

MANAGING THE CREATIVE EFFORT: PRE-PRODUCTION AND POST-PRODUCTION MEASURES OF EMOTIONAL RESPONSE¹

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Although consumer research began focusing on emotional response to advertising during the 1980's (Goodstein, Edell & Chapman Moore, 1990; Burke & Edell, 1989; Aaker, Stayman & Vezina, 1988; Holbrook & Batra, 1986), few studies have examined the possibility of using pre-production measurements to predict emotional responses to finished commercials. Research exploring the ability of preproduction stage executions to evoke emotional responses is needed to advance the advertising copy development systems (Shimp & Gresham, 1983). Major practical benefits of testing preproduction executions include the ability to evaluate and revise before spending time and money on final production; the ability to economically test a number of different strategies and executions; and more flexibility for decision making (Whitton, 1985; Lipstein & Neelankavil, 1982; Schlinger & Green, 1980; Brown & Gatty, 1967).

The lack of pre-production research is due in part to the post-production orientation of copy research and the lack of reliable, and simple to administer measures of emotional response. Advertising researchers and practitioners have traditionally viewed copy testing as a method of posting scores on finished ads (Langhoff, 1955) and using the scores as "go/no go" decision makers (Leckenby & Plummer, 1983) or benchmarks for performance against competitors' campaigns (Leckenby & Plummer, 1983).

Testing systems that do implement concurrent procedures (Leckenby & Plummer, 1983) still face the problem of reliably measuring emotional responses as they occur in different stages of commercial development. It is crucial to have a copy testing method designed specifically to measure emotional response (Cafferata, 1989; Plummer & Leckenby, 1985).

Many of the traditional copy testing methods such as measures of recognition, recall and attitude-toward-the-ad are not designed to gauge the full range of emotional responses to advertisements (Cafferata, 1989; Plummer & Leckenby, 1985). These techniques measure thoughts not feelings, two things experienced and processed differently (Zajonc, 1980; Zajonc & Markus, 1982). Allen and Madden (1989) contend that "focusing on evaluative judgments rather than affective experience in ad effects research may involve a serious compromise regarding the ecological validity of the focal process" (p. 330).

Several researchers (Holbrook & Batra, 1988; Teachman, 1985; Schlinger, 1979) and advertising agencies (BBDO, 1989; Budner, personal communication, October 25, 1991) have developed emotional response measures specifically designed to gauge consumers' reactions to emotional appeals in efforts to combat the cognitive bias found in popular copy testing measures. One important objective of the measures has been to look at pre-production versions of commercials for the desired emotional response. Of interest then is whether emotional responses to pre-test

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versions of commercials, such as storyboards or animatics, can reliably predict emotional responses to the finished version (Goodstein, Edell, Chapman Moore, 1990).

Measuring Emotional Response to Advertising

The majority of advertising testing systems available was developed during the "information processing era" of advertising, and while they work well for evaluating rational appeals, they are particularly weak in their capabilities to assess emotional commercials (Cafferata, 1989; Plummer & Leckenby, 1985). Part of the difficulty in developing measures of emotional response stems from the complexity of emotion itself (Plummer & Leckenby, 1985). These measures have ranged from verbal self-reports (adjective checklists) to physiological measures to nonverbal photo decks. Each of these measures offer some advantages for advertising copy research, but most of them bear a number of problems.

Bipolar theories of emotion propose that emotions are structurally related and that all emotions stem from a relatively small number of base emotions (Havlena & Holbrook, 1986; Daly, Lancee & Polivy, 1983; Mehrabian & Russell, 1977, 1978; Davitz, 1969; Osgood, Suci & Tannebaum, 1957). Research evidence has supported the theory that affective states possess certain similarities and can vary along dimensions such as pleasant-unpleasant or aroused-calm (Daly, Lancee & Polivy, 1983). In contrast to the monopolar view, this theory suggests that people do not cognitively separate emotions, but classify them as continuing bipolar dimensions (Russell, 1989; Daly, Lancee & Polivy, 1983; Mehrabian & Russell, 1977; Osgood, Suci & Tannebaum, 1957). For example, happy and sad would exist along the same continuum, with sad representing negative degrees of happiness or vice versa.

Much of the evidence supports only three basic dimensions of emotion. The first two dimensions, pleasure and arousal, have gained considerable support, but the third is still under debate (Russell, 1989; Storm & Storm, 1987; Daly, Lancee & Polivy, 1983). Labels for the third dimension have included dominance (Mehrabian & Russell, 1974, 1977), level of aggression (Bush, 1973), trust (Dittman, 1972), authoritarianism (Frijda, 1969) and interpersonal readiness (Block, 1957). Researchers agree that the evidence indicates models with less than three dimensions may not accurately represent affective experience (Russell, 1989; Daly, Lancee & Polivy, 1983; Mehrabian & Russell, 1977). Mehrabian and Russell's (1974) Pleasure-Arousal-Dominance (PAD) model has gained widespread attention in advertising research (Havlena & Holbrook, 1986). This has the potential for being useful in strategy formulation and in copy development (Zeitlin & Westwood, 1986).

Mehrabian and Russell's PAD Theory

Mehrabian and Russell (1974) defined the pleasure dimension as a continuum ranging from extreme happiness or ecstasy at one end to extreme pain or unhappiness at the other end. The arousal dimension was defined as a continuum ranging from frenzied excitement at one end to sleep at the other end. The third dimension, dominance, was defined as a continuum ranging from feelings of total lack of control to feelings of total control or influence. All other emotions can be considered combinations of these three basic dimensions. For example, anger and anxiety, two emotions thought by many theorists to be independent basic emotions, are really combinations of pleasure, arousal and dominance. Both anger and anxiety are characterized by

levels of displeasure and arousal, but anger involves feelings of dominance whereas anxiety involves feelings of submissiveness.

Mehrabian and Russell (1977) found further support for their PAD theory in tests designed to determine if the PAD dimensions were both necessary and sufficient to define emotional states. A regression of 42 verbal report scales as functions of the PAD dimensions indicated that the three PAD dimensions accounted for almost all of the reliable variance in the 42 scales, providing strong evidence that these three dimensions are sufficient to define all of the emotional states.

Emotional Response Measurements in Copy Pre-testing

Research investigating the ability of storyboards and animatics to predict emotional responses to finished commercials remains limited. Advertising agencies have conducted private research, but very few published studies have addressed the issue (Goodstein, Edell & Chapman Moore, 1990). Existing copy testing literature centers on the pretesting of finished commercials rather than copy development testing (Ostlund, 1978). A few studies have compared storyboards to finished commercials (e.g. Goodstein, Edell & Chapman Moore, 1990; Schlinger & Green, 1980; Brown & Gatty, 1967; Caffyn 1965; Lieberman, 1964)) or animatics to finished (e.g. Goodstein, Edell & Chapman Moore, 1990; Appel & Jackson, 1975), but the majority measure recall, recognition, or clarity of copy points and not emotional response.

