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Cognitive responses and message acceptance: An evaluation of alternative functional relationships.

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COGNITIVE RESPONSES AND MESSAGE ACCEPTANCE: AN EVALUATION OF ALTERNATIVE FUNCTIONAL RELATIONSHIPS

by

Stuart Brockbank

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ABSTRACT

COGNITIVE RESPONSES AND MESSAGE ACCEPTANCE: AN EVALUATION OF ALTERNATIVE FUNCTIONAL RELATIONSHIPS

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An investigation was conducted across two product classes and alternate message appeals to determine the best functional relationship between message acceptance and four independent cognitive responses: support argument, counterargument, source bolstering, and source derogation. A multi-variate regression analysis was employed to compare various linear and non-linear models. The four dependent cognitive structure measures used were attitude toward the brand, and the cognitive, conative, and affective components of the tricomponent attitude model. The results indicate that in general, linear models best explain message acceptance as a function of cognitive response. This investigation is an extension to current literature and has implications for consumer persuasion.

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CHAPTER 1: INTRODUCTION

1.1 Background

In 1984, over $88 billion dollars was spent on advertising in the United States (Berkman and Gilson 1987) and by the year 2000, spending on advertising is predicted to escalate to $320 billion in the United States and $780 billion worldwide (Coen 1980). To increase the benefits from the investment in advertising, marketers have developed models which specify psychological outcomes short of overt purchase which may provide the basis for setting objectives for a campaign and measuring the results (Wright 1973). However, creating a favourable product disposition or attitude toward the product has unfortunately become a secondary outcome due to the surprisingly general disinterest and lack of research into the psychological mediators of message acceptance.

Wright (1973) defined several mediators of the communication process and through the use of a multivariate regression analysis, suggested the relative importance of these mediators in message acceptance. Since this time, there has been limited research into the modelling of multiple concurrent mediators and, to exacerbate the issue, Wright's (1973) original set of three mediators, which consisted of support arguments, counterarguments, and source derogations, has been elaborated to include source bolstering. For this research, this

leads to the postulation of two questions: (1) What is the relative importance of this new, modified set of mediators? and, (2) How are the mediators affected by different product classes and message appeal types?

Though the modification of Wright's (1973) original cognitive mediator set is a minor refinement, the results could in fact be exceedingly important Prior research indicates that attitude toward the advertisement itself leads to changes in brand attitudes (Gorn 1982; Lutz, MacKenzie, and Belch 1983; Mitchell and Olsor 1981) and without understanding the relative importance of the mediators, the advertising strategist would be incapable of predicting the effect a communication will have on attitudinal outcome. Specifically, this research seeks answers concerning the identification of the best functional relationship between message acceptance and cognitive responses and their relative importance in shaping consumer attitudes across different product classes and appeal types.

1.2 Research Objectives

Research on the functional relationships between cognitive responses and communication acceptance has been somewhat neglected in current marketing theory and application. The purpose of this study is to investigate the functional relationship between cognitive responses and message acceptance across two product classes and two forms of communication: a one-sided and a two-sided non-refutational print advertisement.

Research on the cognitive processes mediating acceptance of advertising, from both marketing and social psychology literature, form the theoretical background. Spontaneous cognitive responses will be applied to the understanding of the underlying processes that

mediate the effectiveness of an advertisement and the tricomponent attitude model (Rosenberg et al. 1960) will suffice as the measure of the degree of effectiveness of the advertisement by assessing attitude toward the advertisement. Another measure will be similarly employed to determine attitude toward the advertised product.

The problem lies in determining which type of model will best suit the data for the product and appeal type. Will the most appropriate representation take the form of a linear compensatory model or a nonlinear, non-compensatory model, for example, a conjunctive or disjunctive model, or some relationship as yet undefined?

Currently, there is no empirical support for any specific functional relationship between source bolstering, source derogation, counterargument, and support argument and message acceptance. This study will contribute to research in this area by investigating alternative functional relationships between an expanded cognitive response inventory and message acceptance. The following section outlines the organization of the paper.

1.3 Format of the Paper

This paper is divided into five chapters. They are: Chapter 1 Introduction; Chapter 2 Review of the Literature; Chapter 3 Methodology; Chapter 4 Data Analysis and Results; and Chapter 5 Summary, Implications, and Future Research.

Chapter 2 reviews past research and sets the foundation for this thesis. The purpose of the chapter is to provide the theoretical background for this research. Specific hypotheses will not be presented because of the current state of theory.

Chapter 3, Methodology, discuses the scope of the research that was conducted. Within this chapter, the sample is defined and the research design and procedure are discussed.

The purpose of Chapter 4 is to analyze the data collected in the research characterized in Chapter 3. The chapter primarily focuses on the results of the study.

Chapter 5 summarizes the results, discusses the implications, and recommends possible domains for future research.

