Measuring Multiple Emotional Responses To a Single Television Commercial

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Research on emotion and advertising has focused on emotional responses in the viewer and include links between emotional responses, recall, attitude-toward-the-ad, and purchase behavior (Holbrook & O'Shaughnessy, 1984;Thorson, 1989). The fact that both positive and negative emotional responses to the same advertisement have been found (Edell & Burke, 1987) suggests that these relationships might be more complex than previously thought. If more than one emotional response occurs within the same commercial, then a measurement of overall emotion may be insufficient to explain the effects of emotion. For example, one McDonalds commercial has a father sharing french fries with his eight-year-old daughter and then feeling left out when she becomes a teenager and shares fries with her friends instead. After watching the entire ad, viewers might describe it as slightly pleasant. This description would miss the fact that more than one emotional response may have been experienced, a very pleasant emotional response to the first part and a slightly sad emotional response to the second half. These multiple responses may or may not turn out to be significant in the long run, but no researchers have yet addressed this problem empirically. If a method is found for detecting multiple emotional responses to a single commercial the next step may be to explore the relationship among the responses.

Some investigators have hypothesized that more than one emotional response occurs either simultaneously (Burke & Edell, 1989; Mitchell. 1986), in sequences (Aaker. Stayman & Hagerty, 1986; Burke& Edell, 1989: Rossiter & Percy. 1991:Yi, 1990),or combines to make new emotions (Batra & Holbrook. 1990; Hill 1988; Hill & Gardener, 1987: Mano, 1990; Mitchell. 1986) Some have even gone as far as to predict the effects of multiple emotions Aaker et al. 1986). arguing that sequence effects would occur according to adaptation (Helson. 1964) and assimilation contrast theory (Sherif& Hovland, 1961).
While Edell and Burke (1987) provide empirical evidence of co-occuring multiple emotional responses, other data also point to this phenomenon. Aaker, Stayrnan, and Hagerty (1986) have shown that the intensity of one emotion, warmth, varies across a single advertisement. Rossiter and Percy (1991) have suggested that intentionally eliciting multiple emotional responses can benefit advertisers. They propose that a sequence of emotions must be present to motivate behavior. In an approach/avoidance construct (Mowrer, 1960) viewers could be motivated to avoid negative stimuli and search out positive stimuli. For instance, a commercial might begin by eliciting a negative emotional response and end by removing the negative stimuli, which would create a "relief" reaction in the viewer. These types of ads have been called poignant and adjective checklists such as the Multiple Affect Adjective commercials (Thorson & Friestad, 1989). Check List (MAACL) (Zuckerman & Lubin, 1965) and the Nowlis (1965).

Dimensions or Emotion

Several methods for measuring emotional responses to advertisements have been tested (eg: Izard, 1977: Plutchik, 1984; Mehrabian and Russell 1974, 1977) with the greatest support for the dimensional approach (Holbrook and Westwood, 1989). This approach holds that emotions are dimensional and measurements of response can be plotted in a single three-dimensional space. The axes of the space, the three dimensions that compose each emotion, are named pleasure, arousal, and dominance (PAD). These dimensions are bipolar, so the pleasure dimension, which

is also called valence, runs from pleasant to unpleasant. The arousal dimension runs from aroused to asleep, and the dominance dimension runs from in-control to controlled. By finding an emotion's pleasure, arousal, and dominance scores, it can be plotted in the three dimensional space, and each emotion's position in the space is unique.

Even using Mehrabian and Russell's (1974) PAD framework, however, measurement of more than one response is problematic. To measure emotional responses to parts of an ad, it is necessary to use one of three methods: 1) rely upon the viewer's memory of all of his/her emotional responses and where they occurred in the ad; 2) continuous measure of emotional responses; or 3) stop the ad at the point of measure. Of these three methods, the first can be ruled out because only the memory of an emotional response, not the actual emotional response itself, would be measured. The other two methods are not as easy to judge.