The majority of studies comparing preproduction executions to finished commercials were conducted in the 1960s and 1970s and focused on cognitive copy testing procedures. A 1982 survey of television advertising copy practices among major advertisers and agencies (Lipstein & Neelankavil, 1982) indicated that the most common measures used when evaluating roughs were as follows: copy point playback (97%), commercial reaction measures (92%), product attributes (84%), persuasion (84%) and recall (6 1%). The Schlinger and Green (1980) study used the Viewer Response Profile, which was called an emotional response measure in earlier research (Schlinger, 1979), but actually measures the following six factors: confusion, empathy, stimulation, relevant news, familiarity and brand reinforcement. Thus, their subjects reported judgments of the ads' characteristics rather than how they made them feel (Goodstein, Edell & Chapman Moore, 1990).

The interchangeable use of terms in the literature makes it difficult to generalize results of the studies (Goodstein, Edell & Chapman Moore, 1990) or to build a solid research base. More importantly, there remains little "hard" data on the ability of rough executions to predict responses to finished commercials (Goodstein, Edell & Chapman Moore, 1990; Schlinger & Green, 1980; Ostland, 1978). Studies analyzing anywhere from two (Brown & Gatty, 1967) to 133 (Schlinger & Green, 1980) storyboard-finished pairs of commercials indicate that in most cases reactions to storyboards are good representations of reactions to finished commercials. Several studies conducted in the 1960s indicated that Telpex roughs reliably predicted viewers' reactions to the finished versions of the commercials (Brown & Gatty, 1967; Caffyn, 1965). One limitation, however, is that each of these studies generally tested only two commercial pairs.

Companies such as American Express who produce a lot of image-oriented advertising have

explored the ability of rough executions to predict emotional responses and have produced encouraging results. Research conducted by American Express comparing animatics and finished commercials indicated that: (1) animatics showed a pattern of predictability to finished such that the same decision would be made; (2) absolute levels on many measures, as well as the patterns of response were similar; and (3) animatics can capture imagery and dynamics of involvement which can be helpful in identifying problems early on (Whitton, 1985).

Goodstein, Edell and Chapman Moore (1990) have provided the most promising evidence to date in this area of advertising research. They specifically asked the question: "Can pretest versions of ads generate emotional responses that reliably predict the level of emotional responses that will be generated by the finished version of the ad?" (Goodstein, et al., 1990, p. 175). The primary purpose of the study was to contrast the impact of the overall feelings generated by storyboards, animatics and finished versions of commercials on attitude toward the ad and attitude toward the brand.

The results indicated that the overall impact of feelings on attitude toward the ad and attitude toward the brand did not differ significantly by format. There was, however, a significant ad by format interaction indicating that the level of feelings generated by the formats may differ significantly for some ads on an individual basis. Further examination indicated that animatics were good predictors of finished commercials when the ads generated high levels of upbeat, warm and disinterested feelings and storyboards were good predictors of high levels of disinterested and uneasy feelings. Goodstein et al. interpreted this to mean that storyboards would be misleading indicators of responses to finished commercials designed to create high levels of positive feelings.

Verbal Measures of Emotional Response

Most emotional measures developed and used in consumer research have been verbal measures employing semantic differential scales or adjective checklists. There are also measures such as Holbrook and Batra's (1986) Standard Emotional Profile (SEP), Schlinger's (1979) Viewer Response Profile (VRP) or the Beaumont Emotion Battery, which are combinations of several techniques. In most cases respondents are either given pairs of adjectives or statements on semantic differential scales, asked to check off adjectives in a checklist which apply, or even asked to give open-ended responses indicating how they felt after viewing the commercial.

Verbal measures, however, have some inherent problems associated with using language referents even though they do consist of emotion-denoting terms and are designed to gauge emotional responses. First, verbal measures are still cognitively oriented. Responding to verbal measures means thinking about the emotion and how it relates to the words or phrases used in the measure. This cognitive process distorts the initial reaction to the commercial (BBDO, internal report). Psychological research has produced evidence indicating that the communication of affect is processed differently than semantically oriented material, relying more on nonverbal channels of communication (Zajonc, 1980; Schneider, Hastorf & Ellsworth, 1979; Ekman & Friesen, 1969). Second, affective reactions are instantaneous and automatic (Zajonc, 1980; Zajonc & Markus, 1982;), whereas reading and evaluating the emotion terms used in verbal measures requires more cognitive processing. The mental activity prompted by the

emotional cues in commercials occurs very rapidly and often subconsciously, making it difficult for people to verbally report their responses (Hammond, 1987; Miserski & White, 1986). Because of this unconscious processing, copy testing systems using verbal measures may be totally ineffective for gauging emotional responses elicited by the commercial (Allen & Madden, 1989; Miserski & White, 1986; Jolly, 1984; Zajonc & Markus, 1982).

Third, several studies have provided evidence that affect is processed differently from semantic content. For example, results of a study by Pavio (1978) indicated that reaction times for pleasant-unpleasant ratings are faster for pictures than for words. He interpreted the results as indicating “the analog information involved in the pleasantness and value judgments is more closely associated with the image system than with the verbal system” (p. 107). Moreover, verbal measures of emotion are susceptible to problems of interpretation by the subjects. “People have an informal and implicit ‘naive theory’ of emotion, which they use when they anticipate, identify, communicate about, and try to influence the emotional states of others.” (Russell, 1989, p. 84). Many of the adjective checklists that are used expect subjects to respond regardless of whether or not a word has a referent in their personal experience of emotion.

Research on emotional response to advertising, which uses these types of verbal measures, has tended to conceptualize emotional response as a unidimensional phenomenon (Stout & Leckenby, 1986). As a result, these measures have failed to tap the richness of a person’s complete emotional reaction.

Nonverbal Measures of Emotion

Several researchers (e.g., Morris, Bradley, Lang, & Waine, 1992; Teachman, 1985) and advertising agencies (e.g., BBDO; Foote, Cone, & Belding/Leber Katz Partners) have investigated nonverbal measures of emotional response as one viable alternative. Nonverbal measures of emotional response have been viewed as one answer to the problems surrounding verbal and psychophysiological measures. Nonverbal measures of emotion used within advertising research have typically been in the form of some type of photo deck, with pictures rather than words indicating the different emotions. These types of measures have generally been developed at some of the larger advertising agencies for private use.

BBDO’s Emotional Measurement System (EMS) is one nonverbal measure of emotional response that has been used in the advertising industry. The measure consists of a photo deck of 53 photographs depicting emotional facial expressions based on 26 distinct emotion categories. Each photograph has been located on a perceptual map and serves as a standard for measuring and interpreting consumers’ emotional responses to advertising. Consumers view the commercials and then sort through the EMS Photo deck and select the faces that represent their feeling after viewing the commercial. The results are then statistically analyzed and plotted on a perceptual map, which allows advertisers to compare the emotional impact of various executions or of their spots in relation to the competition’s (BBDO, 1989).