CHAPTER 2: LITERATURE REVIEW

The purpose of this chapter is to review the literature on cognitive processes mediating acceptance of advertising, product involvement, measures of message acceptance, and one-sided and two-sided advertisements. This chapter is divided into six subsections; the first will present a historical perspective of cognitive response mediation, the second section will discuss cognitive structure, and the third section will discuss cognitive response theory. The fourth section will discuss the importance of mediator weighting, the fifth section will review the theories involved with alternate message appeals, and the last section will outline the scope of this research.

2.1 Historical Perspective on Cognitive Response Mediation

The paradigm of cognitive response mediation was pioneered by Greenwald in 1968 and has since been employed in persuasion research (Batra and Ray 1986; Hastak and Olson 1989; Petty, Ostrom, and Brock 1981; Olson, Toy, and Dover 1978, 1982; Wright 1973). Wright (1973) initiated research on the processes mediating message acceptance and suggested that consumer acceptance of advertising was mediated by the cognitive responses generated by message recipients rather than by the content of the ad itself. Through the use of a linear regression analysis with message acceptance as the dependent measure and cognitive responses as the independent measures, Wright (1973) was able to obtain R^2 for print advertisements (low content processing involvement) ranging from .18 to .32 . The

difference in the explained variance was due to the different types of linear models and the different measures of attitudinal acceptance of the advertisement's information. Similarly, Batra and Ray (1986) obtained R^2 ranging from .05 to .55 depending on the attitude measure and the independent cognitive response variables used in the linear multiple regression.

Other studies have provided more evidence in support of Wright's (1973) original finding that cognitive responses to persuasive communications mediate the effect of the message on elements of cognitive structure (Belch 1981, 1982; Belch and Belch 1984; Edell and Mitchell 1978; Lutz and Swasy 1977; Olson, Toy, and Dover 1978; Petty, Ostrom, and Brock 1981; Swasy and Marks 1986; Wright 1980).

Similarly, new categories of cognitive responses have been developed. They consist of subclassifications of various kinds of support and counter arguments (Wright 1980), simple affirmations and disaffirmations (Beaber 1975), neutral and irrelevant thoughts (Cacioppo and Petty 1979), ad-execution responses (Lutz and MacKenzie 1982); source bolstering and study-specific "repetition-related evaluations" (Belch and Lutz 1982), and affective responses (Batra and Ray 1986). Batra and Ray (1986) found affective responses to have a weak but significant mediating impact upon brand attitudes.

Although there is supportive evidence for mediation between cognitive response and message acceptance, and the cognitive response inventory has been expanded by many researchers, there has been no empirical research on the exact functional relationship between the cognitive mediators and message acceptance. Wright (1973) employed a general linear framework for his mathematical models whereby the cognitive responses are addressed independently or combined to form an index. This linear framework has proved to be the

cornerstone for this type of mediation research and has been employed in other studies (Batra and Ray 1986; Hastak and Olson 1989; Olson, Toy, and Dover 1982).

2.2 Cognitive Structure

Spontaneous cognitive responses are presumed to mediate communication effects on the conative (purchase intention), cognitive (believability), and affective (likeability) components of the tricomponent attitude model as well as attitude toward the brand. Research has indicated low but significant correlations between the number of support arguments and/or counterarguments and the measure of attitude toward the brand and purchase intention (Belch 1981, 1982; Belch and Belch 1984; Edell and Mitchell 1978; Olson et al. 1978, 1982; Petty, Cacioppo, and Schumann 1983; Raju and Hastak 1983; Rethans, Swasy, and Marks 1986; Toy 1982; Wright 1973; 1974a). For example, Olson et al. (1982) found support arguments and counterarguments showed consistent, but small correlations ($r \approx 0.20$) with the belief, attitude, and intention elements of cognitive structure.

A combined cognitive structure/cognitive response model based on work by Fishbein (1975) and developed by Olson, Toy, and Dover (1982), implies the following view of advertising effects:

Ad exposure → Cognitive Responses → Beliefs → Attitude → Intentions → Behaviour

The model can be loosely interpreted to suggest that: (1) an advertisement may have an impact on the attitude and intention elements of cognitive structure (partially) independent

of its effects on beliefs and (2) cognitive responses possibly may only partially mediate message effects on cognitive structure.

2.3 Cognitive Response Theory

If consumers tend to confront influence attempts and critically analyze information, important questions regarding these cognitive evaluation processes arise. If the receiver is an active information processor, he can be expected to attempt to compare the new information with his existing structure of beliefs and values (Wright 1973). These relational activities generate a set of cues or spontaneous cognitive responses which research suggests are the actual primary mediators of message acceptance (Greenwald 1968).

However, it is necessary to model the process of information acceptance in terms of a collection of spontaneous cognitive responses to the stimulus (or advertisement) that have conceptually distinct modes of response. The first three variables, defined by Wright (1973), are counterarguments, support arguments and source derogation, and the fourth independent variable, defined by Belch (1981), is source bolstering. They are discussed below and explicitly defined in Appendix A.

