THE RELATIONSHIP BETWEEN VISUAL INFORMATION AND AFFECT IN TELEVISION COMMERCIALS

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ABSTRACT

THE RELATIONSHIP BETWEEN
VISUAL INFORMATION AND AFFECT
IN TELEVISION COMMERCIALS

By

Norman Jeffrey Medoff

Despite twenty-five years of experimentation, television advertisers are still confused regarding the potential effectiveness of television commercial messages. The specific problem seems to be that advertisers do not know which advertising stimuli yield which responses. The present study was designed to help answer the question regarding the relationship between stimuli and responses in television advertising.

The study was conducted in June, 1971, utilizing three Michigan State University introductory advertising classes. Subjects were shown the video portion of ten professionally produced television commercials and each subject recorded his perception of the stimulus and his response.

Traditionally, aestheticians have asserted that an intermediate degree of information yields maximum appeal in visual

material. Too little information leads to insipidity; too much leads to bewilderment. It is believed that a filtering/gating mechanism is at work in this process.

The specific problem addressed in the current study was, "How does the amount of product visual information in commercial material influence the amount of affect which results from that commercial? At what level of visual information will affect be greatest?"

It was hypothesized that the "medium level" of information stimuli would yield the highest amount of affect response.

Subjects were shown commercials containing varying levels of product visual information and asked to record how much they liked each commercial on a bipolar, segmented line. The line represented a scale from Very Bad to Very Good (a total of five choices). Mean scores for each information condition were obtained; a t-test was utilized to determine differences between any two means tested.

The tests found no significant differences between any two of the product visual information or non-product visual information conditions. The direction of the findings of the pvi conditions agreed with the hypothesis stated, while the n-pvi findings did not.

The findings in the pvi conditions seem to agree with the findings of Vitz and the concept of a filtering/gating mechanism, which leads to an optimum stimuli level. The findings in the n-pvi conditions did not indicate an optimum stimuli level, but rather a slight preference for more complex stimuli, as found by Berlyne and others.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF GRAPHS

I. INTRODUCTION

Despite a snailish economy and numerous attempts to cut back on expenses, advertisers spent a record high of 3.03 billion dollars on television advertising in 1970.[1] In fact, all of the top ten national advertisers increased their combined network and spot investments that year.[2] The 1970 figures are but another link in a long chain of slow but steady increases in television time sales dollars.

These increases are a result of two main factors: the rise in the use of the medium (television now reaches more people, more hours per day), and the rise in its cost. One advertising official stated, however, that despite the perennial television cost problem, the medium is too important to ignore. The result is that many advertisers are practically forced into television in order to remain competitive. This situation gives rise to the increased use of thirty-second spots over sixty-second spots; in fact, a desire for more exposures with less cost may lead to the existence of fifteen-second spots.[3]

Besides the cost of the medium itself, one columnist believes that, "Inflation or no inflation, today's average commercial is costing the advertiser from 10 to 20% more than it should (due to production)."[4] These costs are incurred partly by overshooting, use of expensive color rushes, lavish sets and exotic shooting sites, and partly by using more advertising than is necessary to achieve the desired goals.[5] Television advertising, therefore, is far from efficient.

The above facts have not gone completely unnoticed by advertising agencies. One of the trends noted in some 1970 television campaigns was a switch to the more shocking, but less informative type of commercial. It seems that the "harsh exigencies of television time and competition have trained creative people to think only in terms of short bursts and explosive single selling points."[6] This new trend may result from the belief that a small number of selling points can generally be learned by a subject more easily than a large number, making less informative commercials more efficient. Since some advertisers run highly informative yet highly successful campaigns, however, the problem of ultimate efficiency remains unsolved.[7]

The new trend towards less informative ads may have some logic behind it. If a low amount of information can achieve the same goal as a high amount, the next step seems to be either a time or frequency reduction, and, thus, a cut-back on costs.

Background

It is the area of informational content of televised commercials that is pursued in this study. On an intuitive basis, it has been said that exposure to a flood of information may serve to narcotize rather than to energize the average reader or listener (or viewer).[8]

On a more factual basis, it was found that the "noting" of television commercials declined by close to 50% between 1960 and 1970. Here "noters" were those who said they were watching the channel and saw the commercial in question. This same study conducted by Starch and C. E. Hooper Inc. found that noting increased with commercial length, but not proportionally.[9]

The Study

Without specific stimulus-response information prior to commercial production, advertisers can only "guess" how efficient a stimulus is and in what direction the audience response will be. Despite twenty-five years of experimentation, television advertisers are still confused regarding the "effectiveness" of their commercials. In 1963, the Advertising Research Foundation admitted that the most important question in advertising was, "Which advertising stimuli give rise to which responses?"[10] Unfortunately, in the more than

eight years since that statement was made, little research has been done to provide further insight into the question of effectiveness of advertising messages.

The present study was designed to help answer the question put forth by the A.R.F. Since one desirable response in television advertising is a "liking" for the commercial in question, the response chosen for this study was affect. The stimuli chosen were pieces of information which were transmitted visually.

The study was conducted in June, 1971, utilizing three Michigan State University introductory advertising classes. Subjects were shown the video portion of ten professionally produced television commercials, in fifteen-second segments. Each subject recorded his perception of the stimulus (visual information) by writing down a score between one and five for each segment of each commercial. The recording of the response (affect, or liking) was made on a similar scale, though only one affect rating was given per commercial.

The measure of visual information was divided into two categories, product and non-product, to help subjects analyze the stimulus as accurately as possible; thus, for each sixty-second commercial, four product information scores and four non-product scores were recorded. Responses (affect scores) were recorded

after all commercials had been seen, with printed cues given to aid recall.

A second measurement of affect was taken after a second viewing of all commercials. In this test, the commercials were not segmented, and the stimulus included the sound track; here, the objective was to determine general attitudes towards the entire commercial, and to gain some indication of which commercials depended on sound to convey their messages.

II. THEORETICAL BACKGROUND

In any communication situation, the source attempts to send a message that the receiver can understand. The more specific the desired response, the more accurate the message must be. In an advertising situation, a highly accurate message must be designed by the source in order to achieve the desired consumer response.

Theoretically, if an advertiser had the ability to construct a message that was completely understandable to a human receiver, then the receiver should have an exact copy of that message in his brain. However, it has been found that human receivers do not use sensory data at any level that approaches theoretical capacity.[11] Thus, on a practical level, advertisers have two disadvantages to overcome: first, the failure of the message to transmit the information efficiently, and second, the inability of humans to receive all that is sent.

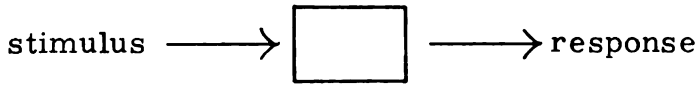
The general question of perception has been approached in two disciplines, physiology and psychology. The physiology involved in information reception is concerned mainly with the nature of the sensory organ which receives it. For most sensory organs, it can

be assumed that each has some upper limit of reception, that is, a physiological limit to the amount of information which can be taken in per unit of time.[12] In the current study, the eye was the principal sensory organ studied. The retina of the eye has a definite size with a finite number of rods and cones. Each of these is limited in the number of stimuli that can be discriminated per time unit. Thus the eye has a finite capacity for reception. This limit is more or less the theoretical limit of perception.

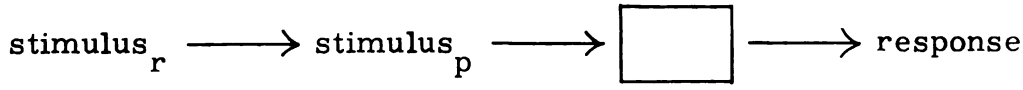
The psychological approach yields a more practical insight to the problem. Utilizing the stimulus-response approach to learning theory, the behavioral aspects of perception can be examined. The common relationship of stimulus-response theory:

$$\text{stimulus} \xrightarrow{\text{yields}} \text{response}$$

can be further explained by:



the empty box accounting for the factors that exist which prevent a direct, automatic, predictable response to a stimulus. Incorporating the physiological limit of the eye:



(where r = reality, p = perceived)

If the above concepts are ranked by information quantity,

$$\text{stimulus}_r > \text{stimulus}_p > \text{filter/gate} > \longrightarrow \text{response}$$

a decreasing amount of the contents of the stimulus appears at each point. The first decrease is physiological, the second, psychological. In this study, the desired response was maximum appeal, to create a favorable image in the mind of the consumer.

Traditionally, aestheticians have asserted that an intermediate degree of information yields maximum appeal in visual material. They also state that too little information leads to insipidity, while too much leads to bewilderment.[13] Obviously, then, some psychological mechanism operates as a gate or filter which regulates the amount of information received. The existence of such a mechanism has been supported by Broadbent[14] and Bruner.[15] This mechanism, just as in the nervous system, tends to inhibit the information deemed less significant than that which is received; thus, this mechanism simply cuts out some of the information.[16]

This phenomenon of the human perceptual system is further substantiated by the findings of Dember and Earle, who theorize that a subject has a preferred or optimal amount of stimulus capacity.[17]

The aim of communication is to bring about a desired modification of behavior; thus, the naturally discriminative stimuli for desired responses should be isolated and, if possible, incorporated into the communication.[18] The result is a strengthening of the desired response to the message. The attempt to isolate the stimuli which give rise to desired responses is the ultimate goal of the current study and of most efficiency-related research in advertising.

Assumptions

It is assumed that the best test for efficiency in communication is a comparison of responses by the sender and the receiver. If the responses (a result of the message stimuli) are identical, the communication is totally efficient.[19]

It is also assumed that no communication is effective unless it is attended to; therefore, attending behavior must be reinforced in order to gain sufficient attention to allow the subject to fully receive and understand the message.

III. RELATED RESEARCH

In 1957, D. E. Berlyne conducted studies utilizing tachistoscopic exposures of visual figures.[20] The subjects were allowed as many exposures as they desired before going on to the next figure. The results showed a positive relation between perceptual curiosity and an attribute designated as complexity of the figure.

In that same year, Dember and Earle postulated that stimulus complexity is a major determinant of attention.[21] They also stated that an individual has a "pacer" stimulus (an optimum stimulus level) and that attention is held more by this level than by a higher or lower stimulus level.

In 1966, Vitz utilized nonsense figures to study the effect of stimulus complexity.[22] In the first part of the experiment, eight black line drawings of random walks were presented with varying numbers of steps. Subjects ranked these by preference, and findings showed that the subjects had an optimal or preferred amount of visual complexity. The second part of the experiment yielded similar results using pictures with lines drawn between points on the outside

of a square. The findings strongly favored the claim that an optimum amount of visual complexity exists. If this level is exceeded, affect decreases.

Studies by Berlyne, Fantz, and Dember, Earle, and Paradise show that as stimulus complexity is increased, subject attention or affect is increased. The Berlyne study used human adults who preferred the more complex of two visual stimuli.[23] The Fantz study utilized human infants and showed that infants preferred complex stimuli as opposed to simple stimuli.[24] Dember, Earle, and Paradise tested rats for differential stimulus complexity and found a preference for more complex stimuli.[25]

Travers, after surveying available literature in the area of audiovisual information transmission, concluded that optimal stimulus complexity geared to the age and type of audience can add interest to learning or performance of a task and thus heightens the attention value of a stimulus. Furthermore, he states that the importance of optimal stimulation itself in heightening voluntary, sustained attention (and, therefore, in enhancing the learning process) cannot be overstressed.[26]

In the above studies, non-meaningful, pictorial objects were used as stimuli. The present study assumes that the change from meaningless to meaningful objects will not seriously influence

subjects' liking for the stimuli. Second, it assumes that the findings for pictorial visual materials (drawings, photographs) can be generalized to filmed material--adding a motion dimension.