The advantages of using a photo deck are that it is image-oriented and it is language-free. The processing of the emotions expressed in the facial expressions is very close to the processing that occurs for affective reactions (Mehrabian & Russell, 1977); therefore this type of measure may

gauge the emotional responses more accurately than verbal measures. The elimination of semantic content also allows for more effective processing and response, as well as providing the capability of being applied cross-culturally. There are, however, several limitations to this method of measurement. Even though the verbal bias has been eliminated, there is still the possibility of bias created from using actual human faces in the photographs. Respondents could have emotional reactions to the photographs themselves, thus confounding the results of the responses to the commercials being tested. In addition, if respondents have to sort through all of the pictures each time they indicate their emotional response it could create wear out due to the amount of time involved.

The Self-Assessment Manikin

The Self-Assessment Manikin (SAM) presents a promising solution to the problems that have been associated with measuring emotional response to advertising. SAM visually represents Mehrabian and Russell's three PAD dimensions and was designed as an alternative to cumbersome verbal self-report measures (Lang, 1980). SAM depicts each PAD dimension with a graphic character arrayed along a continuous nine-point scale. Initially, SAM was compared to PAD by using the catalog of situation employed by Mehrabian and Russell (1974) to standardize the PAD dimensions. The results indicated that SAM "generated a similar pattern of scale values for these situations as was obtained for the semantics differential (Pleasure +.937, Arousal +.938 and Dominance +.660) (Lang, 1980, p.123).

Visually oriented scales using a graphic character eliminate the majority of biases associated with verbal measures and nonverbal measures based on human photographs. In addition, subjects can complete ratings on the SAM scales in less than 15 seconds, allowing more stimuli to be tested in a shorter amount of time and reducing respondent wear out. Subjects have expressed greater interest in SAM ratings in a number of studies and have stated that it is more likely than verbal measures to hold their attention (Lang, 1980). A third advantage is that both children and adults readily identify with the SAM figure and easily understand the emotional dimensions it represents (Lang, 1980). Because SAM is a culture-free, language-free measuring instrument it is suitable for use in different countries and culture (Bradley, Greenwald & Hamm, in press).

Several studies both in the United States and abroad have validated the SAM scales and demonstrated their effectiveness for measuring emotional responses. Greenwald, Cook and Lang (1989) examined the relationship of affective judgments using SAM and psychophysiological responses based on a dimensional analysis of emotion. Strong relationships between subjective evaluation and psychophysiological responses have not been easy to obtain in past research, but Greenwald et al. found a close correspondence between physiological patterning and dimensional (valence, arousal) responding.

Morris et al. (1992) recently examined the effectiveness of SAM in evaluating advertising messages by comparing SAM to a verbal PAD scale in an advertising environment. The study partially replicated a 1987 Holbrook and Batra study, which evaluated emotional responses to 72 television commercials using their SEP measure. The verbal measure was based on a PAD scale; therefore it represented a suitable method of comparison. Over 245 subjects used SAM to indicate their emotional response to 46 of the original Holbrook and Batra commercials. The results indicated a strong correlation between mean PAD scores using SAM and the mean PAD

scores using SEP. Correlations between the SAM and SEP measures on each PAD dimension were as follows: Pleasure ($r=.36$), Arousal ($r=.65$), and Dominance ($r=.37$).

The main purpose of emotional response copy testing is determined whether the commercial is communicating the intended level of emotional impact. Methods determining this at the earliest possible stage create significant advantages for advertisers and agencies. Several studies (e.g., Chaiken & Eagly, 1983; Goodstein, Edell & Chapman Moore, 1990; Liu & Stout, 1987) have asserted that the addition of audio in animatics makes them more representative of finished commercials than storyboards. Therefore, the questions of interest are: 1) Do emotional responses to storyboards and animatics serve as representations of emotional responses to finished commercials? 2) Do emotional responses to animatics better represent emotional responses to finished commercials than emotional responses to storyboards?

Research Design

The purpose of this study was to examine the differences in emotional response to storyboards, animatics and finished versions of commercials. Four large advertising agencies provided a total of sixteen different commercials in their storyboard, animatics and finished form. Unfortunately, only photo boards, rather than storyboards, were available for three of the commercials. Photo boards consist of still photographs taken from the finished commercial and although they are in a print format, still present the commercial in a finished form of production. The three photo boards were not included in the experiment due to these differences, reducing the number of storyboards to thirteen.

Table 3-1
Advertisements By Title, Brand and Product Type

<u>Ad #</u>	<u>Ad Title</u>	<u>Brand Name</u>	<u>Product</u>
1)	Static	AT&T	Long Distance Phone Service
2)	Beep	AT&T	Long Distance Phone Service
3)	Waiting	AT&T	Long Distance Phone Service
4)	Silver Spinner	AT&T	Long Distance Phone Service
5)	Women	Jell-O	No Bake Cheesecake
6)	Cookie	Jell-O	Sugar-Free Gelatin
7)	You Made Me Love You	Jell-O	Fat-Free Pudding
8)	Savor	Philadelphia	Flavored Cream Cheese
9)	How To Eat Light	Philadelphia	Light Cream Cheese
10)	For Daddy	Kraft	Fat-Free Cheese Singles
11)	Switcheroo	Kraft	Light Cheese Singles
12)	Cold Cereal*	Cold Cereal	Cold Cereal
13)	Stain Resist	Woolite	Carpet Cleaner
14)	Sleeping Baby	Gerber	Baby Formula
15)	Nursing Mother	Gerber	Baby Formula
16)	Burp Dance	Gerber	Baby Formula

*This advertiser wished to remain anonymous.

The commercials represented eleven different products in six different product categories. All of

the commercials were either currently being aired or had been aired within the last year. The three Gerber commercials were all part of a campaign, and three of the four AT&T commercials were all part of a campaign. Table 3-1 lists each commercial by assigned ad number, title, brand name and product type.

SAM

The Self-Assessment Manikin (SAM) (Lang, 1980) was used to measure the subjects' emotional responses to each commercial in whichever form they were viewed. SAM utilizes a continuous nine-point scale for each of the three Pleasure, Arousal and Dominance (PAD) dimensions.

SAM Valance Scale

The SAM figure ranges from smiling to frowning on the valance (pleasure) scale. A score of nine, corresponding to the smiling figure on the left end of the scale, indicates the respondent felt completely happy, pleased, satisfied, contented or hopeful after viewing the commercial. A score of one, corresponding to the figure at the extreme right end of the scale, indicates the respondent felt completely unhappy, displeased, melancholic, despaired or unsatisfied after viewing the commercial. A score of five, corresponding to the figure in the middle, indicates the respondent felt relatively neutral after viewing the commercial. Remaining scores indicate the respondent felt varying degrees of pleasure or displeasure after viewing the commercial, depending on which figure was marked.