When an individual compares incoming information to an existing belief structure and a discrepancy is noted, the result is the spontaneous activation of a counterargument which will counter or at the least, neutralize message evidence. For example, an individual who finds a product claim unbelievable will form a counterargument which will minimize message acceptance.

In order to maximize message acceptance, counterarguing should clearly be minimized. Hovland, Lumsdaine, and Sheffield (1949) expressed the belief that a message recipient's covert rehearsal of arguments opposing the position recommended by the communicator would decrease persuasion. Hass and Linder (1972) found the ability of the audience to counterargue and message structure variations, which influence the counterarguing activity, may be important determinants of a communicator's position.

The second cognitive response, which may be considered the opposite of a counterargument, is termed a support argument. In relating incoming information to existing beliefs, an individual may activate responses indicating that congruent associations have been discovered or that the persuasive message is supported by currently entrenched beliefs (Kelman, 1953). To assist in the acceptance of advertising, a support argument type of cognitive response must be generated by the message recipient.

The third type of cognitive response, which focuses on the source of the information, is a resistive mediator and termed source derogation. Unlike counterarguing though, source derogation thoughts are aimed at the information source; usually the advertiser or the overall means used by the advertiser. The source derogating response, which is used quite frequently in situations where the source is biased, may substitute for and may indeed be as devastating as counterargument.

Source bolstering, unlike the previous three cognitive responses, was defined much later by Belch (1981) to elaborate Wright's (1973) original cognitive inventory and to serve as an antithesis for source derogation. Source bolstering can be considered the positive

counterpart of source derogation in that the thought is positive in valence and is directed toward the advertiser or the advertiser's approach rather than toward the message "per se".

2.4 Mediator Weighting

The relative weighting of the mediators is of the utmost importance in employing the cognitive response model. How do consumers combine the cognitive responses and what are the weights assigned to the cues? Theory is lacking immensely in this area, but there are research propositions.

2.4.1 Linear Relationships

The use of a linear model to approximate the methods by which decision makers combine information has been suggested by many researchers and the results are typically a good fit for the data (Anderson 1968; Hammond 1955; Hammond, Hursch, and Todd 1964; Hammond and Summers 1965). One reason for the good fit of the linear model in many different areas of decision making may be that the linear model can still provide a very good approximation even when there are significant nonlinear relationships in the data (Yntema and Torgerson 1961).

A model mediating message acceptance, based on research by Wright (1973), may be framed in a general linear framework such as:

$$\text{Acceptance} = w_{sacasdsb}\Sigma_i(SA_i - CA_i + SB_i - SD_i) \qquad (2.1)$$

where $w_{sacasbsd}$ is the weight assigned to the overall combination of the cues and SA_i refers to the number of support arguments by respondent i, CA_i to the number of counterarguments

by respondent i, SB_i to the number of source bolsterings by respondent i, and SD_i to the number of source derogations by respondent i. In this type of framework, the weights assigned to the individual cue types are balanced equally by the receiver to form an index that represents message acceptance. This linear model may be referred to as a fully indexed compensatory model.

Perhaps the receiver critically analyzes the information in another general linear framework whereby support arguments and counterarguments are subtracted from one another to form a message index and similarly, source bolstering and source derogation are also subtracted from one another to form a source index. This framework, based on research by Wright (1973), may take the following form:

$$\text{Acceptance} = w_{saca}\Sigma_i(SA_i\text{-}CA_i) + w_{sbsd}\Sigma_i(SB_i\text{-}SD_i) \qquad (2.2)$$

where w_{saca} and w_{sbsd} are the weights assigned to the respective indexed cues. One would expect with a split indexed compensatory model such as this, that support arguments and counterarguments are "indexed" and similarly source bolstering and source derogation are also "indexed" before an acceptance decision is made. For example, a receiver's cognitive pattern may proceed after exposure to an advertisement as follows:

> "Since I have previous information on this product, I believe that attributes *X* and *Y* are useful but *Z* is not, therefore, that's good. The advertisement in general appears acceptable but the copy is too illegible, so that's not good. But, the product attributes are more important to me than the advertisement so overall I find the ad quite believable, and I may buy the product."

The receiver may attach weights to each cue type before combining them in a general linear framework such as:

$$\text{Acceptance} = w_{sa}\Sigma_i SA_i + w_{ca}\Sigma_i CA_i + w_{sb}\Sigma_i SB_i + w_{sd}\Sigma_i SD_i \qquad (2.3)$$

where w_a, w_p, w_{ap}, and w_u are the weights assigned to the respective cue types. One would expect with a straight compensatory model such as this that the receiver combines all, none, or some of the cues linearly after exposure to an advertisement to arrive at an acceptance decision. The relative importance of each weight is important with this type of compensatory model which is based on research by Wright (1973).

2.4.2 Non-Linear Relationships

Although linear compensatory models have been used almost exclusively in dealing with judgemental processes, they are not the only combination model available (Einhorn 1970). Other models have been specified for combining data and two of these are theoretically termed the conjunctive and disjunctive models.