IV. PROBLEM AND HYPOTHESES

Problem Statement

How does the amount of visual information in commercial material influence the amount of affect which results from that commercial? At what level of visual information will affect be greatest?

Hypotheses

The physiological limitations of the eye, general theoretical background, and recent research (primarily Vitz, 1966) suggest the following hypotheses:

A_1 = low product condition A_2 = low non-product condition

B_1 = medium product condition B_2 = medium non-product condition

C_1 = high product condition C_2 = high non-product condition

1. In the testing of the product information condition,

   the affect resulting from:

   A_1 will equal C_1, and

   the affect resulting from:

   A_1 and C_1 will be less than from B_1

2. In the testing of the non-product information condition,

the affect resulting from:

A_2 will equal C_2, and

the affect resulting from:

A_2 and C_2 will be less than from B_2

Definitions

1. Affect is defined as the score between one and five which was given to answer the question: "According to your own standards, how much did you like this commercial? (How good was it?)"

2. Visual information refers to the score between one and five which was given to answer the question: "How much did you see . . . ?"

3. Visual information is subdivided into product visual information and non-product visual information (pvi and n-pvi).

   a. The amount of product visual information is the score from one to five given in response to the question: "How much product information did you see? (How much did you see concerning the product only?)"

   b. The amount of non-product visual information is the score from one to five given in response to the question: "How much non-product information did you see? (How much did you see that did not indicate the product?)"

4. A commercial designated as low pvi is defined as a commercial which received the lowest mean pvi score (all respondents included).

   A commercial designated as low n-pvi is defined as a commercial which received the lowest mean n-pvi score (all respondents included).

5. A commercial designated as medium pvi is defined as a commercial which received the largest number of middle pvi scores (three on a one to five scale).

   A commercial designated as medium n-pvi is defined as a commercial which received the largest number of middle n-pvi scores (three on a one to five scale). In both measures, all respondents were included.

6. A commercial designated as high pvi is defined as a commercial which received the highest mean pvi score.

   A commercial designated as high n-pvi is defined as a commercial which received the highest mean n-pvi score. In both measures, all respondents were included.

V. METHODOLOGY

Statistical Design

The experiment involved six conditions: low, medium, and high product visual information, and low, medium, and high non-product visual information. Hypotheses 1 and 2 each called for statistical tests to determine the difference between three means. Thus the null hypotheses for both product and non-product information conditions were:

$$H_o: \quad u_1 = u_2$$

$$H_o: \quad u_2 = u_3$$

$$H_o: \quad u_1 = u_3$$

where u represented the population mean.

The statistical test chosen was the t-test, which tests the significance between one sample statistic and another. This test was selected because the design of the experiment called for each subject to be exposed to each condition. Any null hypothesis would be rejected if the value of t observed were greater than the value of t expected in a table of t values. The level of significance tested in

all cases was $\alpha = .05$. This significance level assumes that the probability of H_o being true when t observed is greater than t expected is only one in twenty.

Sample Design

Subjects were male and female students enrolled in three undergraduate introductory advertising classes, spring, 1971, at Michigan State University. The subjects were very similar in age, level of sophistication in advertising, and general achievement level in education. Two hundred and seventeen students participated in the experiment, yielding one hundred and eighty-seven usable questionnaires.

Message Design

Television has become a very common fixture in the American home not only as a source of high interest programming, but also as a source of lower interest programs, commercials, and general background noise. Due to the continuous viewing habits of some sectors of the population, the set is often left on either by children or by adults who prefer television to silence or other noise. Thus television is often in the same category with radio--a secondary activity. As the general attention level of the audience drops, the

efficiency of television stimuli drops; because fewer stimuli are received, and fewer are attended to, fewer responses are given to the messages transmitted. For an advertiser who transmits specific stimuli to gain specific responses, a loss in efficiency can necessitate extra expenditures to increase frequency or length of commercials if his goal is to be obtained. Thus the basic question arises--how can television advertising be made more efficient? In terms of the stimulus-response framework of this study the question becomes: How many stimuli are needed to yield the most desired responses? How can the stimulus-response process be made more efficient?

This study attempted to find the optimum stimulus level for one aspect of televised advertising messages--visual information. Commercials utilized (obtained from NBC-TV, Chicago) were selected from a large pool of color television commercials. The basic criterion for selection was the provision of a wide spectrum of visual information levels; ten commercials were chosen.

Subjects were shown a group of ten commercials which included three thirty-second commercials and seven sixty-second commercials. The three thirty-second commercials were used as examples to aid in subject familiarity with the scoring procedure.

The seven commercials tested had a number of factors in common. All were in color, all were sixty seconds long, all advertised

products which were financially accessible to middle income families, and all were geared to a very large segment of the audience (that is, they had broad demographic and psychographic appeal). Commercials utilized were spliced end to end for continuous showing. Each commercial had a red ink mark which appeared every fifteen seconds; but the marks did not alter content of the films. The purpose of these marks was to cue the projectionist to stop the projector. The sound track of the film was eliminated by turning off the audio. Each commercial was shown in four fifteen-second segments with five seconds between each segment and slightly longer between commercials.

Questionnaire Design

The Advertising Research Foundation stated that before an advertisement can communicate at all, it must first be perceived.[27] Therefore, it follows that audience perception is the crucial link in the communication process between an advertiser and his audience. An advertiser's perceptions of the stimuli which are put in his message are meaningless unless they concur with the perceptions of the audience. With this in mind, the experiment was designed to allow viewers to interpret the independent variable, visual information. Subjects recorded their perceptions of the amount of visual

information viewed. The first page of the questionnaire had ten rows (down) with four squares (across) per row. In each box, two lines with five segments each were shown. The four boxes across represented the four fifteen-second segments per sixty-second commercial. The two segmented lines provided the interval scoring scale for product visual information (pvi) and non-product visual information (n-pvi). The extreme left segment of both lines corresponded to the lowest information level possible, and the extreme right segment corresponded to the highest information level possible. The three remaining segments represented (left to right) medium low, medium, and medium high visual information levels.

Subjects marked with an "X" the segment they felt best represented the visual information level in each fifteen-second segment of the commercials shown. (See Appendix A for complete questionnaire.)

The dependent variable, affect, was recorded on page two, utilizing segmented lines similar to those for visual information. Each commercial received only one affect score because a single fifteen-second segment of a commercial was relatively meaningless if evaluated separately. The segmented line represented the distinction between low and high affect levels. To avoid subject confusion over the question asked, "How good was this commercial?"

and a low and high scoring scale, the segments were labeled (from left to right): Very Bad, Moderately Bad, Medium, Moderately Good, and Very Good.

The commercials were identified by number only, on page one, because responses were recorded simultaneously with the segmented showing of the commercials. Page two was completed after subjects viewed all commercials; therefore, commercials on this page were identified by number and product in order to minimize confusion.

Pre-test

Questionnaires, instructions, and commercial messages were pre-tested on undergraduate classes in English and Advertising. The objectives were: to test the clarity of the instructions, to practice the stop-start film projector procedure, and to get an estimate of the total time necessary for the experiment. It was concluded that the instructions were understood by all subjects, the stop-start projector procedure allowed subjects to mark questionnaires properly, and the time required for the experiment was thirty minutes.

The Experiment

On June 2, 1971, three sections of the Introduction to Advertising course at Michigan State University participated in the experiment. (Responses were combined to form one large group of subjects.) The experimenter was introduced as a graduate student in the Department of Advertising who was currently studying audience responses to television advertising.

Subjects were then familiarized with the experiment: they were to see (without sound) ten commercials, each divided into fifteen-second segments. After each segment they were to score what they had seen according to: first, product information; and second, non-product information. A sample segmented line was drawn on the blackboard to demonstrate acceptable marks for scoring. The concepts of product and non-product information were explained and all questions were answered.

The projector was stopped for approximately five seconds after each fifteen-second segment of film to allow subjects to record their responses. A slightly longer pause occurred between commercials to facilitate subject scoring on the proper line.

After seeing the entire reel of ten commercials, subjects were asked to fill out page two, thus recording their affect responses for each commercial message.

To lessen the frustration arising from seeing commercials in segments with no sound and to provide further data for analysis at a later date, the reel was again shown without the segmentation and with sound. Page three of the questionnaire contained another affect response test which identified commercials by number only. Subjects recorded their responses as the film was in progress.

Limitations of the Study

The cooperation received from subjects was generally good; however, a close analysis of the data indicates that some subjects may have misunderstood the concepts involved. The visual information scores did not cluster as markedly as expected on the dispersion graphs due, perhaps, to a general confusion regarding the explanations of product and non-product visual information.

The sample in this study was composed of advertising students, preventing the generalizing of the findings of this study to the entire population. Furthermore, the sample used was not a random sample; thus it does not represent advertising students in general. Another limitation results from the varying interest levels of students in the sample. Some subjects may have recorded intuitive reactions while others recorded responses resulting from the application of pre-learned standards of excellence in advertising.

Some uncontrollable factors may have biased the dependent variable measure. These factors include the products advertised and creative approaches. Although all products were financially accessible to a large portion of the audience, some products would not be useful to all of the audience (i.e., since Magic Moment hair product is designed for use by women, men would have little interest in it). Creative approaches varied greatly; some commercials utilized a humorous approach, while others were more of a straight selling proposition. (See Appendix B.) Production technique varied: some commercials were animated, while some were not. Camera technique was not held constant, nor was shot composition.

From a procedural standpoint, the experiment was satisfactory. More numerous, smaller groups, however, might have led to greater subject attention and a more relaxed atmosphere, thus encouraging more specific questions (by subjects) regarding definitions of the variables to be rated.

Statistical and Analytical Procedure

For each commercial viewed, subjects gave affect scores between one and five. These scores were summed and then divided by the number of subjects to yield a mean affect score for each condition.

Hypotheses 1 and 2 called for tests to determine the difference between any two of the three means. The statistical test utilized for testing two means at a time was the t-test.