Continuous autonomic measures or physiological measures have not enjoyed wide acceptance in advertising studies. Among the physiological measures available are heart rate (HR), galvanic skin response (GSR), electrodermal activity (EDA), the electrocardiogram (EKG), electromyogram (EMG), electrogastrogram (EGG), elctrooculogram (EOG), electroencephalogram (EEG), pupil dilation, eye movement, and facial expressions. While this is a large arsenal of measures, none of these have been widely accepted as useful in advertising research for measuring emotion (Holbrook & O'Shaughnessy, 1984) and any one physiological measure is inadequate to detect a full range of emotional responses (Russell, 1989; Cacioppo & Petty, 1989).

Aaker et al. (1986) developed a warmth monitor that provides a possible continuous measure. To apply their technique to the measurement of PAD, however, would require a separate instrument for each dimension. If we accept the three dimension theory (PAD) of emotion then a single dimension continuous measure would be inadequate or at best cumbersome.

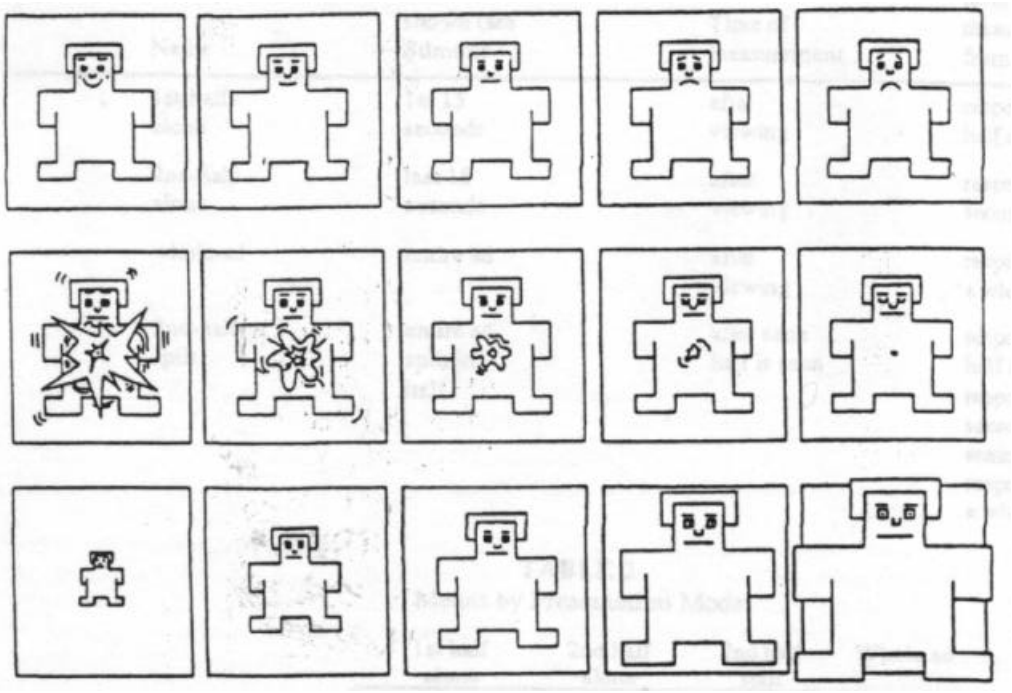
Measurement of an Ad by Halves

Measuring an ad by halves should be sufficient to determine if more than one emotional response occurs. This assumption is based upon research showing that emotional intensity varies by the midpoint and the end of an advertisement (Aaker et al., 1986). In addition, measuring ads by halves will allow for the comparison of each half alone to the ad as a whole. If this research uncovers multiple emotional responses, then a more continuous analysis of advertisements might be warranted.