SAM Arousal Scale

The SAM figure ranges from excited to calm on the arousal scale. A score of nine on this scale indicates the respondent felt completely aroused, excited, frenzied, jittery or wide-awake after viewing the commercial. At the other end of the scale, a score of one indicates the respondent felt completely unaroused, calm, relaxed, sluggish, dull, sleepy or bored after viewing the commercial. A score of five indicates relatively neutral feelings and the other scores indicate various degrees of arousal or nonarousal.

SAM Dominance Scale

The dominance scale displays the SAM figure ranging from small to large. A score of nine indicates the respondent felt completely controlled, influenced, cared-for, awed, submissive or guided after viewing the commercial. A score of one indicates the respondent felt completely in control, influential, controlling, important, autonomous or dominant after viewing the commercial. Again, a score of five indicates relatively neutral feelings after viewing the commercial and the remaining scores indicate varying feelings of dominance or submission.

Sample

A total of 123 undergraduate students enrolled in an introductory advertising course participated as subjects in the study. The students were given extra credit points toward their grade for participating. One week before the study the students were given sign-up sheets with the date and time of twelve different sessions and asked to sign up for one session at their own discretion. The

number of available spaces per session was limited to a maximum of twenty. The subjects per session varied from two to twenty, but the subjects were totaled by format, creating three large groups for the statistical analyses. A total of 41 subjects viewed the commercials in the storyboard format, 41 subjects viewed the commercials in the animatics format and 41 viewed the commercials in the finished format.

Several emotional response studies (e.g., Holbrook & Batra, 1987, 1988; Moms et al., 1992) and copy research studies (e.g., Holbrook & Lehmann, 1980; Schlinger, 1979; Wells, 1964; Wells, Leavitt, & McConville, 1971) have used the advertisements themselves rather than the respondents as units of observation. Holbrook and Batra (1988) contend that people can be aggregated to create response measures that characterize ads rather than people as sampling units of interest. Modeling the previous empirical studies, this study uses the ads in their different formats as the sampling units of observation. Thus, the sample produces a homogenous group with significant power (Morris et al., 1992). Given this, no demographic data on individual subjects have been analyzed. Therefore, the groups have been identified by the three stages of production: Storyboard, Animatics and Finished.

The order of advertisements presented in each of the twelve sessions was varied to control for the possibility of different responses due to the order of advertisement presentation. A different format (storyboard, animatics or finished) order was presented each day over a four-day period to control for the possibility of different responses due to the order of format presentation.

Subjects were unaware of the nature of the study and had no way of knowing which format they would be seeing. Group sessions were conducted in a medium-sized classroom in the College of Journalism and Communications on four different evenings in November 1991. Three different group sessions per day were conducted over the four-day period. On each of the four days one group of subjects viewed storyboards, one group viewed animatics and one group viewed finished commercials. Each session lasted approximately 20 minutes.

Table 3-2 illustrates the order of format presentation for each day.

Table 3-2
Order of Format Presentation

Day 1: Finished, Storyboard, Animatics

Day 2: Storyboard, Animatics, Finished

Day 3: Animatics, Finished, Storyboard

Day 4: Storyboard, Animatics, Finished

Procedure

The SAM scales were presented in the same basic layout for the three groups (storyboard, animatics and finished groups). The questionnaires for the animatics and finished commercial groups consisted of booklets comprised of 15 and 16 pages respectively of SAM scales. Each page corresponded to one ad and the order of the SAM PAD scales varied for each page. The experimenter presented the procedure instructions verbally so no written instructions were included in the booklets. At the start of each session, the experimenter read instructions for the

procedure aloud from a prepared script. The instructions briefly outlined the testing procedure and explained each of the SAM scales and how to use them. For the storyboard and animatics groups the instructions included a brief explanation of storyboards or animatics. The subjects in all groups were asked not to evaluate the ads themselves, but to indicate how the ads made them feel.

The storyboard groups were given booklets containing copies of the storyboards and their corresponding SAM scales. The subjects in these groups were given one minute to read each of the storyboards and indicate their emotional response using SAM. The subjects were instructed not to go back and read the storyboard when trying to make their ratings, but to read through the storyboards and then indicate their initial emotional response. The experimenter gave a fifteen-second warning prior to the time limit for each ad so subjects could make their ratings and then indicated when each minute was up.

The animatics and finished sessions were each conducted using the same procedure. Each group watched the ads (either in animatics or finished format) on a half-inch videotape projected onto a color television at the front of the classroom. The videotapes were edited so that the commercials were shown in their pre-determined order, with fifteen-second spaces between them. Once the tape was started it played uninterrupted until subjects viewed the last ad. Subjects viewed each commercial the entire time it was on the screen and then indicated their emotional responses during each fifteen-second period.

Analysis

A Univariate analysis of variance (ANOVA) was used to determine whether significant differences existed between the storyboard, animatics, and finished formats and whether there was an ad by format interaction. a mixed-model repeated measures design was used with a one-way analysis used to test for significant differences in format for individual ads. Newman-Keuls and Scheffe procedures were performed to pinpoint the sources of any significant differences between the formats.

Results

The Pleasure, Arousal, and Dominance scores for the sixteen ads were summed to assess the overall relationships between the emotional responses to the storyboard, animatics and finished formats. The analysis indicated that the ad format was not significant for Pleasure $F(2, 98) = .58$; Arousal, $F(2, 99) = .80$; or Dominance, $F(2, 99) = 1.14$. A main effect for individual ads and their formats was found for Pleasure, $F(22, 1078) = .36$; and Arousal, $F(22, 1089) = 2.58$, dimensions but not for the Dominance dimension, $F(22, 1089) = 1.44$.

The results also indicate significant differences between the sixteen ads themselves. The ads show significant differences for Pleasure, $F(1, 1078) = 20.88$; and Arousal, $F(1, 1089) = 11.79$; but not for Dominance, $F(1, 1089) = 1.28$. The significant differences between ads indicate that SAM discriminated between the different emotional responses evoked by the ads.

Significant differences were found between formats for seven of the sixteen ads. The formats were different on the Pleasure dimension for all seven ads and on the Arousal dimension for

three of the ads. Table 4-I presents the mean PAD scores by format for each individual ad. The table only includes data for the Pleasure and Arousal dimensions since there were no significant differences between ads or significant ad by format interaction for Dominance.