In dealing with these models, the function resulting from attaching of utility or worth to a multiattribute stimulus can be called an evaluation function (Dawes 1964). An individual may be represented as a multiattribute vector with the components being the separate attributes, that is, $X = (x_1,x_2,x_3...x_n)$. The conjunctive model, which is based on research by Wright (1973) and Einhorn (1970), states that whether an individual surpasses some stimulus or standard $Y = (y_1,y_2,y_3...y_n)$ will depend on x_i being greater than y_i for all i. This may also be thought of as a minimum evaluation function since the individual is evaluated on his minimum ability. The implication of the conjunctive model is that a person must have a certain number of minimum ability on all the attributes. This implies a multiple cutoff procedure rather than a linear compensatory procedure and may be mathematically formulated as:

$$\log(\text{Acceptance}) = w_{sa}\Sigma_i\log(SA_i) + w_{ca}\Sigma_i\log(CA_i) + w_{sb}\Sigma_i\log(SB_i) + w_{sd}\Sigma_i\log(SD_i) \quad (2.4)$$

where w_{sa}, w_{ca}, w_{sb}, and w_{sd} are the weights assigned to these cue types. The highest acceptance occurs when there are equal amounts for the variables (*SA*, *CA*, *SB*, *SD*) so that this approximation approaches a multiple cutoff procedure and hence, there is no allowance for compensation. A mathematical interpretation of this transformation is natural and useful: it equals the percentage of change in the dependent variable associated with a one percent change in the independent variable. The coefficients are in effect estimates of the elasticity of response of a given variable with respect to the dependent variable.

Another possible structure for message acceptance may be formulated as follows:

$$\log(\text{Acceptance}) = w_{sa}\Sigma_i\log(a_i\text{-}SA_i) + w_{ca}\Sigma_i\log(a_i\text{-}CA_i) + w_{sb}\Sigma_i\log(a_i\text{-}SB_i) + w_{sd}\Sigma_i\log(a_i\text{-}SD_i) \quad (2.5)$$

where w_{sa}, w_{ca}, w_{sb}, and w_{sd} are the weights assigned to these cue types and a_i refers to an arbitrary constant greater than largest number of any cognitive response (a_i-1 > *SA*,*CA*,*SB*,*SD*). This type of model, which is based on research by Wright (1973) and Einhorn (1970), is termed a disjunctive model. It is approximated by a hyperbolic response surface which provides that a stimulus object will have a high utility or acceptance if it contains an extremely high score on only one of the following attributes: support argument, counterargument, source derogation, or source bolstering. This function, opposite to the conjunctive model, may be thought of as a maximum evaluation function since the subject is evaluated on his best response, regardless of other attributes. For example, in selecting members for a football team, one might want a player who can kick *or* run *or* pass with a

great deal of skill. Lending this analogy to the present research, message acceptance may be a function of the most favourable cognitive response.

Other non-linear models that may suit message acceptance could take the form of a split indexed disjunctive model, a fully indexed disjunctive model or a parabolic model. The underlying assumption of the split indexed disjunctive model is that support arguments and counterarguments are subtracted from each other to form a message index and similarly, source bolstering and source derogation are also subtracted from one another to form a source index before an overall maximum acceptance level is achieved. The model, which is based on research by Wright (1973) and Einhorn (1970), is mathematically formulated as follows:

$$\log\ (\text{Acceptance}) = w_{saca}\Sigma_i \log(a_i\text{-}(SA_i\text{-}CA_i)) + w_{sbsd}\Sigma_i \log(a_i\text{-}(SB_i\text{-}SD_i)) \qquad (2.6)$$

where w_{saca} and w_{sbsd} are the weights assigned to the indexes and a_i is an arbitrary constant chosen to avoid taking the log of a negative number. A high acceptance level will be achieved if the individual has a high score on either the message index or the source index.

The underlying assumption of the fully indexed disjunctive model is the receiver combines all cue types to arrive at an index that represents the subject's best response, which is the maximum evaluation criteria. The model, which is based on research by Wright (1973) and Einhorn (1970), is mathematically formulated as:

$$\log\ (\text{Acceptance}) = w_{sacasdsb} \log \Sigma_i(a_i\text{-}(SA_i\text{-}CA_i\text{+}SB_i\text{-}SD_i)) \qquad (2.7)$$

where $w_{sacasbsd}$ is the weight assigned to the overall combination of the cues and a_i is an arbitrary constant chosen to avoid taking the log of a negative number.