Measuring ads by halves could be accomplished using several popular verbal measures. Present verbal measures include emotion and adjective checklists such as the Multiple Affect Adjective Check List (MAACL) (Zuckerman & Lubin, 1965) and the Nowlis (1965) Anxiety Scale. These scales are used in many studies in both psychology and advertising, and are reported to have high reliability and validity scores. Some advertising researchers (e.g., Holbrook & Westwood, 1989; Wells, Leavitt, & McCouville, 1971) have attempted to create their own emotion scales, but have not succeeded in convincing their colleagues to adopt their instruments. Advertising professionals have even gotten into the act with scales such as Leo Burnett's Viewer Response Profile (Schlinger, 1979). These verbal measures are not well suited to the present study because they take several minutes to complete. If an ad is to be stopped in the middle, a measurement

taken, and the ad then continued, the pause between halves must be as short as possible. If the pause is too long, it is likely that subjects will lose the flow of the advertisement, including the emotional responses being measured.

FIGURE 1
The Self-Assessment Manikin (SAM)



The Self-Assessment Manikin

The Self-Assessmenent Manikin (SAM) (Lang. 1984)is a graphic character that is used to represent the three dimensions of PAD. Figure l is an example of the entire SAM scale. SAM depicts each PAD dimension with. graphic character arrayed along a continuous nine-point scale. The first row of figures is the pleasure scale, ranging from pleasant to unpleasant. The second row is the arousal scale, ranging from aroused to asleep, and the final row is the dominance scale, ranging from controlled to controlling. SAM visually represents Mehrabian and Russell s three PAD dimensions and was designed as an alternative to cumbersome verbal self report measures (Lang. 1980).

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 semantic differential (Pleasure .937, Arousal +938 and Dominance + .660)" (Lang. 1980. p.123) Several studies boil, 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 psychophysiologic responses based on a dimensional analysis of emotion. Morris, Bradley, Lang and Waine (1992) successfully tested SAM in an advertising context. Thus, SAM presents a promising solution to the problems associated with measuring emotional response to advertising (Morris & Waine 1993).

SAM has been shown to be highly reliable in psychological studies (Hades, Cook & Lang, 1985) and also highly correlated with national measures or PAD (Mehrabian & Russell. 1977) and physiological measures (Lang. Greenwald. Bradley & Hamm, in press). SAM is easy to use and quick, requiring less than 15 seconds. This is of critical importance to the present study. In addition, as a graphic instrument, SAM avoids cultural and language problems suffered by verbal measures (Lang et al. in press). These factors make SAM a good measure for advertising research and a nearly ideal measure for the present study.

METHOD

The primary purpose of this study was to determine if multiple emotional responses to a single advertisement can be detected with a non-verbal measure of PAD.

H1: Two different mean score levels or emotional responses—pleasure, arousal and dominance—will be detected within one television advertisement.

H2: Measurement of PAD mean scores by ad halves using SAM will detect two distinct emotional responses.

Design

This study utilized a 2 x 2 x 4 repeated measures design. The lone between-subjects variable was gender. Within-subjects variables were ad type (2 levels) and presentation mode (4 levels). Table 1 shows the four presentation modes and the measures derived from them.

Stimuli

Forty-one 30-second television advertisements were chosen from a pool of more than 200 commercials collected from several advertising agency reels, the 1989 Clio awards, and some commercials taped from the television in geographic areas other than where the study was conducted. Advertisements known to be currently running or that had been recently run in the study's geographic were eliminated from the pool. Commercials in the pool were then watched by three judges who were asked to indicate whether they believed the ads would or would not have detectable shifts in levels of Pleasure, Arousal and Dominance. One group, the bi-emotional response ads (bi-ER) included 20 ads that the judges felt (87 % agreement) would elicit two different emotional responses. The second group, the uni-emotional response ads (uni-ER) included 20 ads that the judges felt (93 % agreement) would elicit one emotional response.

On each tape, an ad was shown in one of four presentation modes. These presentation modes were balanced across ads, such that each mode was represented equally on each tape. For example, on the first tape, ad #1 was shown in mode 3, ad #2 in mode 1, ad #3 in mode 3, etc. Also, across tapes, each ad was seen equally in each mode, so for ad #1, tape one showed it in mode 3, tape two mode 2, tape three in mode 1, and tape four in mode 4.