VI. FINDINGS

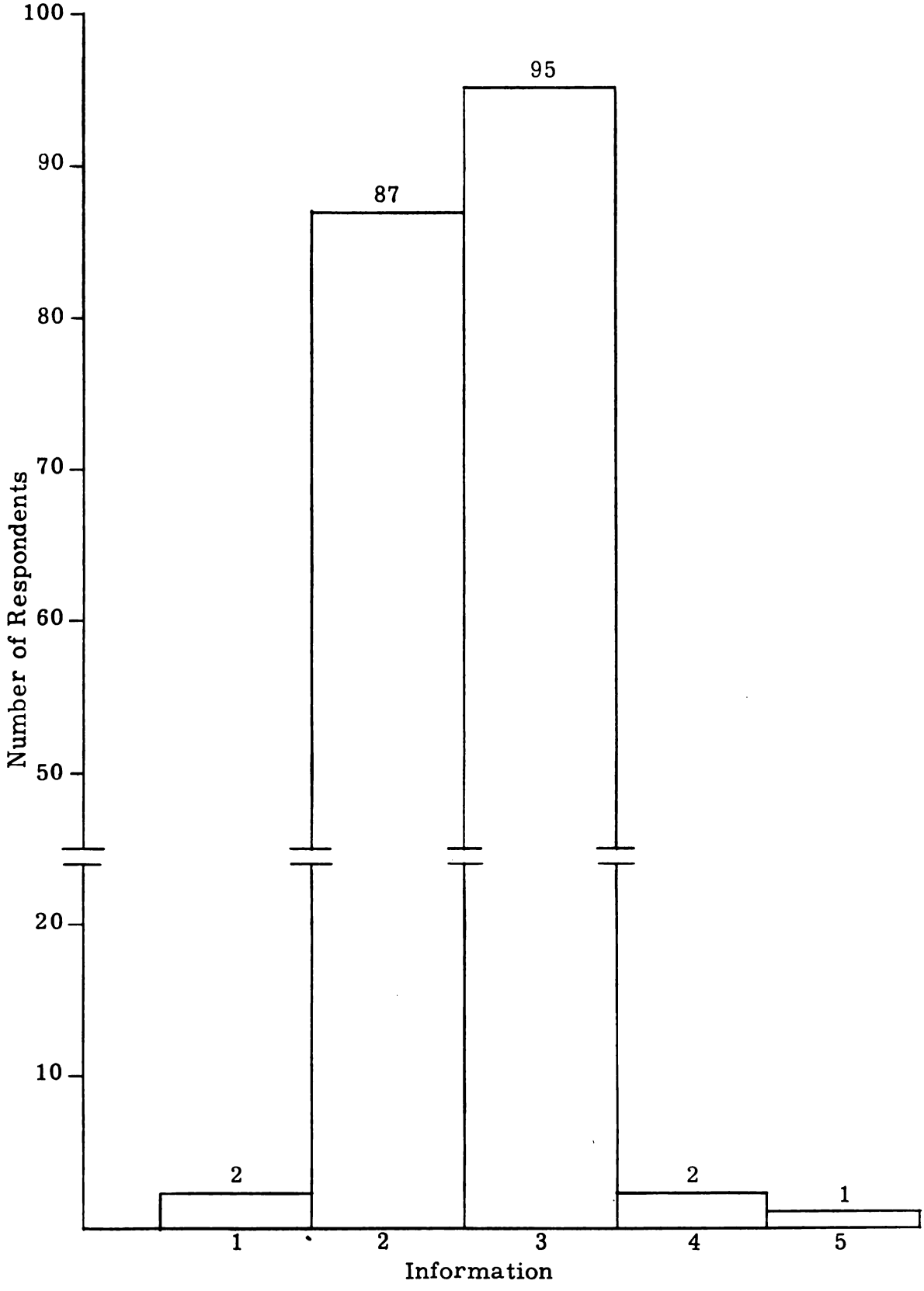
The visual information scores from four of the ten commercials yielded results suitable for analysis. The conditions A_1, B_1, C_1, and A_2, B_2, C_2 were assigned by taking the lowest, middle, and highest scores from the means obtained and the number of responses for each information level between one and five. (See Graphs 1-6.) Table A lists the selections for pvi and n-pvi conditions.

Table A

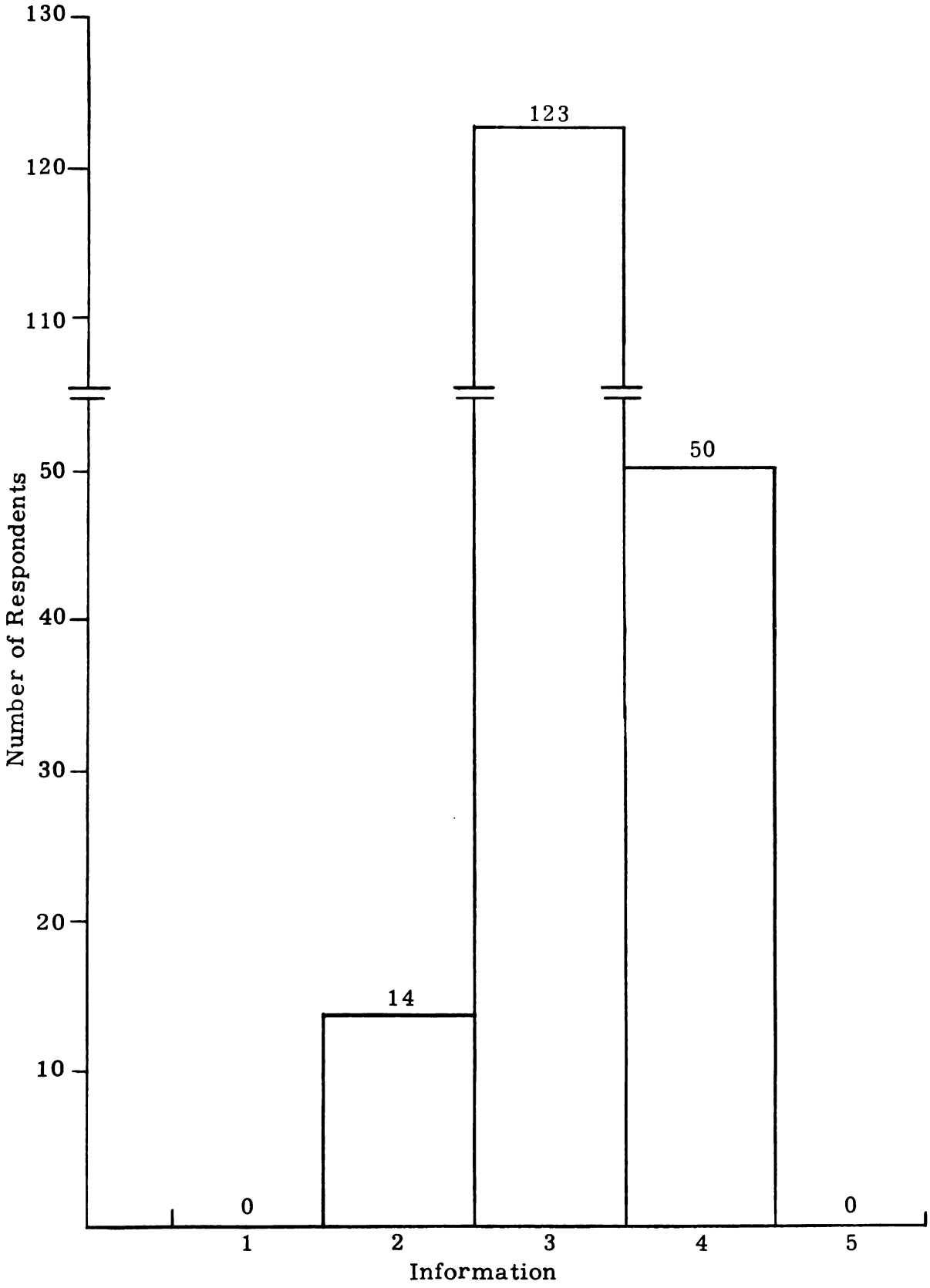
Visual Information Scores

Commercial #	PVI	N-PVI
1	3.09 (B_1)	3.46 (C_2)
2	2.76	2.91 (B_2)
3	3.82 (C_1)	2.42 (A_2)
7	2.40 (A_1)	3.42

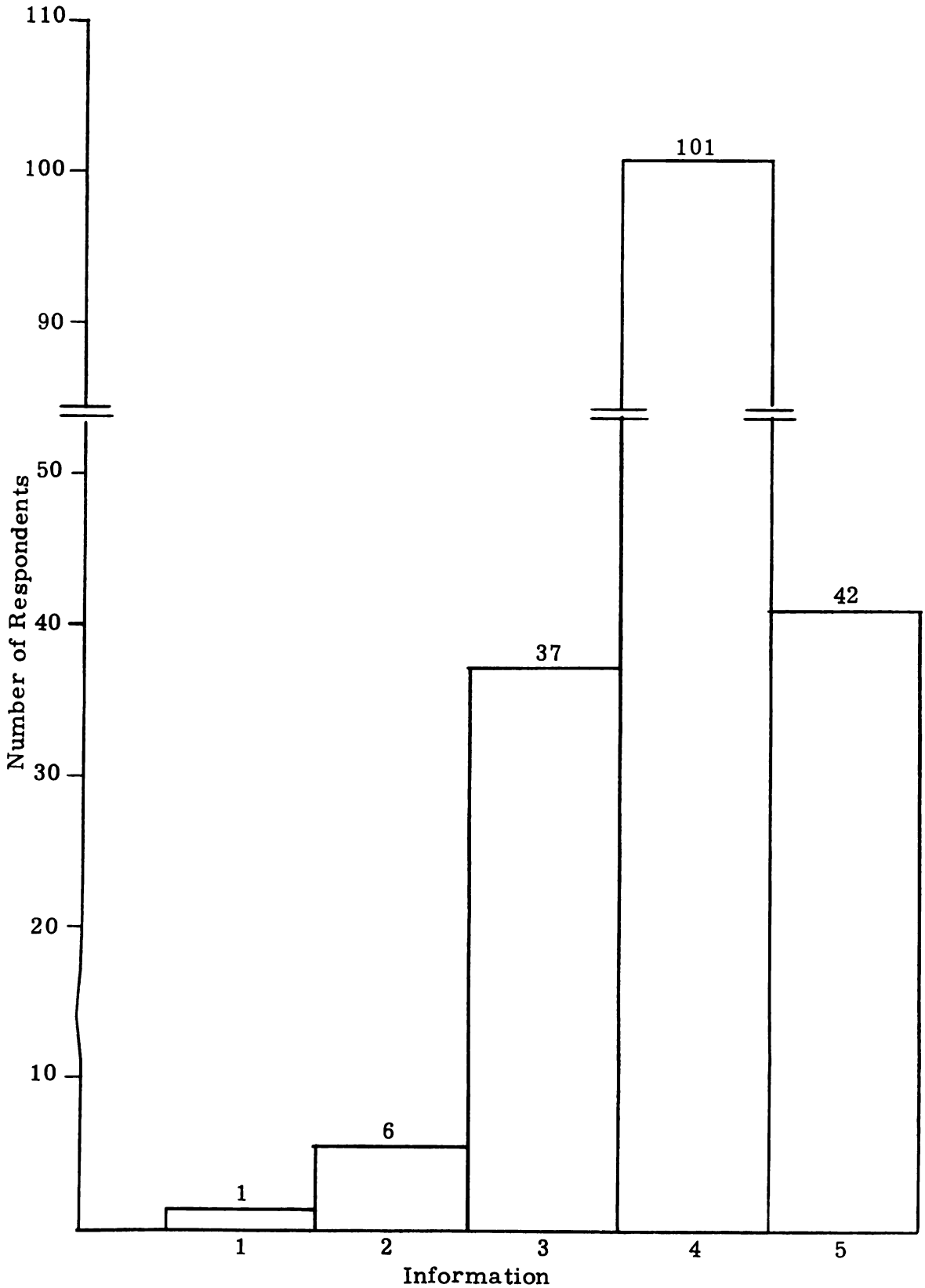
Two groups of three different conditions were tested and the means of the resulting affect scores were as follows: product