Newman-Keuls and Scheffe results were identical and indicated that the significant differences in PAD scores by format were not all due to differences between the storyboard and finished formats, thus the third hypothesis was not supported. Previous research (Goodstein, Edell & Chapman Moore, 1990; Schlinger & Green, 1980) has suggested that significant differences between formats are generally caused by differences between the storyboard and finished versions of commercials. The results of the present study, however, indicate that significant differences in format are just as likely to be caused by differences between mean Pleasure scores for the animatics format and finished format or both the storyboard and animatics formats and the finished format. Of the seven ads with significant differences in Pleasure scores, two show significant differences between the storyboard and finished formats, two show significant differences between the animatics and finished formats, and three show significant differences between both the storyboard and animatics formats and the finished format. Significant differences between mean Arousal scores are due to

Table 4-I
One-way Analysis of Variance Results

Product	Pleasure			Arousal		
	Storyboard	Animatic	Finished	Storyboard	Animatics	Finished
Long Dist. Phone Service	5.62 ^a	5.74 ^a	4.17 ^b	4.00	4.24	3.78
Long Dist. Phone Service	5.65 ^a	5.63 ^a	4.54 ^b	4.37	3.47	3.49
Long Dist. Phone Service	5.63 ^a	5.26 ^a	4.37 ^b	4.62 [']	3.84 ^{ab}	2.95 ^a
Long Dist. Phone Service	6.45	6.21	6.12	4.85	4.32	4.22
No Bake Cheesecake*	5.42 ^a	6.32 ^{ab}	7.17 ^b	3.90 ^a	3.95 ^a	5.29 ^b
Sugar-Free Gelatin	7.27 ^{ab}	6.89 ^b	8.02 ^a	5.65 ^{ab}	4.58 ^b	6.37 ^b
Fat-Free Pudding	6.27	7.29	6.75	4.72	4.84	4.29
Flavored Cream Cheese*	6.84 ^a	7.97 ^{ab}	7.39 ^b	4.80	5.68	5.85
Light Cream Cheese	5.75	****	6.37	4.05	****	4.80
Fat-Free Cheese Singles*	5.67 ^{ab}	6.39 ^b	5.10 ^a	3.97	4.12	3.54
Light Cheese Singles	7.17	6.50	6.78	5.12	4.58	4.37
Cold Cereal	5.57	5.63	6.29	3.82	3.39	3.34
Carpet Stain Remover	6.17	5.84	5.86	4.75	3.58	4.24
Baby Formula	****	6.92	6.68	****	3.89	3.98
Baby Formula	****	6.47	6.17	****	3.26	3.83
Baby Formula	****	6.58	6.85	****	4.26	4.41

* p<. 05

a, b: means with the same subscript are not significantly different

significant differences between the finished and storyboard formats for one ad, differences between the finished and both the storyboard and animatics formats for one ad, and differences between the animatics and finished formats for one ad.

Storyboard, Animatics, and Finished Plot

The scatter plot of the sixteen ads in their storyboard, animatics and finished formats (Figure 4-1) reflects the proximity of the ads and their formats in a Pleasure by Arousal affective space. The plot shows that most of the ads fall together in a high pleasure-low arousal space, indicating

several interesting patterns. First, commercials that were a part of a campaign (e.g., the three AT&T and the three Gerber commercials) fall closely together. The AT&T spots all produced significant differences in formats, but the storyboards cluster together, the animatics cluster together and the finished cluster together. This indicates that all three are producing similar patterns of emotional response. The Gerber commercials cluster closely together in a similar pattern.

The scatter plot also shows that the ads falling at the extremes of the space are ads that have significant differences between formats. The Sugar-Free Jell-O (#10) and Philly Flavored Cream Cheese (#4) spots both have significant differences between formats, and the finished versions are positioned in a high pleasure-high arousal space. The three finished AT&T ads (#9, #5 and #1) lie at the opposite end of the spectrum in the low pleasure-low arousal space. The majority of the ads, though, clusters together in a low pleasure-low arousal space and did not have significant differences between their formats. The two ads that produced the most extreme scores (highest pleasure and arousal; lowest pleasure and arousal) were both in the finished format.

Discussion

The results of the investigation indicated that overall, emotional response scores for the preproduction versions are not significantly different emotional response scores for finished versions of the commercials (See Figure 4.1). For some individual ads, however, the preproduction versions will not generate the same overall level of emotional response as the finished commercial. The results did not support previous findings (Goodstein et al., 1990; Schlinger & Green, 1980) indicating that significant differences between formats would be due to differences between the storyboard and finished versions of the commercial.

The fact that emotional response scores for the sixteen commercials did not differ significantly by format on the PAD dimensions is encouraging and provides additional support for research conducted by Goodstein, Edell and Chapman Moore (1990). The Goodstein et al. study indicated that storyboards and animatics could be used to assess the nature of the influence emotional responses have on attitude toward the ad and attitude toward the brand. The present study examined the more fundamental issue of whether emotional responses to storyboards and animatics are reliable representations of emotional responses to the finished commercials regardless of their effect on Attitude toward the ad or attitude toward the brand. The study focuses instead on the measurement of emotional responses during different stages of copy development.

Moreover, emotional responses did not differ significantly across formats on any of the three PAD dimensions indicating that storyboards and animatics produce the full range of emotional responses elicited by finished commercials. Mehrabian and Russell's (1974) PAD dimensions are the three basic emotional dimensions that account for all other emotions. Just as other emotions are combinations of Pleasure, Arousal and Dominance, advertisements are combinations of different emotions that work together to produce the overall emotional response to the ad. The results of the investigation indicate that SAM captured those combinations of emotions and that the storyboard and animatics versions were generally able to convey these emotions as effectively as the finished versions of the commercials. This is important since

storyboards and animatics need to be able to tap most of the emotional responses elicited by an ad in order to determine the full impact of the finished commercial.

Format By Ad Interactions

Although storyboards and animatics are generally reliable predictors of finished commercials, preproduction versions of some individual ads will not always generate the same level of emotional response as the finished versions. The analyses of the within-subjects factor of format by ad interaction revealed a main effect for seven individual ads on the Pleasure and Arousal dimensions. These findings also support findings by Goodstein et al. (1990). The evidence suggests that certain elements within individual ads affect the emotional responses the ads will elicit in various stages of production. Identifying these elements is important for reliably interpreting the emotional response scores for the preproduction versions and holds important implications for testing advertising (Goodstein et al., 1990).

Researchers (Liu & Stout, 1987; Chaiken & Eagly, 1983) have suggested that certain audio-visual techniques associated with the finished formats may affect the emotional response to the commercial. Moreover, Kanter (1985) and Schlinger and Green (1980) suggest that preproduction versions, particularly storyboards, of commercials focusing on appetite appeals may not be reliable predictors of responses to the finished versions. The visual appeal of the food is often diminished in the storyboard or animatics format (Schlinger & Green, 1980).