The 40 ads were then randomly ordered for placement on the four experimental tapes. Different versions of each of the 40 ads were randomly ordered for placement on the experimental tapes. Four tapes were made, and the ads were placed in the same order on each tape. This means that effects of ad order should have been the same for all tapes. The break points of the ads came at the 15-second mark unless the scene, jingle, or story made this impractical. In those cases, the

Table 1
Presentation Modes

Mode#	Name	Part of Ad shown (see stimuli)	Time of measurement	Emotional measures derived from mode
1	1st-half alone	1st 15 seconds	after viewing	response to first half only
2	2nd-half alone	Last 15 seconds	after viewing	response to second half only
3	whole ad	entire ad	after viewing	response to ad as a whole
4	2nd-half split	entire ad split in half	after each half is seen	response to first half alone, response to second half after seeing first half, response to ad as a whole

Table 2
Means by Presentation Mode

	1st half alone	2nd half alone	2nd half split	Whole ad
Pleasure	6.30	6.37	6.68	6.93
Arousal	5.39	4.98	5.15	5.67
Dominance	5.54	5.69	5.82	5.67
Recall	36.56%	33.66%	49.06%	41.99%

break point came at a logical break in the story or scene (as close to the 15-second mark as possible). This was done to allow for easier understanding by subjects who saw only the second halt of the ad, and for a less abrupt ending for those who saw only the first half.

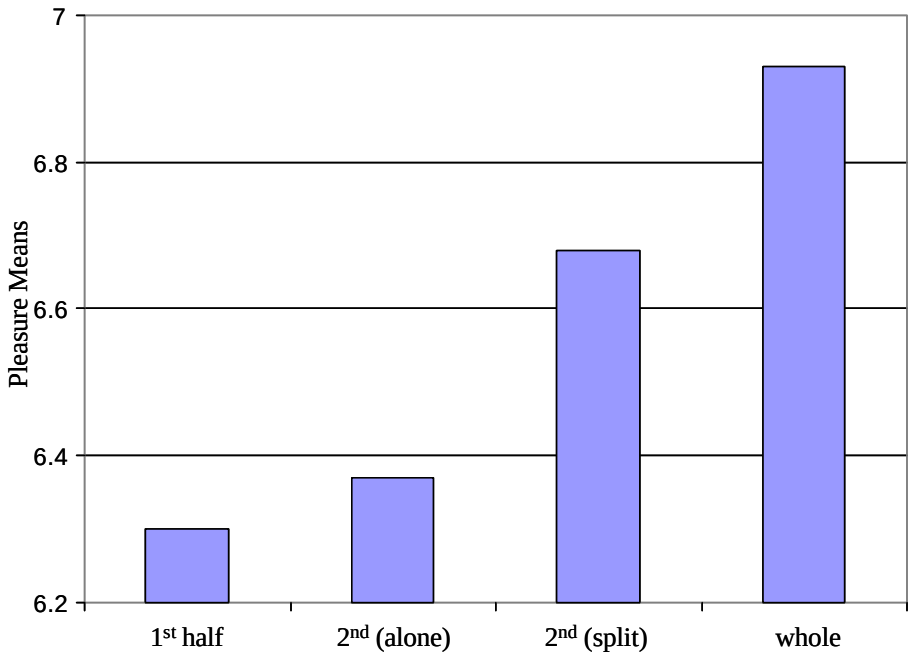
Subjects

Thirty-seven subjects, 19 females and 16 males, were recruited from an introductory advertising class. They were primarily freshmen and sophomores and received extra credit in their class for their participation in this study. Subjects were randomly assigned to videotape groups. Emotional responses were measured using SAM. The order of the three dimensions was varied to make subjects pay attention to the scale, and to keep them from making the same marks in the same order on every page.