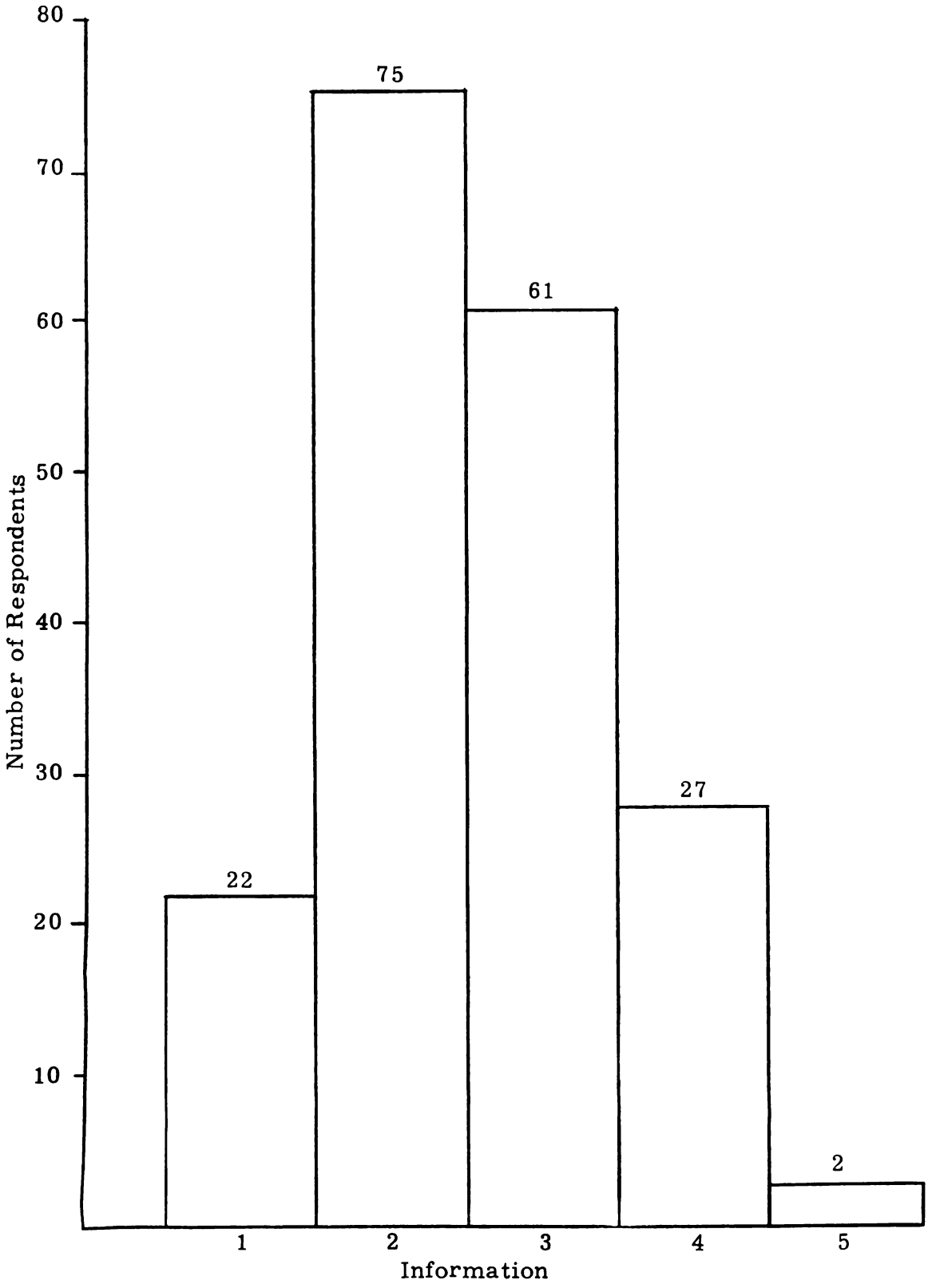
Graph 1. --Condition A_1: PVI Mean = 2.40



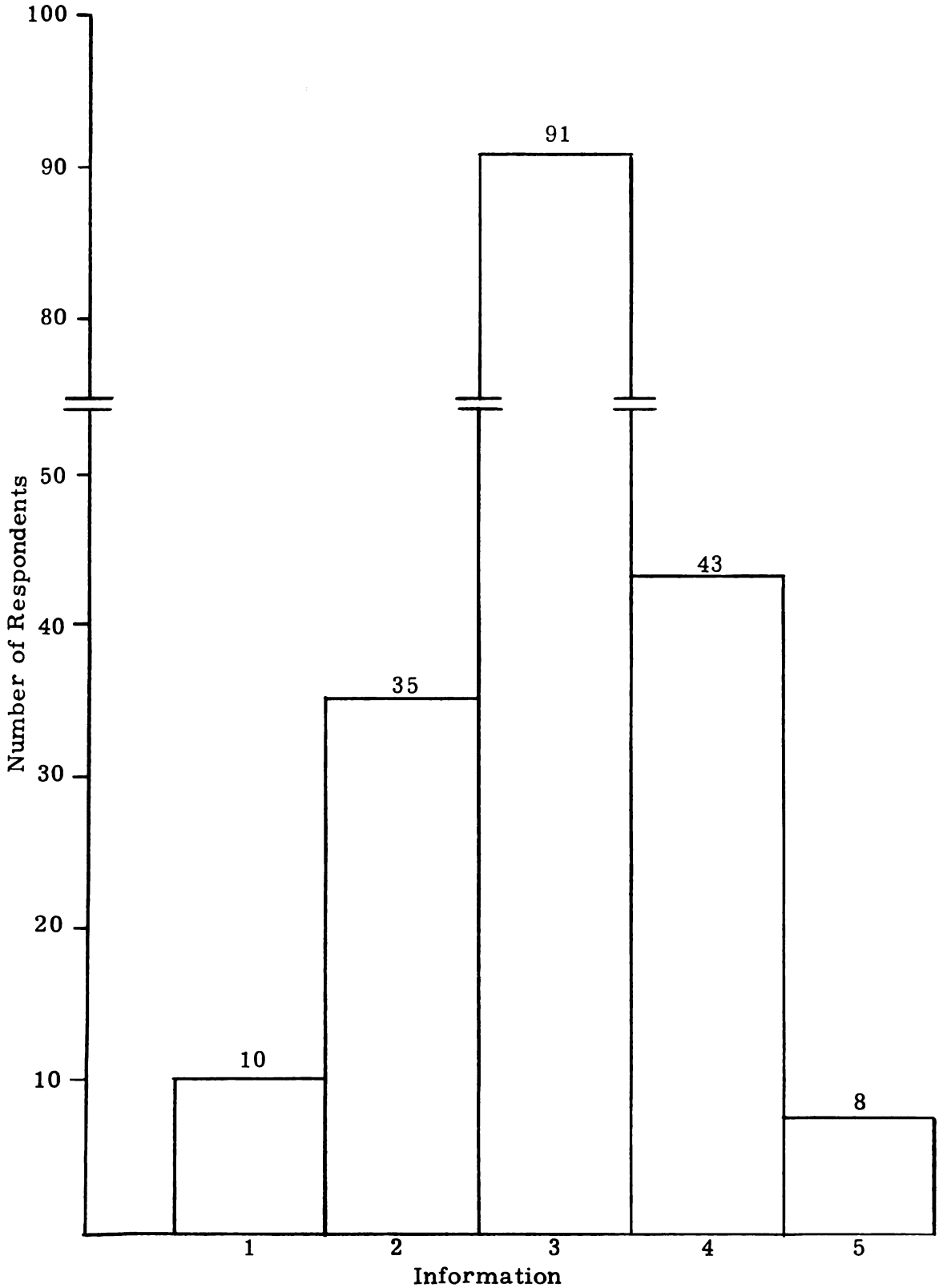
Graph 2. --Condition B_1: PVI Mean = 3.09



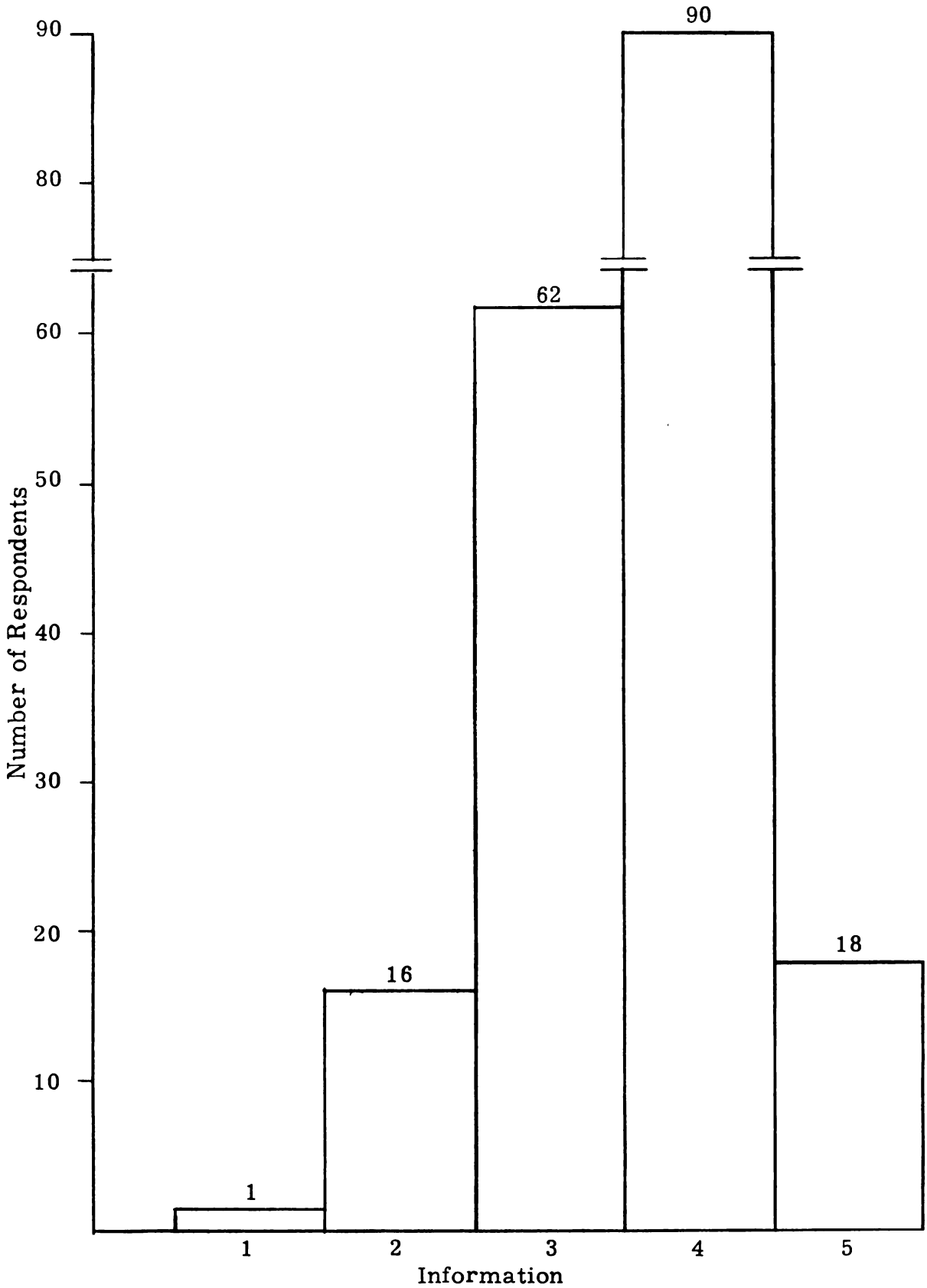
Graph 3. --Condition C_1: PVI Mean = 3.82



Graph 4. --Condition A_2: N-PVI Mean = 2.42



Graph 5. --Condition B_2: N-PVI Mean = 2.91



Graph 6. --Condition C_2: N-PVI Mean = 3.46

visual information conditions yielded affect means of 3.48 for low level, 3.77 for medium level, and 2.80 for high level (see Table B). The non-product visual information conditions yielded affect means of 2.80 for low level, 2.73 for medium level, and 3.77 for high level (see Table C).