Significant differences between formats were found for seven of the sixteen ads, in two distinct groups: AT&T commercials and commercials featuring food products. Differences between formats for the AT&T commercials appear to be due to production techniques, specifically the enhanced audio-visual quality of the finished ads. The production techniques used in the finished commercial could not be accomplished in the storyboard or animatics versions and generated significantly different emotional response scores.

AT&T Commercials

The three AT&T spots that produced significant differences in emotional response between formats were clearly all a part of the same campaign and employed the same creative strategy. The storyboards and animatics for each of the three spots were very similar, but the finished versions differed significantly from the preproduction formats, most likely due to the production techniques involved. In these cases the preproduction versions underestimated the emotional responses to the finished versions of the commercials. The fourth AT&T commercial in the study used a much different approach that did not produce any significant differences between formats.

Each of the three AT&T spots presented a different problem consumers encounter with international long distance phone services. The spots were designed to convey the annoying feelings people get when they encounter problems such as static on the line, busy signals when all the lines are tied up, or waiting for the calls to go through. The results indicate that while the storyboards and animatics successfully evoked feelings of mild annoyance or displeasure at these problems, the finished versions of the ads evoked stronger feelings of annoyance or displeasure. A comparison of the three formats for each of the ads provides valuable insight into why the

finished versions of the commercials rated significantly less pleasurable.

The copy remained almost identical from the storyboards to the finished commercials, but the production techniques used in the finished commercials created less pleasurable emotional responses. In the “Static” spot (Figure 4.2), the storyboard (M = 5.62, P) and animatics (M = 5.74, P) show the static in black and white (the animatics adds a little bit of color), and the static patterns shown on the screen are fairly symmetrical. The finished version (M = 4.17) of the commercial adds a red color to the static visuals and the patterns are more chaotic and jump out at the viewer. The static sound is also louder and more crackling than the sound in the animatics, creating greater feelings of irritation. This could indicate that the more intense visuals combined with the louder, grating audio had a significant impact on the feelings elicited by the finished commercial.

The finished versions of the “Beep” (Figure 4.3) and “Waiting” (Figure 4.4) spots employed similar production techniques to generate more intense feelings of annoyance than the storyboard or animatics versions. The storyboard (M = 5.65, P) and animatics (M = 5.63, P) versions of “Beep” both featured the word “beep” filling in the screen in a symmetrical pattern. In contrast, the “beeps” in the finished version (M = 4.54, P) rolled out at the viewer and then off to the left or the right. The “beeps” also had a light fluorescent green color and “glowed” as they beeped and rolled out at the viewer. The “Waiting” spot showed the words “one thousand, two one thousand,” etc. on through “six one thousand” to indicate having to wait for your call to go through. The storyboard (M = 5.65, P) and animatics (M = 5.26, P) versions showed the phrases in a neat, systematic order with one phrase per frame. In contrast, the finished version (M = 4.37) had the phrases rolling out at the viewer one after another in an almost three-dimensional fashion and going all over the screen. As the spot progressed, the phrases started blending and getting blurred so that it was more difficult to read them. The words were projected towards the viewer as they became blurred and this could have created greater feelings of annoyance and impatience. The differences in emotional responses to formats of the three commercials are even more apparent when you examine the locations of the storyboard, animatics and finished versions of each commercial in the two dimensional affective space.

Figures 4.2, 4.3, 4.4, showed the positions occupied by the storyboard, animatics and finished versions of the three AT&T commercials in a Pleasure by Arousal affective space. The plot indicates that the formats for all three AT&T ads fall in the same pattern in the space. This indicates that the three commercials are generating similar emotional responses, which is encouraging considering they are all part of a campaign. Morris et al.

(1992) found similar patterns for pairs of finished commercials that were part of the same campaign. Pairs of Pepsi commercials fell closely together in the Pleasure by Arousal space, as did pairs of Maytag and Oil of Olay commercials, reflecting their similarity in execution.

Food Commercials

The four remaining commercials that produced significant differences between formats all advertised food products. The food commercials reflect a pattern similar to the AT&T commercials, with the production quality of the finished commercials creating significantly more pleasurable responses. These commercials advertised Jell-O No Bake Cheesecake Philadelphia Flavored Cream Cheese, Sugar-Free Jell-O Gelatin and Kraft Fat-Free Singles. Previous research

(e.g., Kanter 1985; Schlinger & Green, 1980) suggests that food commercials often produce scores in the finished format that are significantly different from scores in the storyboard or animatics format. The main reason for the differences is the production quality of storyboard, and animatics often diminish the appetite appeal of the food (Schlinger & Green, 1980). Storyboard and animatics often have difficulty conveying certain characteristics of food, such as richness or texture, which make the food appealing to the viewers.

Jell-O No Bake Cheesecake

The Jell-O spot entitled “Women” produced significant differences in both mean Pleasure and Arousal scores in the expected direction (Figure 4.5). The results indicated that the commercial became more pleasurable and more arousing as it progressed to the finished version, with significant differences in format between the storyboard (M = 5.42, P; M = 3.90, A) and finished (M = 7.17, P; M = 5.29, A) versions. The spot attempts to convey that Jell-Os No Bake Cheesecake mix tastes just like you made the cheesecake from scratch and that other people will never know the difference. The spot involves several product shots designed to convey how delicious the cheesecake looks and to appeal to the viewers’ appetites. The storyboards simply don’t capture the rich, deliciousness of the cheesecake, especially since they are in black and white.

This Jell-O spot follows the expected progression for food commercials, with the spot becoming more pleasurable, more arousing and more appealing as it progresses through the production stages. The results indicate that for this product, as with many food products (Schlinger & Green, 1980; Kanter, 1977), the storyboard underpredicts the level of emotional response to the finished version on both the pleasure and arousal dimensions.

Philadelphia flavored Cream Cheese

The Philadelphia Flavored Cream Cheese spot “Savor” also uses a lot of product shots designed to create appetite appeal, and like the “Women” spot, the significant differences in format are between the storyboard (M = 6.84, P) and finished (M = 7.39) versions of the commercial. The finished version scores significantly higher on the Pleasure dimension than the storyboard (Figure 4.6). There were no significant differences between formats on the Arousal dimension.