The underlying assumption of the parabolic model is all four cognitive response types are combined by the receiver in a "parabolic manner" to arrive at message acceptance. Therefore, the variance in acceptance can be explained solely in terms of the squared volume of support argument, counterargument, source bolstering, and source derogation. The model is mathematically formulated as follows:

$$\text{Acceptance} = w_{sa}\Sigma_i SA_i^2 + w_{ca}\Sigma_i CA_i^2 + w_{sb}\Sigma_i SB_i^2 + w_{sd}\Sigma_i SD_i^2 \qquad (2.8)$$

Transformations somewhat confound the conceptualization of the problem, but are indeed understandable. A parabolic model could be hypothesized as increasing or decreasing message acceptance as the square of the individual cognitive responses. For example, if one assumes that the number of counterarguments, source bolsterings, and source derogations are zero for a particular respondent, one would expect for a parabolic model to apply that each increase in support argument results in a squared increase in message acceptance.

Table 2.1 contains the overall summary of all the models and it includes the model number, the functional relationship between cognitive response and message acceptance, the classification, and the name of the model.

2.5 Alternate Message Appeals

In striving to maximize persuasion, advertisers have employed traditional one-sided message appeals, which present positive or supportive product or brand claims, and more sophisticated two-sided message appeals. The latter type of appeal, in addition to presenting positive claims on important attributes, downgrades product performance claims on attributes of minor significance to the consumer to establish credibility without deterring purchase

TABLE 2.1 Functional Summary of Models

Model	Functional Relationship	Classification
1	$A = w(SA - CA - SB - SD)$	Linear: Fully Indexed Compensatory
2	$A = w(SA - CA) - w(SB - SD)$	Linear: Split Indexed Compensatory
3	$A = wSA - wCa - wSB - wSD$	Linear: Straight Compensatory
4	$\log A = w\log SA + w\log CA + w\log SB + w\log SD$	Non-Linear: Conjuctive
5	$\log A = w\log(8-SA) + w\log(8-CA) + w\log(8-SB) + w\log(8-SD)$	Non-Linear: Straight Disjunctive
6	$\log A = w\log(8-(SA-CA)) + w\log(8-(SB-SD))$	Non-Linear: Split Indexed Disjunctive
7	$\log A = w\log(8-(SA-CA+SB-SD))$	Non Linear: Fully Indexed Disjunctive
8	$A = wSA^2 + wCA^2 + wSB^2 - wSD^2$	Non-Linear: Parabolic

Note: A = attitude measure; w = weight attached to that cue type; SA = number of support arguments; CA = number of counter-arguments; SB = number of source bolsterings; SD = number of source derogations.

(Kamins and Assael 1987). In this research, a two-sided non-refutational message format will be used whereby there is no attempt to refute negative product or brand claims within the text of the advertisement.

Two-sided advertisements, in some circumstances, are capable of performing better than one-sided advertisements on several measures of advertising effectiveness such as: positive attitude change (Faison 1961); higher purchase intentions (Golden and Alpert 1987); and enhanced credibility (Settle and Golden 1974). Claim credibility can be enhanced by actually disclaiming superiority of some product features in relation to a competing brand.

Communication researchers have investigated ways to insulate existing customers from outside persuasion and have found that two-sided messages containing both pro and con arguments about the brand serve to inoculate consumers against arguments that may be raised by competitors (Kamins and Assael 1987). In effect, this strategy provides consumers with counterarguments with which to dilute future attacks by competing brands. Inoculation theory will be discussed in the next section.

2.5.1 Reactance and Inoculation Theory

Reactance theory suggests when an individual is free to adopt or reject any of several positions on an attitude issue and is then pressured to adopt a particular position, his freedom is threatened and a motivational state known as psychological reactance is aroused. This state motivates an individual to restore their threatened freedom by resisting the pressure to adopt or by adopting a position at variance with the one recommended. According to reactance theory, a two-sided communication should be more effective than a one-sided communication as long as the receiver is aware that there are plausible positions on both sides of the issue.

Inoculation theory, conceived by McGuire (1964), seeks to explain persuasion resistance and is concerned with making attitudes resistant to change. Cognitions may be strengthened by exposing an audience to mild attacking arguments directed against the protagonist and then countering those negative arguments within the same communication. This approach may help an audience to learn to cope with stronger negative arguments and it may also increase audience involvement and commitment to the positive aspects of the protagonist's position (McGuire 1961). However, a two-sided message which inadequately

refutes the message recipients's counterarguments may actually strengthen the cognitive defense of the message recipient and thus reduce persuasion (Hass and Linder 1972).

A two-sided message appeal provides consumers with counterarguments with which to rationalize against future attacks by competing brands. Research has indicated that two-sided message appeals produce significantly less counterarguing than the one-sided message appeals (Kamins and Marks 1987) and for new brand introduction, yield higher attitude scores (Etgar and Goodwin 1982).

2.5.2 Attribution and Correspondence Theory

Attribution theory seeks to describe the cognitive processes involved when an individual assigns an observable event to its underlying causes (Smith and Hunt 1978). If a message, which may be thought of as an observable event, is attributed to the advertiser's desire to sell the product, then the individual will be uncertain about the actual characteristics of the brand and the amount of counterarguing will increase and the acceptance will decrease. This would result even if the claim were true.