According to the paired t-test method of statistical analysis, none of the means appear significantly different from the others in either pvi or n-pvi conditions.

Hypothesis 1: Affect Response from Product Visual Information

Three t-tests were made to test the affect means which resulted from low, medium, and high levels of product visual information. Hypothesis 1 predicted that the responses from low and high level pvi would be equal, with the medium level response greater than both of the other two. Statistically, no differences were exhibited in the data. However, Table B shows that increasing the pvi from low to high caused a 10% increase in affect. Increasing it further caused a 25% decrease in affect.

Although the differences were not statistically significant, slight differences are numerically apparent between the means.

Table B

Affect Level from Product Visual Information

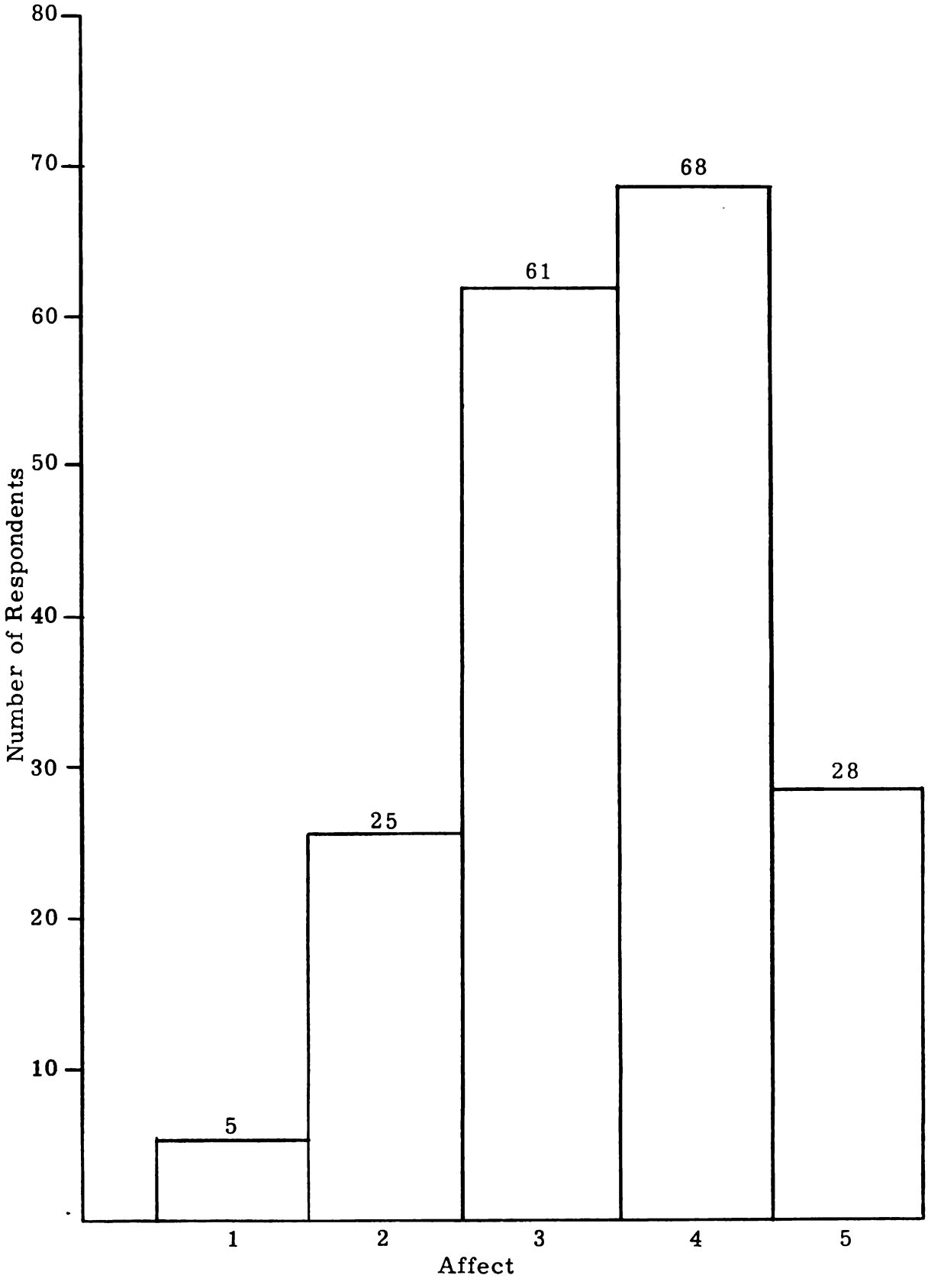
Sample Condition	A_1	B_1	C_1
Population Mean	u_1	u_2	u_3
PVI Level	low	medium	high
PVI Mean	2.40	3.09	3.82
n	187	187	187
Affect Mean	3.48	3.77	2.80
t-test:	$u_1 = u_2$		t = .29
	$u_2 = u_3$		t = .94
	$u_1 = u_3$		t = .63

For all above t-tests, the expected t value was 1.97 at $\alpha = .05$. The observed t value was smaller in all three tests.

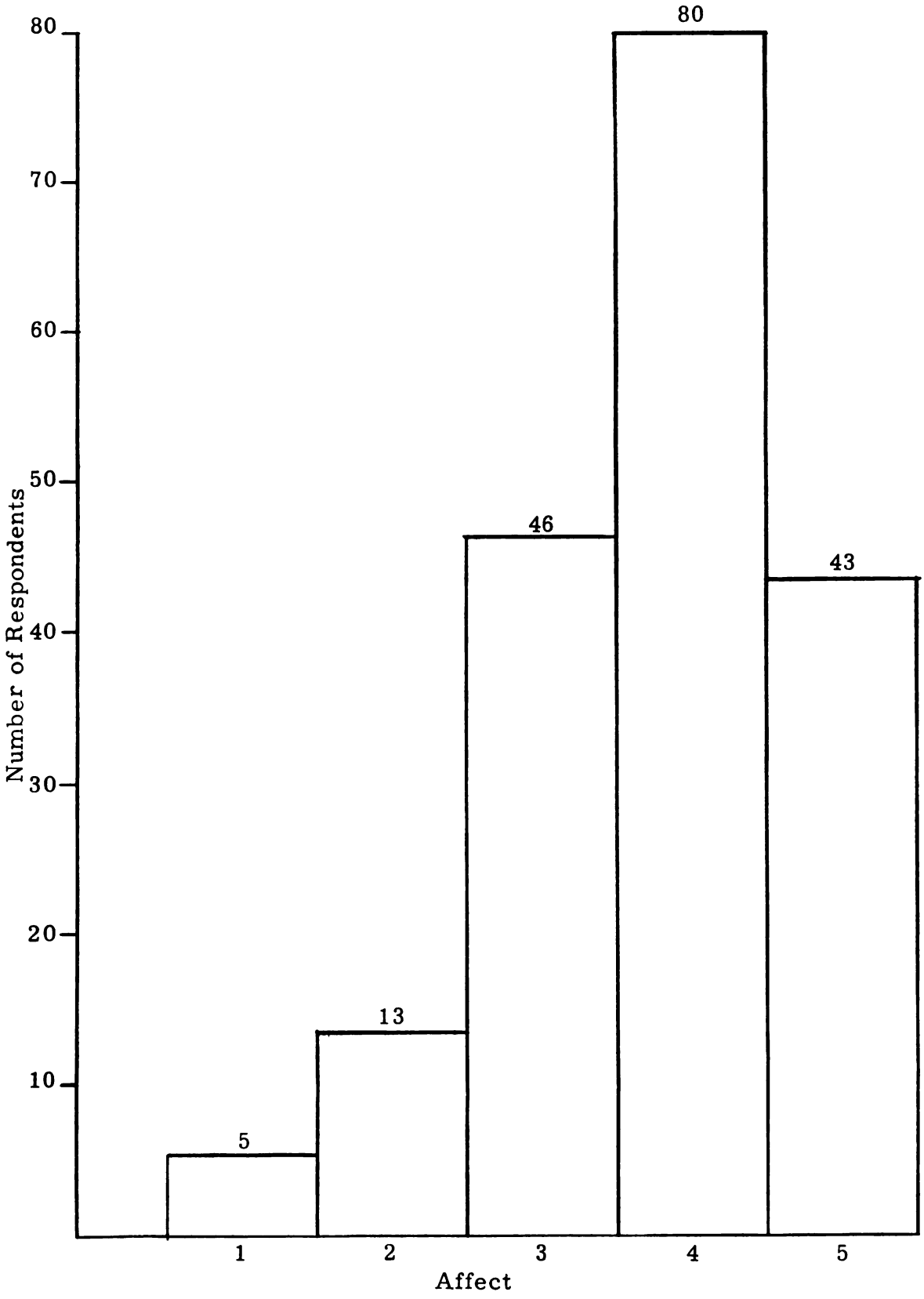
The number of responses for each affect level for low, medium, and high pvi levels is shown in Graphs 7, 8, and 9.