Sugar-Free Jell-O

This spot, entitled “Cookie,” relies heavily on the appetite appeal of food. The spot features close-ups of several different desserts such as cookies, ice cream, brownies and of course Jell-O. The statistical analyses indicated that significant differences in both mean Pleasure and mean Arousal scores occurred between the animatics (M = 6.89, P; M = 4.58, A) and the finished (M = 8.02, P; M = 6.37, A) formats rather than the storyboard (M = 7.27, P; M = 5.65, A) and the finished formats (Figure 4.7). None of the desserts are as appealing in the animatics version as they are in the finished version, but the differences in the scores are most likely due primarily to differences in the appearance of the Jell-O. The spot shows Jell-O cubes tumbling into a dish, and in the animatics they are stiff and look like blocks. In the finished version, however, you see the Jell-O cubes wiggling and bouncing as they fall into the dish. These are both appealing characteristics favorably associated with Jell-O. In this case, the movement associated with the

product was not effectively captured in the animatics. The similarity between the storyboard Pleasure and Arousal scores and the finished Pleasure and Arousal scores could be because the subjects automatically fill in the well-known jiggly characteristics of Jell-O as they read the storyboard, even though this characteristic is not overtly conveyed. The animatics, on the other hand, shows them, the Jell-O in a stiff, uncharacteristic form that may create cognitive dissonance, thus producing lower Pleasure and Arousal scores for this format.

Kraft-Free Singles

The Kraft-Free singles “For Daddy” spot produced Pleasure scores in the opposite direction from the other food advertising. Here, the finished version ($M = 5.10$) elicited significantly less pleasurable scores than the animatics ($M = 6.39$). Although there were no significant differences between the finished and storyboard ($M = 5.67$) formats, the finished elicited less pleasurable scores than the storyboard as well (Figure 4.8). Two factors appear to influence the differences in scores between the formats and the direction of those scores. First, most product shots in the finished version are of the package rather than the actual cheese slices, therefore the spot does not rely as much on appetite appeal as the other three spots did. Second, the actors portrayed in the storyboard and animatics are more comical in appearance than the actual actors in the finished version. The preproduction versions create a slightly more humorous appeal whereas the finished version is somewhat neutral.

In this case the animatics overestimated the emotional response to the finished version. The animatics essentially do a better job than the finished version of conveying the delicious appeal of the Kraft cheese. The animatics show more shots of the cheese singles than the finished commercial, which focuses more on the package and the actors.

Conclusions

The results of this investigation indicate that in general, emotional responses to storyboards and animatics are reliable representations of emotional responses to finished commercials. In some instances, however, there will be significant differences between formats. In this study differences between formats occurred in commercials that advertised food or relied on audio-visual techniques to create a portion of the emotional response. The results hold significant implications for advertising copy testing research not only because they support previous findings, but because they provide a better understanding of the limitations surrounding certain types of commercials and methods for overcoming the limitation.

The investigation of the relationships between emotional responses to preproduction versions and emotional responses to finished versions of commercials provides encouraging results. One of the great needs of advertising research is the need for studies that accumulate research findings in order to provide an appropriate base for advertising science and policy formation (Shimp & Gresham, 1983).

Many advertisers have recognized the advantages of using emotional appeals (Hammond, 1987; Zeitland & Westwood, 1986). For example, emotional appeals can influence attitudes toward the brand or help create a brand image; they can communicate benefits of the brand to the consumer, and they can enhance the delivery of the advertising message (Zeitlin &

Westwood, 1987; Miserski & White, 1986).

Given the growing prevalence of emotional appeals in advertising, the ability to use the emotional responses to preproduction versions to predict emotional responses to finished versions of commercials becomes important in copy development. The knowledge that emotional responses to storyboards and animatics are often reliable representations of emotional responses to finished commercials should enable testing of a greater number of different executions or make necessary changes in executions without spending enormous amounts of money.

The use of SAM in emotional response copy testing provides an even greater advantage because it reduces the amount of time it takes the respondents to indicate their emotional reactions. This prevents respondent wear-out and allows the researchers time to test a greater number of commercials or executions. The fact that SAM is visually oriented, as are the storyboards and animatics, may even provide a greater richness in response than verbal measures. Researchers that employ SAM in copy testing affect-based advertising may tap truer, and thus more useful, emotional responses to the storyboards and animatics.

Future research should, of course, attempt to replicate the findings and to investigate a larger sample of commercials employing a full spectrum of emotional appeals. Future research should also focus on identifying other elements that may create significant differences in emotional responses between formats. Studies should examine whether there are differences for among product types, different execution styles such as slice-of-life or testimonials, or different production elements such as music or graphics.

By understanding the relationships between emotional responses to preproduction and finished versions of commercials, advertising researchers enhance the development of advertising theory and enhance the effectiveness of advertising strategy.

References

- Allen, C. T., & Madden, T. (1989). Gauging and explaining advertising effects: Emergent concerns regarding construct and ecological validity. In P. Cafferata & A. M. Tybout (Eds.), Cognitive and affective responses to advertising (pp. 327-351). Lexington, MA: Lexington Books.
- Appel, V., & Jackson, B. (1975). Copy testing in a competitive environment. Journal of Marketing, 39, 84-86.
- BBDQ Advertising. (1989). BDO's emotional measurement system. New York: BBDO Research Services Department.
- Block, J. (1957). Studies in the phenomenology of emotions. Journal of Abnormal Social Psychology 54, 358-363.
- Bradley, M. M., Greenwald, M. K. & Hamm, A. O. (In press). Affective picture processing. In N. Birbaumer & A. Ohman (Eds.), The organization of emotion. Toronto: Hughton-Huber.
- Brown, N. A., & Gatty, R. (1967). Rough vs. finished TV commercials in Telpex tests. Journal of Advertising Research, 7, 2 1-24.
- Burke, M. C., & Edell, J. A. (1989). The impact of feelings on ad-based affect and cognition. Journal of Marketing Research, 26 (1), 69-83.
- Bush, L. E. (1973). Individual differences in multidimensional scaling of adjectives denoting feelings. Journal of Personality and Social Psychology 25 (1), 50-57.
- Cafferata, P. (1989). The advertisement development process from the practitioner's point of view. In P. Cafferata & A. M. Tybout (Eds.), Cognitive and affective responses to advertising (pp. 393-401). Lexington, MA: Lexington Books.
- Caffyn, J. M. (1965). Telpex testing of TV commercials. Journal of Advertising Research (2), 29-37.
- Chaiken, S., & Eagly, A. H. (1983). Communication modality as a determinant of persuasion: The role of communicator salience. Journal of Personality and Social Psychology, 45 (2), 241-243.
- Daly, E. M., Lancee, W. J., & Polivy, J. (1983). A conical model for the taxonomy of emotional experience. Journal of Personality and Social Psychology, 45 (2), 443-457.
- Davitz, J. R. (1969). The language of emotion. New York: Academic Press.
- Dittman, A. T. (1972). Interpersonal messages of emotions. New York: Springer.