In contrast, an attribution to the actual characteristics of a brand would be expected to lead to higher certainty, increased support arguments, and to a higher acceptance; the theory being that the positive claims are due to their validity rather than the desire of the advertiser to push the product. This is the preferred situation. Research by Settle and Golden (1974) has supported attribution theory but has been criticized so extensively (Burnkrant 1974; Hansen and Scott 1976) that other researchers have turned to a more specific attribution theory; namely correspondence theory (Smith and Hunt 1978).

Correspondence theory, developed by Jones and Davis (1965), is well suited for one and two-sided messages and attempts to explain the conditions under which an individual will attribute either internally (correspondent attribution) or externally (noncorrespondent attribution) to a specific event. A correspondent attribution occurs when an observer attributes an event's causes to the true feeling or disposition of the actor. In contrast, a noncorrespondent attribution occurs when an observer attributes an event to environmental factors. For example, an observer may feel that the actor is being pressured to act in a certain manner and the observer perceives that there is not necessarily any relationship between the actor's behaviour and his true feelings.

Based on the communication stimuli, researchers contend that correspondence theory is concerned primarily with the attribution to the source in the form of either source bolstering or source derogation and support for this has been found in reduced source derogation for two-sided message appeals (Kamins and Assael 1987).

One-sided message appeals are quite traditional in advertising, have a high probability of occurrence, and often lead to noncorrespondent attributions. As a result, the observer is not likely to infer much about the advertiser. Because of the low probability of occurrence and the novelty of two-sided appeals, correspondent attribution may occur and as a result, the observed behaviour is more likely to be attributed to actual dispositions of the advertiser, such as truthfulness or believability. Thus, if a two-sided message appeal results in a correspondent attribution, and if the disposition that is revealed by the consumer's attribution process is truthfulness, then the perceived credibility of the source should be increased (Smith and Hunt 1978). However, sometimes this is not the case.

Belch's (1981) findings on one and two-sided messages presented through TV and print media did not support the conclusion that a two-sided appeal is significantly better at strengthening source credibility. Similarly, Golden and Alpert (1987) found that overall believability, greater quantity of information, and more useful information was not significantly different for two-sided and one-sided ads for two contrasting products: mass transit and deodorant. But, they did find that the two-sided deodorant message produced higher purchase intention relative to the one-sided advertisement.

These results caused researchers to caution the effectiveness of one-sided versus two-sided messages on the basis of target market, the situation and perceptions of competitive options available to receivers of advertising messages, and the product itself. Further, research has pointed out that alternate message appeals may interact with product involvement (Faison 1961; Swanson 1987). Considering the varying conclusions regarding one and two-sided advertising, there may be different functional relationships or weights applied to the cognitive responses in arriving at message acceptance.

2.5.3 Product and Advertisement Involvement

Most consumers, exposed to mass-media communications in an environment cluttered with other stimuli, are typically involved with the editorial matter of the media rather than commercial messages and hence, the tendency to respond cognitively to an advertisement is not great. However, when an individual is presented with an advertisement that is perceived to be relevant to an impending decision, cognitive facilities can be expected to be engaged to critically process the message. Contrasting processes of cue weighting may be the result

of variations in acute involvement with the advertisement, stemming from the receiver's perception of the relevancy of that content to some impending problem (Wright 1973).

Faison (1961) indicates that the relative amount of influence of one-sided and two-sided communications within an advertising framework may be related to the type of product being advertised. In high involvement situations, the impact on attitude of two-sided communications is greater than the impact of one-sided communications (Faison 1961; Settle and Golden 1974; Smith and Hunt 1978; Swanson 1987). Also, involvement with advertisements leads one to give more counterarguments (Wright 1974a) and involvement with products lead to greater perception of attribute differences, perception of greater product importance, and greater commitment to brand choice (Howard and Sheth 1969). When considering involvement, there may be different functional relationships or weights applied to the cognitive responses in arriving at message acceptance.

2.5.4 Disclaimer Importance

When designing a two-sided message appeal, care must be taken with respect to the perceived importance level of the disclaimed attributes. The disclaiming of low importance attributes would have little effect on advertisement appeal or advertiser credibility and the disclaiming of high importance attributes would adversely affect purchase intention. Therefore, moderate importance attributes are typically disclaimed. This approach has been used in other research (Kamins and Assael 1987; Kamins and Marks 1987; Settle and Golden 1974; Smith and Hunt 1978).

2.6 Research Scope

The focus of this research is to define the best functional relationship between message acceptance and cognitive response over alternate message appeals and two different product classes. Highly specific hypotheses were not considered possible given the current state of theory. The scope of this research will be limited to the testing of specific models including: three linear compensatory models, three non-linear disjunctive models, one non-linear conjunctive model, and one parabolic model.