Hypothesis 2: Affect Response from Non-product Visual Information

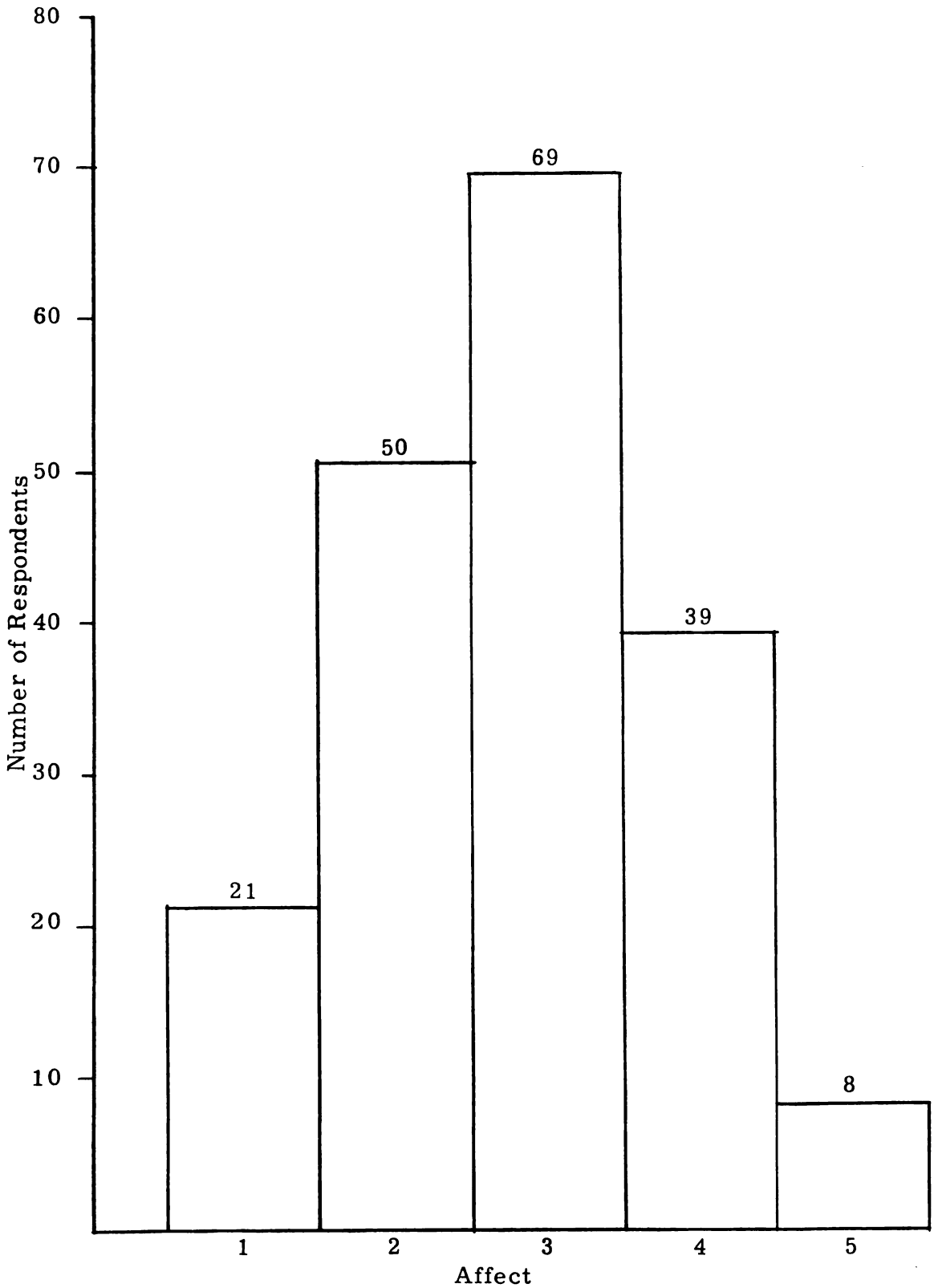
Three t-tests were made to test the three affect levels resulting from the non-product visual information conditions.



Graph 7. --Condition A_1: Low PVI



Graph 8. --Condition B_1: Medium PVI



Graph 9. --Condition C_1: High PVI

Hypothesis 2 predicted that the affect means for the low and high n-pvi levels would be equal and the affect mean for the medium level would be higher than both of the others. The data did not substantiate this hypothesis. The observed differences were not even in the expected direction: A_2 and B_2 appeared the same and C_2 appeared larger. Increasing n-pvi from low to medium caused almost no change in affect level; however, increasing n-pvi further to a high level caused a 38% increase in affect. Thus the optimum level of n-pvi (if one exists) did not appear to be in the medium level. The findings tend to indicate the optimum may be at the high level of n-pvi.

Table C shows the findings for the n-pvi conditions and the resulting t-values for differences between the means.

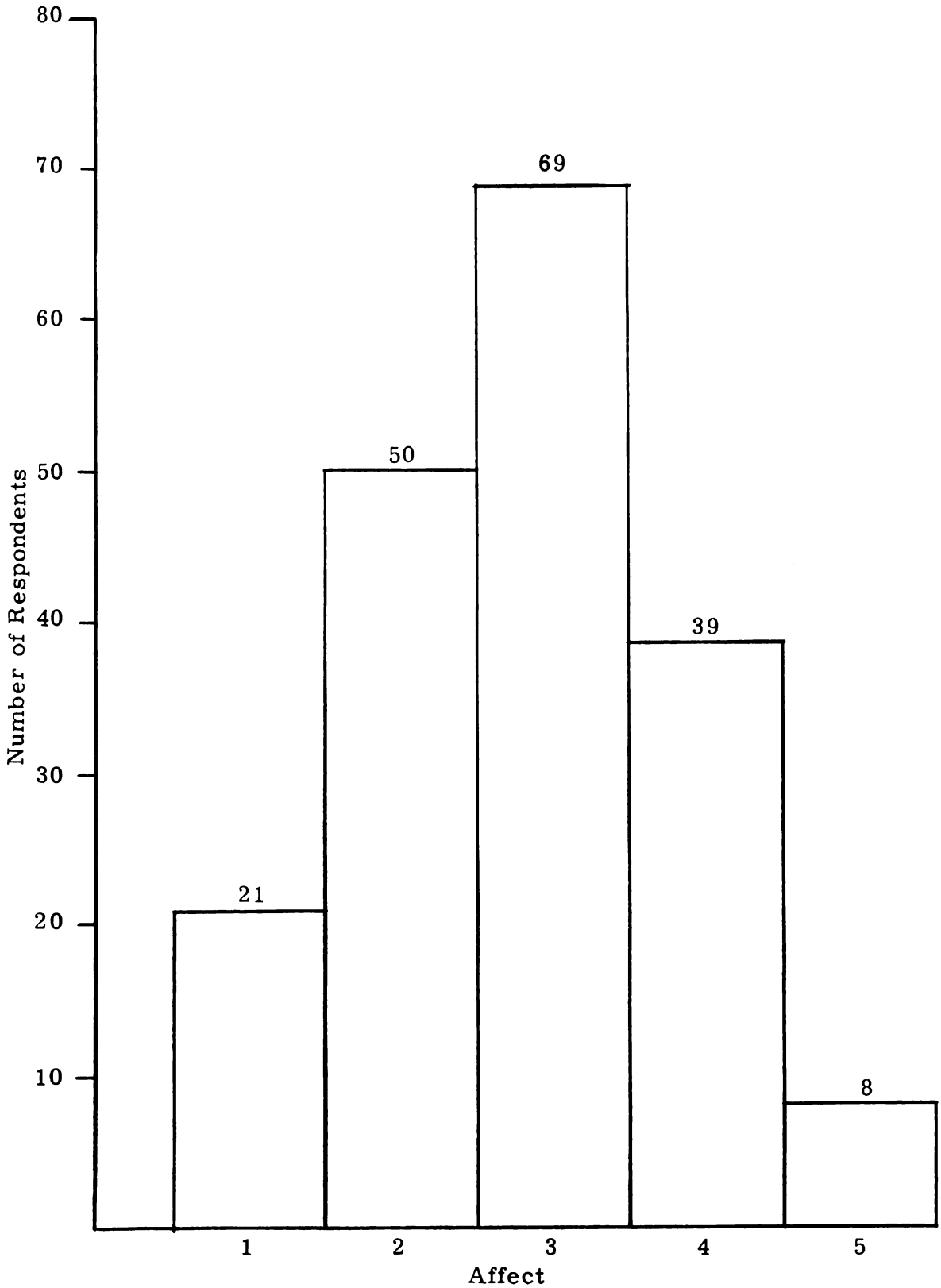
For all the t-tests in Table C, the tested significance level was $\alpha = .05$ with an expected t-value of 1.97. The observed t value was less than this value in all three tests.

Graphs 10, 11, and 12 are bar histograms of the number of responses for each affect level for low, medium, and high levels of n-pvi.