RESULTS

In selecting the television commercials for this study, judges were used to produce two groups (ad types). To determine if the groups were significantly different, each type was analyzed by first half alone and second half alone presentation modes. A within-subjects MANOVA revealed a type by mode interaction (F(1/29)=4.66) for pleasure only. As expected, pair wise t-tests revealed that, for ads which were pre-judged to have more than one emo tional response (bi-ER ads), pleasure for the second half was significantly greater than the first half (t (31)=-2.07). Ads which the judges' felt would elicit the same emotional response throughout (uni-ER ads) showed no difference between halves (t(31)=0.30). Pair wise t-tests between types of ads (uni-ER or bi-ER) revealed a significant difference for the first half. Uni-ER ads were significantly more pleasurable than bi-ER ads in the first half (t (31)=2.34). No such difference was found for the second half alone presentation mode (t (31)=-O.04). These results support the premise that ads differed by type in the first half of the commercial. Typically, the second half would be constructed to leave the viewer with a positive feeling about the product. The second half of both presentation types (uni-ER or bi-ER) should be the same.

FIGURE 2
Pleasure by Presentation Mode

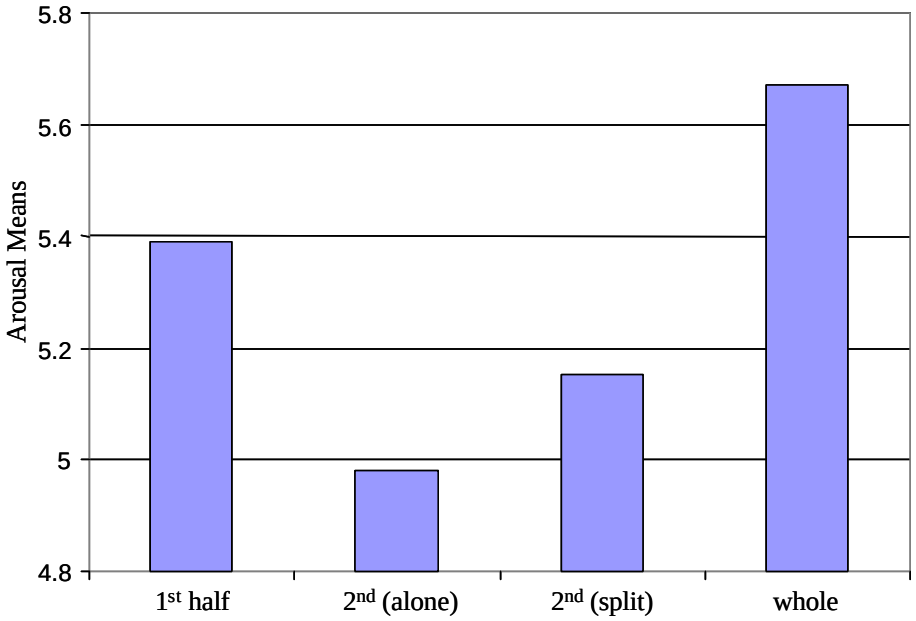


PAD Results

Mean ratings for pleasure, arousal, and dominance by presentation model are given in table 2. A mixed-model MANOVA was run on the subject means to determine main effects and interactions. No main effects of either gender or ad type were found, nor were any interactions found. Significant main effects for presentation mode were obtained for both pleasure ratings (F

(3/87)=6.88) and arousal ratings (F (3/87) 6.45) but not dominance. These results indicate that levels of pleasure and arousal varied depending upon what part of the ad was seen.

FIGURE 2
Arousal by Presentation Mode



To further examine these effects, paired t-tests were conducted on the pleasure and arousal means by mode. Figure 2 illustrates the means by mode for pleasure. The valence results showed that the first half alone and second half alone presentation modes were significantly less pleasurable than the whole-ad mode (t (31)=-3 .93; t (31)=-3.50 respectively) or the second half split mode (t (31)=-3.22; t (31)=-2.0l respectively). If the second half split mode is considered to be a measure of the entire ad, these results imply that whole ads were more pleasurable than either half alone. For arousal, the t-tests revealed that the first half alone and whole-ad presentation modes were more arousing than the second half alone mode (t (31)=2.66; t (31)=-3.l0). The whole-ad mode was also significantly more arousing than the second half split mode (t (31) 2.43). Figure 3 illustrates these results. Thus, in all instances where the first half of the ad was included in the presentation, whether alone, split, or in the whole ad, arousal ratings were higher. Viewing the second half in the absence of the first half produces lower emotion ratings.