CHAPTER 3: METHODOLOGY

The purpose of this chapter is to discuss the methodology employed in this research. This chapter is divided into seven major sections. The first section discusses the selection of the sample and the second and third sections discuss the experimental design and the product categories used in this research respectively. The fourth section addresses the advertisements used in the study and the fifth section outlines the experimental procedure. The chapter concludes with a discussion of the independent variables in the sixth section and the dependent variables in the seventh section.

3.1 Sample Selection

Data for this study was obtained from 284 undergraduate business students at the University of Windsor in the fall of 1991. To avoid repeated participation in the experiment, subjects were drawn from two introductory marketing classes that consisted primarily of second year students.

3.2 Experimental Design

The experimental design was comprised of four treatment groups. Based on the two types of message appeals and two products, the experimental design was a 2 X 2 and thus, four different one page black and white print advertisements were used in the study. The two

product categories selected were pen and calculator and the two types of appeals were a one-sided message appeal and a two-sided non-refutational message appeal.

3.3 Product Categories

As previously mentioned, the two product categories that were selected for this study are pen and calculator. They were chosen because they satisfied several research criteria that includes relevance to a student population, non-gender specific, ease of evaluation in a brief period of time, and different levels of product involvement.

Advertisements for functionally utilitarian products receive higher attitude scores than those for socially utilitarian products (Etgar and Goodwin 1982) and advertisements for low-involvement products produce a greater change in attitude than advertisements for high-involvement products (Faison 1961). Both products are easily identified as functionally utilitarian but only the pen is a low-involvement product. Pens have been successfully used in past studies (Kamins and Assael 1987; Kamins and Marks 1987; Olson, Toy and Dover 1978). The calculator, identified as a high involvement product (Zaichkowsky 1985), was specifically chosen instead of another low-involvement product, such as a ruler, to compare and replicate functional relationships over different products with different levels of involvement.

Product involvement was measured for the pen and calculator products to determine if the products were perceived to have a different involvement level with the subjects. Different functional relationships between message acceptance and cognitive response may occur between products with distinct levels of subject involvement.

Zaichkowsky's (1985) seven-point bipolar adjective involvement scale was employed to determine if the two products, pen and calculator, were perceived by the subjects as having different levels of involvement. The scale successfully meets standards for internal reliability, reliability over time, content validity, criterion-related validity, and construct validity.

To avoid any preconception biases to the study, brand names for the two products were chosen for the advertisements that were unknown to the sample. A preliminary study to determine brand familiarity, which was measured on a seven-point interval scale with endpoints "not at all familiar" and "extremely familiar", was conducted on 20 University of Windsor MBA students. Table 3.1 exhibits the mean brand familiarity of various pen and calculator brands and the questionnaire that was used to collect the data can be found in Appendix B.

Table 3.1 Mean Brand Familiarity Ratings

Pens	μ
Bic	6.60
Papermate	5.53
Parker	5.46
Cross	5.18
Sheaffer	4.86
Faber-Castel	4.06
Pentel	3.53
Uni-Point	3.06

Calculators	μ
Texas Instruments	6.33
Sharp	5.93
Hewlett Packard	5.40
Casio	3.20
Brother	2.40
Caltronix	1.60
Selectric	1.46

Note: Ratings were collected on a seven-point scale; 7 = extremely familiar, 1 = not at all familiar.

A foreign pen, designated the "PENTEL" pen and not available in the immediate area that the sample resides and a fictitious calculator, designated the "CALTRONIX" calculator, proved to be unfamiliar to the sample and thus were used in this study. Similarly, to minimize the effects of preconception bias, other researchers have avoided established brand names in their studies (Kamins and Marks, 1987; Golden and Alpert, 1987; and Smith and Hunt, 1978).

3.4 Advertisements

Based on the two types of message appeals and the two products, four different one page black and white print advertisements were used in the study. Two mock "PENTEL" pen ads, developed by Gauthier (1989), and two mock "CALTRONIX" calculator ads, developed specifically for this research, all contained a similar layout and wording.

The attributes used in the pen advertisements were selected from a previous study. Gauthier (1989) sampled 30 students on twenty-three pen attributes, which were selected from a review of pen advertisements and studies that used a pen as the focal product (Anderson 1973; Kamins and Marks 1987; Olson, Toy and Dover 1978; Settle and Golden 1974), to determine their importance level. Two high importance attributes, two moderate importance attributes and two low importance attributes, selected on the basis of mean and low variance, were paired and isolated from the 23 attribute list. A t test (α=.05) was then employed to ensure that the high attributes were significantly similar in mean, the moderate attributes were significantly similar in mean and the low attributes were significantly similar in mean. The t test was also employed to assure that the 3 chosen pairs were statistically

different in mean (i.e. the high pair was significantly different from the low and moderate pairs, etc.). Consistency of ink flow and writing performance were chosen as high importance attributes, quality of construction and writes at any angle were chosen as moderate importance attributes, and appearance and colours available were chosen as low importance attributes. Table 3.2 exhibits the mean importance for pen attributes.