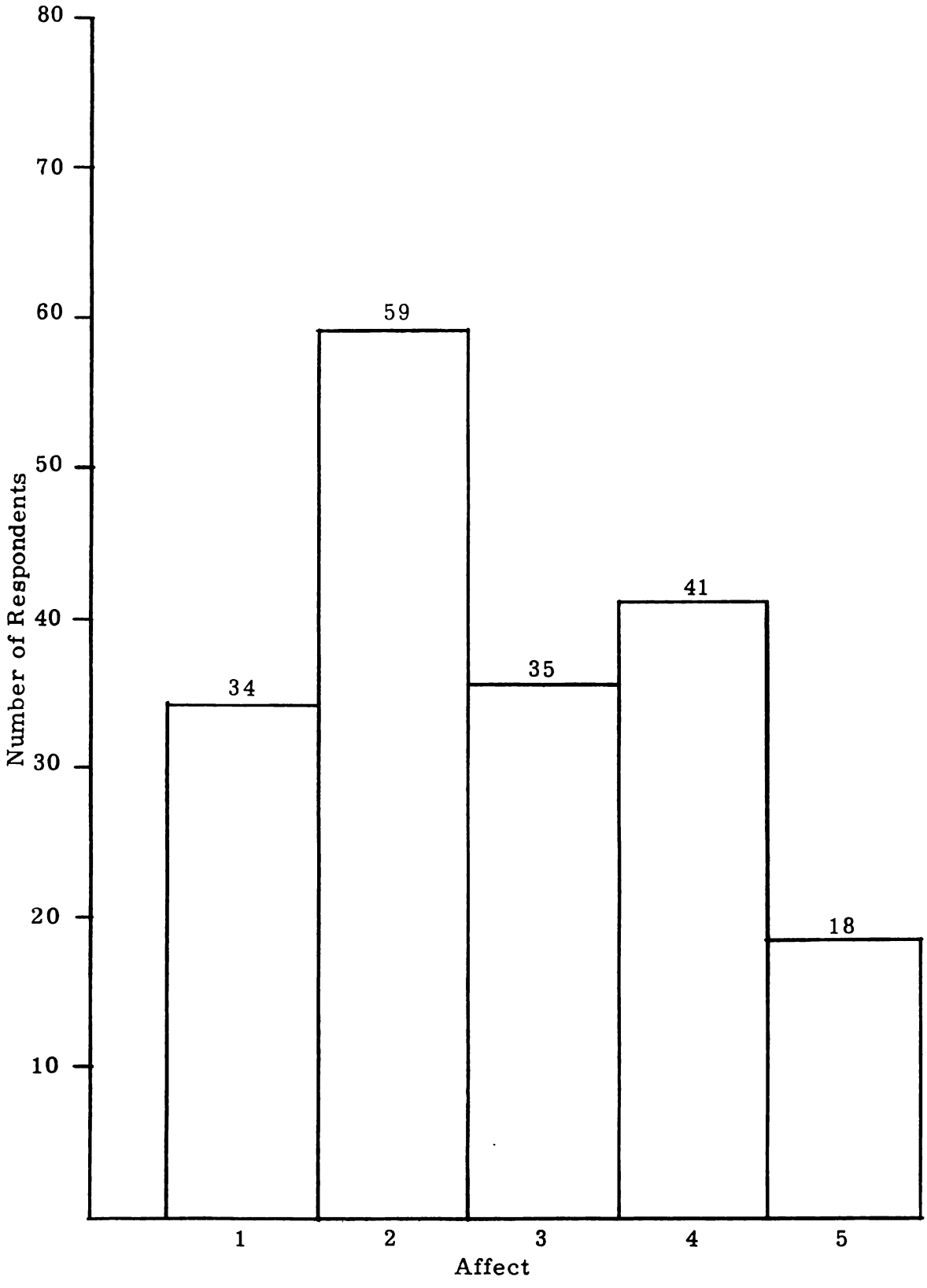
Table C

Affect Level from Non-product Visual Information

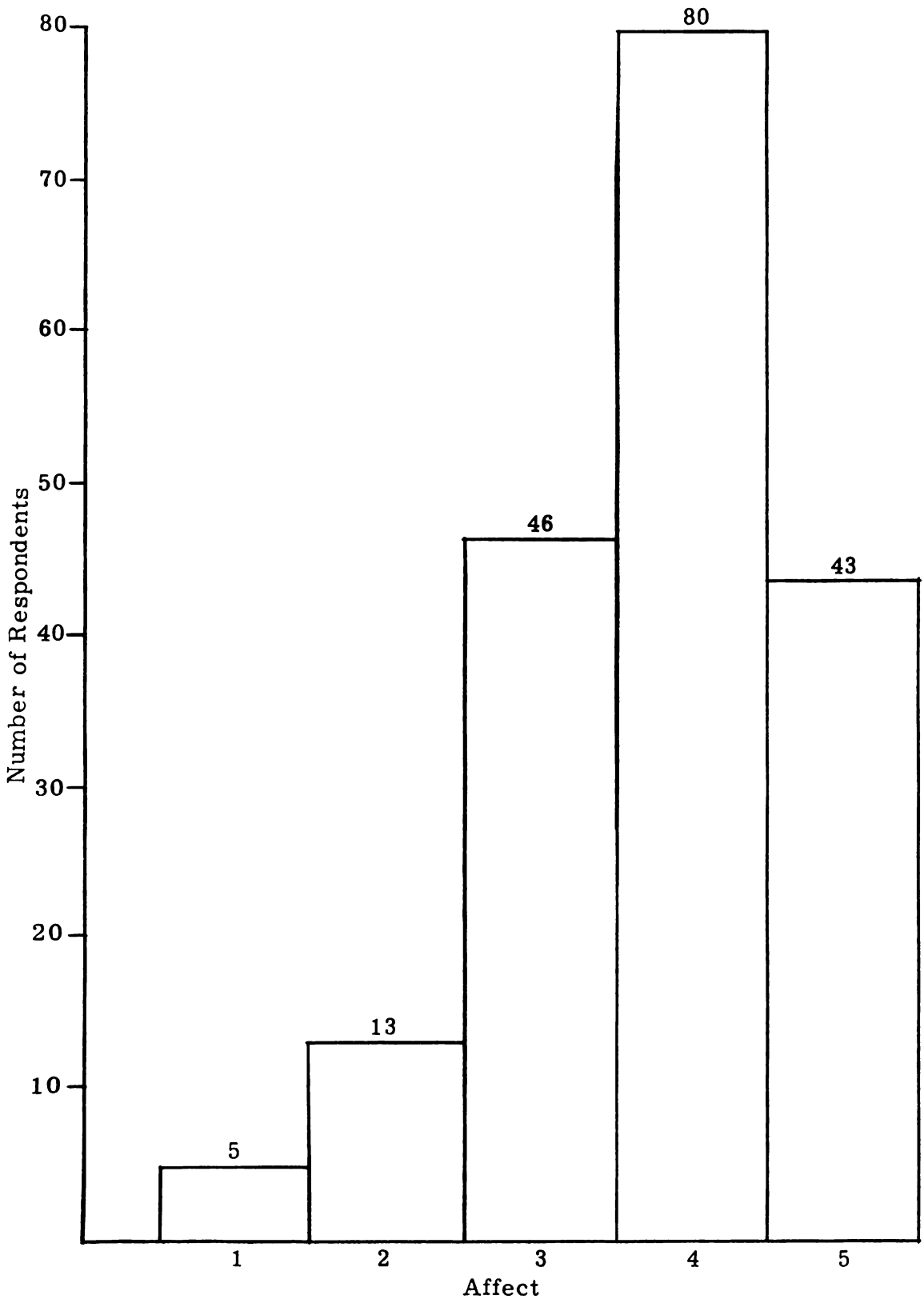
Sample Condition	A_2	B_2	C_2
Population Mean	u_1	u_2	u_3
N-PVI Level	low	medium	high
N-PVI Mean	2.42	2.91	3.46
n	187	187	187
Affect Mean	2.80	2.73	3.77
t-test:	$u_1 = u_2$		t = .55
	$u_2 = u_3$		t = .94
	$u_1 = u_3$		t = .92



Graph 10. --Condition A_2: Low N-PVI



Graph 11. --Condition B_2: Medium N-PVI



Graph 12. --Condition C_2: High N-PVI

VII. DISCUSSION

The findings for Hypotheses 1 and 2, though not statistically significant, do seem to demonstrate differing relationships between affect and visual information.

Findings from the pvi conditions tend to agree with the findings of Dember and Earle, and Vitz. An optimum stimulus level may exist and this level seems to be in the middle range of stimulus levels.

The findings from the n-pvi conditions seem to agree with the general findings of Berlyne, Dember, Earle and Paradise, and Fantz. These studies found that subject affect increases as stimulus complexity increases. Results of the current study did not seem to indicate that the optimum level of n-pvi stimulus was the medium level.

Filtering/Gating of Stimuli

The directions of the findings for pvi conditions seem to indicate that a filtering/gating system may have been in operation. The experiment was designed to keep open such a system to allow

as many stimuli as possible through to the receiver for a cognitive evaluation.

If a gating system were in operation, the mechanism would have attempted to block all stimuli above the desired stimulus level. The fifteen-second segments, with two evaluative decisions each, served to maintain a high attention level throughout each commercial. Theoretically, the segments would be ideal only if each separate stimulus were isolated for evaluation.

The evidence of a decrease in affect following an increase in information suggests that subjects received more stimuli than desired.

In the n-pvi conditions, evidence of a gating system was not present. The highest affect level occurred with the highest information level. An expansion of the information spectrum might have shown evidence of a drop-off in affect, but such cannot be predicted from the current study's findings.

Optimum Stimulus Level

Though not statistically significant, the data were in the proper direction to indicate an optimum stimulus level in the pvi conditions. A 10% increase in affect occurred when the low stimulus level was increased to the medium level. Increasing the stimulus

level further to the high level caused a 25% decrease in affect. A similar trend was found by Vitz.

The optimum stimulus level was not demonstrated in the n-pvi conditions, because no decrease in affect appeared to accent an optimal stimulus level. In order to prove the optimal nature of the condition yielding the highest affect response, a higher n-pvi level must be tested which would demonstrate a marked decrease in affect. The interpretation of the data as recorded in this study would have to be that affect level increases as n-pvi level increases.

The studies of Berlyne, Fantz, and Dember, Earle and Paradise all utilized stimuli which were of a neutral nature to the subjects. These studies showed a preference for complex stimuli as opposed to simple stimuli. In the current study, the n-pvi conditions also had neutral stimuli. These were often small vignettes which were not pure selling attempts or product-oriented situations. The pvi conditions measured the amount of "sell" and product in the commercial message. These stimuli cannot be considered totally neutral. Subjects may have had pre-held bias toward the product or may have quickly developed bias as a result of the selling strategy of the commercial message.

The Relationship Between Information and Affect in Visual Messages

The findings of this study suggest two possibilities: first, the optimal level relationship, and second, the positive relationship between the tested variables, visual information and affect. The optimal level relationship predicts that affect increases with information until a certain level is reached; then affect decreases as information increases. The second relationship is the positive relationship --as information increases, affect increases.

Both of these relationships have been posited by researchers in the past. In all cases, past studies utilized less specific stimuli. The current study utilized specific commercial messages featuring consumer products which were subject to bias and may not be generalizable to "all stimuli" or "all information."

The gating mechanism which may exist under product visual information conditions is due, possibly, to this bias--the activation of a psychological filtering mechanism. The less specific non-product visual information does not generate as much bias (if any); thus, if this mechanism exists under non-product visual conditions, it may be activated only at higher stimuli levels.

The presence of possible gating activity at medium levels of product information demonstrates the need for two assessments

of the stimuli: quantitative and qualitative distinctions of a more exact nature than was undertaken in this study.

Efficiency from Visual Information

The findings for the pvi and n-pvi conditions indicate that the optimal level for pvi would be the medium level, while for n-pvi, it would be the high level.

The difference between these two conditions can be more easily understood by qualitatively assessing the stimuli. The product visual information variable measures the amount of "product sell" contained in the message. Condition C_1 --from Commercial #3-- (see Appendix B) contained the highest amount of product visual information and received the lowest amount of affect. Commercial #7 had the lowest pvi score and yielded the second highest affect score.

The n-pvi variable measures all other aspects of the message which are utilized to provide the selling proposition: the creative framework which paves the way for an often uncreative product. In the n-pvi conditions, Commercials #1, #4, and #7 ranked 1, 2, and 3 in n-pvi amount, and ranked 1, 2, and 3 in affect.

Although the current study does not substantiate the notion that affect increases as n-pvi increases, findings do merit further investigation.

They seem to point to a high optimum level for non-product information. Subjects receive more n-pvi than pvi before affect level drops. The high correlations between curiosity and time spent in observing and affect found by Berlyne seem to explain this occurrence.[28] Non-product information offers the viewer an opportunity to explore, to create a story, or just to desire an explanation. The product visual information seems to have a set level--a viewer only desires a certain amount of pure "sell."

The findings of the current study point to a possible "formula" that may lead to more viewer affect in television commercials. Utilizing relative levels, it seems that the most viewer affect, and, therefore, the most efficient message, would be comprised of a mixture of a medium amount of product visual information and a high amount of non-product visual information. This allows sufficient product exposure and pure sell, while providing it within a context which would provide highest attention and curiosity.

VIII. CONCLUSIONS

The current study found no statistically significant relationship between the amount of visual information and resulting affect in commercial messages. The results from the product visual information conditions, however, do seem to be in the predicted direction. The results from the non-product information conditions do not agree with the stated hypothesis. N-pvi results gave indications that a positive relationship may exist between non-product visual information and affect. The findings were not significant, however.

Hypothesis 1: The Relationship Between Product Visual Information and Affect

The relationship between product visual information and affect is non-significant as tested in this study; the directions indicated by the findings, however, do agree with the hypothesis. The medium level of product visual information received the highest amount of affect, while the low and high levels were similar in affect response level. If the experiment had been designed with

less inherent bias--such as bias toward the product, or a more diverse sample--the differences shown in the data might have been statistically significant.

Findings were, however, similar to those of Vitz (1966). Subjects demonstrated a preference (though non-significant) for an intermediate complexity level of stimuli. In the present case, with the stimuli contained in television commercials, lower levels of stimuli seemed to fail to generate interest. The higher levels caused too much stimuli to be received by the subject. This situation can cause the operation of a filtering or gating system; however, the present study attempted to minimize its effects by requiring close attention to all stimuli. Although subjects were not in a realistic viewing situation, their close attention provided a good measure for the determination of the independent variable, and the demonstration of a drop-off in affect.

The indication of a possible optimal level of stimuli has great significance for the message designer (in this case, the advertiser). A certain quantity of product information can lead to the best results.