- Echoer, D. A., Stayman, D. M., & Vezina, R. (1988). Identifying feelings elicited by advertising. Psychology & Marketing, 5 (1), 1-16.
- Ekman, P., & Friesen, W. V. (1969). The repertoire of nonverbal behavior: Categories, origins, usage, and coding. Semiotica, 1, 49-98.
- Goodstein, R. C., Edell, J. A., & Chapman Moore, M. (1990). When are feelings generated? Assessing the presence and reliability of feelings based on storyboards and animatics. In S. J. Agres & T. M. Dubitsky (Eds.), Emotion in Advertising (pp. 175-193). New York: Quorum.
- Greenwald, M. K., Cook, E. W. III, & Lang, P. J. (1989). Affective judgment and psychological response: Dimensional co-variation in the evaluation of pictorial stimuli. Journal of Psychophysiology, 3, 51-64.
- Hammond, M. (1987). Measuring emotion. Marketing & Media Decisions, 51-55.
- Havlena, W. J., & Holbrook, M. B. (1986). The varieties of consumption experience: Comparing two typologies of emotion in consumer behavior. Journal of Consumer Research, 13, 394-404.
- Holbrook, M. B. (1986). Emotion in the consumer experience: Toward a new model of the human consumer. In R. A. Peterson, W. D. Hoyer & W. R. Wilson (Eds.), The role of affect in consumer behavior: Emerging theories and applications. Lexington, MA: Lexington Books.
- Holbrook, M. B. & Batra, R. (1988). Assessing the role of emotions as mediators of consumer responses to advertising. Journal of Consumer Research, 14, 404-419.
- Holbrook, M. B., & Hirschman, E. C. (1982). The experiential aspects of consumption: Consumer fantasies, feelings, and fun. Journal of Consumer Research, 9, 132-140.
- Holbrook, M. B., & Lehman, D. R. (1980). Form versus content in predicting Starch scores. Journal of Advertising Research, 20 (4), 53-62.
- Holbrook, M. B., & O'Shaughnessy, J. (1984). The role of emotion in advertising. Psychology & Marketing, 1. (2), 45-64.
- Jolly, W. (1984). Children have feelings too: Research designed to understand children's emotional response to advertising. 10th Annual ARF Midyear Conference. New York: Advertising Research Foundation.
- Kanter, D. L. (1977). Finished or unfinished test stimuli -- the TV testing dilemma. In Twenty-second Annual Conference/1976 Proceedings. New York: Advertising Research Foundation.
- Kanter, D. L. (1985). Roughage--Managing TV testing. Proceedings of the Second Annual Advertising Research Foundation Copy Research Workshop, 120-124. New York: Advertising Research Foundation.
- Lang, P. J. (1980). Behavioral treatment and bio-behavioral assessment: Computer applications.

In J. B. Sidowski, J. H. Johnson and T. A. Williams (Eds.), Technology in mental health care delivery systems, (pp. 119- 137). Norwood, NJ: Ablex.

Lang, P. J., Levin, D. N., Miller, G. A., & Kozak, M. J. (1983). Fear imagery and the Psychophysiology of emotion: The problem of affective response integration. Journal of Abnormal Psychology, 92, 276-306.

Langhoff, P. E. (1955). Copy testing--Success or failure. Paper presented to the National Conference of the American Marketing Association, Milwaukee, Wisconsin.

Leckenby, J. D., & Plummer, J. T. (1983). Advertising stimulus measurement and assessment research: A review of advertising testing methods. In J. H. Leigh & C. R. Martin, Jr. (Eds.), Current issues & research in advertising (pp. 135-165). Ann Arbor, MI: University of Michigan.

Lieberman, S. (1964). Filmed storyboards as a television-testing vehicle. Paper presented at the Advertising Research Groups, American Marketing Association, New York, NY.

Lipstein, B., & Neelankavil, J. (1982). Television advertising copy research practices among major advertisers and advertising agencies: An advertising research foundation survey. In Current TV copy research practices (pp. 23-36). New York: The Advertising Research Foundation.

Liu, S. S., & Stout, P. A. (1987). Effects of message modality and appeal on advertising acceptance. Psychology & Marketing, 4 (3), 167-187.

Mehrabian, A., & Russell, J. (1974). An approach to environmental psychology. Cambridge, MA: MIT Press.

Mehrabian, A., & Russell, J. (1977). Evidence for a three-factor theory of emotions. Journal of Research in Personality, 11, 273-294.

Mizerski, R. W., & White, J. D. (1986). Understanding and using emotions in advertising. Journal of Consumer Marketing, 3, 57-69.

Morris, J. D., Bradley, M. M., Lang, J. B., & Waive, C. A. (1992). Assessing affective reaction to advertisements with the self-assessment manikin (SAM). Working Paper, University of Florida, Gainesville.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). The measurement of meaning. Urbana: University of Illinois Press.

Ostlund, L. E. (1978). Advertising copy testing: A review of current practices, problems and prospects. In J. Leigh & C. R. Martin, Jr. (Eds.), Current issues & research in advertising (Pp. 87-105). Ann Arbor, MI: University of Michigan.

Pavio, A. (1978). Mental comparisons involving abstract attributes. Memory and Cognition, 3, 199-208.

- Plummer, J. T., & Leckenby, J. D. (1985). Copy research foundations and futures. In Copy testing (pp. 24-34). New York: The Advertising Research Foundation.
- Russell, James A. (1989). Measures of emotion. In R. Plutchik & H. Kellerman (Eds.), Emotion: Theory, research and experience (pp. 83-111). San Diego: Academic Press.
- Schlinger, M. J. (1979). A profile of responses to commercials. Journal of Advertising Research, 19 (2), 39-46.
- Schlinger, M. J., Green, L. (1980). Artwork storyboards versus Finished Commercials. Journal of Advertising Research, 20, (6), 19-23.
- Schneider, D. J., Hastorf, A. H., & Ellsworth, P. C. (1979). Reading, MA: Addison-Wesley.
- Shimp, T. A., & Gresham, L. G. (1983). An information-processing perspective on recent advertising literature. In J. H. Leigh & C. L. Martin, Jr. (Eds.), Current issues and research in advertising (pp. 39-69). Ann Arbor, MI: University of Michigan.
- Storm, C., & Storm, T. (1987). A taxonomic study of the vocabulary of emotions. Journal of Personality and Social Psychology 53, (12), 805-816.
- Stout, P. A., & Leckenby, J. D. (1986). Measuring emotional response to advertising. Journal of Advertising, 15, (4), 35-42.
- Teachman, G. (1985). The PEAC system. Proceedings of the Second Annual Advertising Research Foundation Copy Research Workshop (pp.). New York: Advertising Research Foundation.
- Whitton, L. (1985). Can rough testing work for image-oriented advertising. Second Annual Advertising Research Foundation Copy Research Workshop (pp.126-130). New York: Advertising Research Foundation.
- Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. American Psychologist, 35, (2), 151-175.
- Zajonc, R. B., & Markus, H. (1982). Affective and cognitive factors in preferences. Journal of Consumer Research, 9, 123-131.
- Zeitlin, D. M., & Westwood, R. A. (1986). Measuring emotional response. Journal of Advertising Research, 34-44.