Pearson product moment correlations were also calculated to test for relationships between PAD ratings as a function of mode. Overall, pleasure was positively correlated with arousal (r (31>=. 4199) and dominance (r (31)=. 1570). whereas arousal and dominance were not correlated. Of particular interest are the correlations for the whole-ad presentation mode, because they indicate which halves are most related to the ad ass whole. For the pleasure and arousal dimensions, the correlations revealed that ratings for the whole ad are highly correlated with both the first-half (r (39)=. 6425. r (39)=. 5568 respectively) and second-half-split modes (r (39)= .6747. r (39)=.

3858 respectively). The second half alone was also correlated with the whole ad for pleasure (r (39)=. 4562) but not for arousal or dominance. The first half was correlated with the second half split for all three dimensions (r (39)=. 4563, r (39)=. 5567, r (39)=. 4526 respectively), but the second half alone was correlated with the second half split only for pleasure and arousal (r (39)=. 3160, r (39)=. 2659 respectively). Finally, in none of the dimensions were the first and second halves alone correlated.

The first half of the ad seems to be the most important in determining emotional responses to the ad as a whole, because correlations are greater for the first half than the second half in the whole and split modes, and for arousal, the second half is not even correlated with the whole. Furthermore, the correlations with the whole ad are stronger for pleasure than for arousal, signifying that pleasure was the more meaningful dimension for this set of advertisements. Finally, the lack of correlations between the halves suggests that the emotional responses to the two halves are different from each other.

DISCUSSION AND CONCLUSIONS

The results of this study supported both of the stated hypotheses. The first hypothesis predicted that multiple emotional responses would be found within a single advertisement. This was found to be true for both pleasure and arousal, but not for domi nance. Subjects reported that they experienced more arousal in the first half than in the second half of the advertisement. Furthermore. They reported that the entire ad was more pleasing than either half. This demonstrates the complexity of emotional responses to television advertising.

The second hypothesis predicted that the technique of measuring emotional responses by ad halves would allow for the detection of ~multiple emotional responses. The fact that more than one emotional response was found supports this hypothesis. This shows that it may not be necessary to use impractical continuous physiological measures to measure parts of a television commercial.

The Self-Assessment Manikin (SAM) seems to be an effective method for measuring multiple emotional responses. The fifteen seconds given for completing each SAM proved not to be adequate.

Sequence Effects

By comparing emotional responses from entire commercials to emotional responses from their respective parts, combinations of emotional responses can be evaluated. Although several researchers (Hill, 1988; Hill & Gardener, 1987; Mitchell, 1986) have suggested that emotional responses combine over time, they were not able to determine whether the resulting evaluation would be greater, less, or somewhere between the two emotional responses. The results of this study indicate that, for pleasure, the emotional response to the entire advertisement (mean pleasure in~ whole ad mode = 6.93, in split mode = 6.68) is more pleasurable than either half alone (first half = 6.30, second half = 6.37). Interestingly, though, this study suggests that if viewers watch the whole ad, it does not matter whether more than one emotional response is generated. Overall, levels of arousal and pleasure were the same for ads that elicit more than one emo tional response and ads that elicit multiple emotional responses.

Finally, the Self-Assessment Manikin (SAM) was found to be a useful measurement instrument

for assessing parts of advertisements, and could be refined even further by using a shorter reaction time. Perhaps a device could be given to each subject to allow them to complete SAM at their own pace~ and start the next ad segment. Investigators operating within the PAD framework may want to consider SAM as the measuring instrument.

Additional research to determine the relationship between the first half of the commercial and the second half would be interesting. Would changing the first half of the ad affect the second hall of the advertisement? What types of changes, on the front end of the commercial, would have the greatest affect on the second half? Multiple emotional responses to the same ad appear to be part of strategy in many advertising campaigns. The results of further study could help assist advertisers in selecting the best combination of stimuli to place in an ad.

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