Hypothesis 2: The Relationship Between Non-Product Visual Information and Affect

The present study was unable to exhibit a significant statistical relationship between non-product visual information and affect. Again, however, directions indicated by the findings suggest a possible positive relationship. As non-product visual information increased, affect increased.

The findings failed to exhibit any drop-off in affect level as in the product visual conditions. This drop-off would indicate an optimum level--the level at which the most affect can be derived from the message. Thus the findings of Vitz do not explain this stimuli-response relationship. The findings of Berlyne, Fantz, and Dember, Earle and Paradise seem to explain more accurately the findings of the current study. All studies found a general preference for complex stimuli as opposed to simple stimuli.

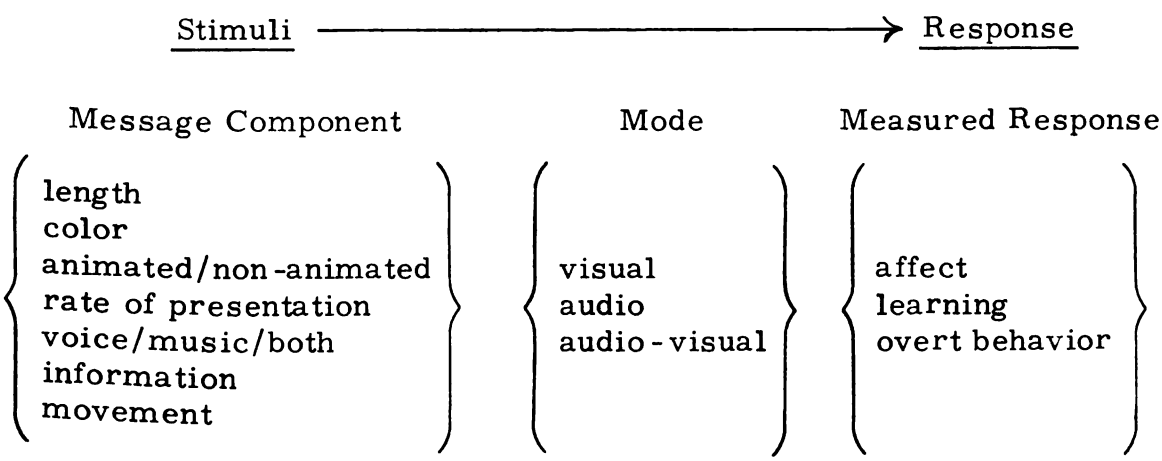
The inability to show a statistically significant relationship between affect and non-product visual information may have been due to the subjects' difficulty in clearly distinguishing between product and non-product information.

Future Research

"The most important question in advertising research today is, 'Which stimuli give rise to which responses?'"[29] This

statement, made by the Advertising Research Foundation in 1963, still holds true today. Very little recognized research has been conducted to explore the relationships that exist between advertising stimuli inputs and resulting responses.

This study attempted to show the relationship between information presented in the visual mode and resulting affect. Many combinations of the various message components can be made. The testing of these combinations will give further insight into the question of efficiency in advertising. If relationships between message component variables and the resulting responses can be defined, message designers will know how much of any given component to insert into a message to obtain optimum response. A partial list of the factors to be tested would include:



Some examples of future research might be:

1. Sixty-, thirty-, and ten-second commercials are presented aurally and subjects are tested for the resulting amount of learning.

2. One-, two-, three-, and four-color ads are presented visually and subjects are tested for changes in their overt behavior.

3. Radio commercials of various lengths are tested with voice only, voice and music, and music only to find which yields the most subject affect.

4. Television commercials with low, medium, and high amounts of action (movement) are presented visually for testing the amount of overt behavior change in subjects.

5. Radio commercials with the same content are presented at varying rates--subjects can be tested for learning at each level.

All of the above proposed studies can be conducted to help understand the relationships that exist between stimuli in advertising and the resulting responses. The more that is known about these relationships, the less waste will occur. Message designers will

be able to select a stimulus level which will lead to optimal responses; such will serve to increase audience interest as well as audience response, and both source and receiver will benefit.

In future research, steps should be taken to discover the role that pre-held exposure or prior product usage plays in influencing response, so that these factors will not distort findings.

In further exploring the contribution made by visual information to affect, future studies should strive to obtain controlled stimuli levels. Improving the accuracy of the independent variable could possibly be achieved by a frame by frame analysis of the informational content of the film. This method would lead to a continuous independent variable, as opposed to one categorized merely by low, medium, and high levels. A continuous response curve would be far more descriptive of the actual relationship between the variables.

Finally, it should be noted that the stimuli in this experiment varied in product and creative approach in addition to information. Future studies should utilize one product and one general creative approach across all conditions, while varying information only.

FOOTNOTES

[1]"How All TV Fared in '70," Broadcasting, May 31, 1971, p. 26.

[2]"Money Talks for National TV Advertisers," Broadcasting, May 17, 1971, p. 29.

[3]"A Hedging of Bets on TV This Year," Broadcasting, January 26, 1970, p. 28.

[4]Arthur Bellaire, "Animation and Closeups Can Save Your TV Spot Dollars," Advertising Age, January 11, 1971, p. 68.

[5]Ibid.

[6]William D. Tyler, "Two Trends in '70 Campaigns: More Shockers, Less Information," Advertising Age, March 22, 1971, p. 33.

[7]Ibid.; Mercedes, Hills Supermarkets, and Uniroyal Tires.

[8]P. F. Lazarsfeld and R. K. Merton, "Mass Communication, Popular Taste, and Organized Social Action," Mass Communication, W. Schramm (Urbana: University of Illinois Press, 1960), p. 494.

[9]"Study Values Message Over Medium," Broadcasting, November 30, 1970, p. 34.

[10]HRB-Singer, Inc., The Measurement and Control of Visual Efficiency of Advertisements, Advertising Research Foundation Report, June, 1962, p. 4.

[11]R. M. W. Travers, Audiovisual Information Transmission, U.S. Department of Health, Education, and Welfare, Office of Education Contract No. 3-20-003, 1967, p. 3.29.

[12]Abraham Moles, Information Theory and Esthetic Perception, Trans. by J. Cohen (Urbana: University of Illinois Press, 1966), p. 60.

[13]M. J. Eysenck, "The Experimental Study of the 'Good Gestalt' --A New Approach," Psychological Review, XLIX, 1942, 344.

[14]D. E. Broadbent, Perception and Communication (New York: Pergammon Press, 1969), p. 61.

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[19]Ibid., p. 184.

[20]D. E. Berlyne, "Conflict and Information Theory Variables as Determinants of Human Perceptual Curiosity," Journal of Experimental Psychology, L, 1957, 402.

[21]Dember, Earle, and Paradise, p. 514.

[22]Paul C. Vitz, "Preference for Different Amounts of Visual Complexity," Behavioral Science, XI, 1966, 105-14.

[23]Berlyne, "Response," p. 403.

[24]R. L. Fantz, Pattern Discrimination and Selective Attention as Determinants of Perceptual Development in Children (New York: International University Press, 1965).

[25]Dember, Earle, and Paradise, "Response," p. 518.

[26]Travers, p. 8.78.

[27]HRB-Singer, Inc., Measurement, p. 28.

[28]D. E. Berlyne, Conflict, Arousal, and Curiosity (New York: McGraw-Hill, 1960).

[29]HRB-Singer, Inc., Measurement, p. 4.

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APPENDIX A

QUESTIONNAIRE

For each segment of each commercial that you are about to see, please answer the following questions:

1. How much product information did you see?
2. How much non-product information did you see?
3. How many seconds did this segment last? (Last four commercials only)

Ex. 1 P _____ NP _____	Lo Hi P _____ NP _____	Lo Hi P _____ NP _____	Lo Hi P _____ NP _____
Ex. 2 P _____ NP _____	P _____ NP _____	P _____ NP _____	P _____ NP _____
#1 P _____ NP _____	P _____ NP _____	P _____ NP _____	P _____ NP _____
#2 P _____ NP _____	P _____ NP _____	P _____ NP _____	P _____ NP _____
#3 P _____ NP _____	P _____ NP _____	P _____ NP _____	P _____ NP _____
#4 P _____ NP _____	P _____ NP _____	P _____ NP _____	P _____ NP _____
#5 SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____
#6 SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____
#7 SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____
#8 SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____	SEC. ___ P _____ NP _____

For each of the commercials that you have seen, please answer the following questions:

	According to your own standards: How much did you like this commercial? (How good was it?)					Have you seen this commercial before? Yes or No
	Very Bad	Mod. Bad	Med.	Mod. Good	Very Good	
Ex. 1 Lancers	___	___	___	___	___	
Ex. 2 Awake	___	___	___	___	___	
#1 Mercury Montego	___	___	___	___	___	
#2 Continental Air-lines to Hawaii	___	___	___	___	___	
#3 Magic Moment Hair Color	___	___	___	___	___	
#4 Van Heusen Shirts	___	___	___	___	___	
#5 Hertz	___	___	___	___	___	
#6 SpringMaid Sheets	___	___	___	___	___	
#7 Bromo Seltzer	___	___	___	___	___	
#8 Jello	___	___	___	___	___	

For each of the commercials that you are about to see, please answer the following question:

According to your own standards, how much did you like this commercial? (How good was it?)	Very Bad	Mod. Bad	Med.	Mod. Good	Very Good
	____	____	____	____	____

	Very Bad	Mod. Bad	Med.	Mod. Good	Very Good
Ex. 1	____	____	____	____	____
Ex. 2	____	____	____	____	____
#1	____	____	____	____	____
#2	____	____	____	____	____
#3	____	____	____	____	____
#4	____	____	____	____	____
#5	____	____	____	____	____
#6	____	____	____	____	____
#7	____	____	____	____	____
#8	____	____	____	____	____

APPENDIX B

COMMERCIALS UTILIZED IN THE STUDY

Commercial #1

Mercury Montego--Lincoln Mercury

This commercial was animated utilizing a hunter on safari hunting on a mountain and through a jungle. He follows large cat-like tracks. After tracking the "animal" down, he runs right into a Mercury Montego. The car is shown at various angles and a sign giving price information and standard equipment appears in the hunter's hands. The hunter then continues tracking and runs into a Lincoln Mercury logo sign attached to a post. The Mercury cougar (animal) is shown and the commercial ends.

Commercial #2

Continental Airlines to Hawaii

The message which this commercial continuously attempts to convey is, Introducing: Continental flights to Hawaii. The commercial has quite a bit of flashy animation. The artistry is mod, utilizing Hawaiian costumed figures with bright plumage and lettering. Most of the selling points appeared as rapidly moving printed words.

Commercial #3

Magic Moment Hair Color

This commercial showed the product floating, bigger than life, mid-air, for the first fifteen seconds of the commercial. The product was demonstrated on a model's hair--showing her with a head full of sudsy looking foam. The product was on camera almost the entire commercial with occasional views of the model's hair both during and after use of the product.

Commercial #7

Jello

This commercial shows a living room scene with two characters, ostensibly, a middle aged mother and young adult son. The son is lethargically studying the television screen, while the mother talks. Occasionally the son says a word or two. Eventually, the mother leaves and goes into the kitchen. She reappears with some of the product--jello. The son shows surprise. He samples the product and both smile in satisfaction. The product is then shown with a slogan for a few seconds and the commercial ends.