TABLE 3.2 Mean Importance of Pen Attributes

Attribute	μ	σ	
Consistency of Ink Flow	6.23	0.82	*
Writing Performance	6.03	0.88	*
Quality of Construction	4.97	1.38	**
Writes at any Angle	4.93	1.84	**
Appearance	3.30	1.60	***
Colors Available	3.27	1.74	***

Note: Ratings were collected on a seven-point scale; 7 = extremely important, 1 = not at all important; * high importance attributes,** moderate importance attributes,*** low importance attributes. Source: Gauthier (1989).

To determine the six attributes that were to be used in the calculator advertisements, 25 calculator attributes were selected from actual advertisements and by examining several calculators. A second preliminary study to determine the importance level of calculator attributes was conducted at the University of Windsor involving 29 MBA students, none of whom participated in the main experiment. Each attribute was measured on a seven-point equally appearing interval scale with endpoints "not at all important" and "extremely important." Table 3.3 exhibits the mean importance rating for the evaluated calculator attributes and Appendix C contains the questionnaire used in this second preliminary study.

Pairwise t tests (α=.05) were used to ensure that respondents perceived the two high importance attributes, for example, as similar in mean rating, yet significantly different from

the moderate and low importance attributes. The same procedure was used to determine both the moderate and low importance attributes. Table 3.4 exhibits the *t* test results.

TABLE 3.3 Mean Importance of Calculator Attributes

Q#	Attribute	μ	σ	
3	Reliability	6.310	1.289	*
12	Value for money	6.034	0.889	*
5	Durability	5.931	1.284	
4	Price	5.379	1.270	
14	Quality of construction	5.379	1.243	
19	User friendly	5.310	1.533	
15	High degree of functions	5.206	1.214	
2	Brand Name	4.931	1.337	
9	Warrantee	4.793	1.647	
6	Pocket size	4.655	1.468	
16	High tech	4.586	1.520	
7	Battery powered	4.517	1.694	
1	State of the art	4.482	1.610	
10	Weight	4.448	1.610	**
25	Large buttons	4.413	1.273	**
13	Style	4.413	1.218	
20	Large memory	4.379	1.540	
17	Comfort in holding	4.310	1.487	
8	Programmable	4.206	2.040	
24	Liquid quartz display	4.103	1.863	
11	Appearance	4.000	1.313	
18	Solar powered	3.758	1.694	
22	Dot matrix display	2.862	1.634	***
21	Printing capabilities	2.758	1.793	***
23	Reverse Polish notation	2.241	1.523	

Note: Ratings were collected on a seven-point scale; 7 = extremely important, 1 = not at all important. * high importance attributes, ** moderate importance attributes, *** low importance attributes.

Table 3.4 *t* Tests for Calculator Attributes

Ho: $\mu 1 - \mu 2 = 0$ $\alpha = .05$
H1: $\mu 1 - \mu 2 \neq 0$

22,21	t=0.23***	10,25	t=0.09**	3,12	t=0.94*
22,25	t=4.05	25,3	t=5.63	3,10	t=4.86
22,12	t=8.81	10,21	t=3.78	3,22	t=8.92
22,10	t=3.72	10,12	t=4.64	3,21	t=8.66
25,21	t=4.05	25,12	t=5.62	12,21	t=8.82

Note: Ratings were collected on a seven-point scale; 7 = extremely important, 1 = not at all important. * high importance attributes, ** moderate importance attributes, *** low importance attributes.

Based on the results of the *t* tests, reliability and value for money were selected as high importance attributes, weight and large buttons were selected as moderate importance attributes, and a dot matrix display and printing capabilities were selected as low importance attributes.

One pen advertisement and one calculator advertisement were one-sided and hence, reported all six attributes positively. The other two advertisements, a two-sided pen advertisement and a two-sided calculator advertisement, both contained six attributes and disclaimed the two of moderate importance. Golden and Alpert (1978) found that two-sided print advertisements with six attributes rated the highest in terms of copy likability. Moderate importance attributes were chosen to be disclaimed because the disclaiming of low importance attributes would have no effect on advertisement appeal or advertiser credibility and the disclaiming of high importance attributes would adversely affect purchase intention, be an unnatural occurrence, and reduce the external validity of this research. This approach has been used by other researchers (Kamins and Marks 1987; Kamins and Assael 1987; Settle and Golden 1974; Smith and Hunt 1978). Appendix D contains the alternate message appeals and each of the four test advertisements.

3.5 Experimental Procedure

A pretest conducted on 8 MBA students at the University of Windsor failed to bring forth any difficulties either in the instrument or the experimental procedure. None of the candidates used in the pretest were used in the actual experiment.

The experiment was administered on a Tuesday evening to 65 undergraduate introductory marketing students and on a Thursday morning to 219 undergraduate introductory marketing students. The Tuesday class was not informed that the same experiment would be performed on the Thursday class, however, after the experiment, they were informed that they would receive debriefing at the next class meeting.

Both classes received identical verbal instructions which were minimized to avoid a test-like atmosphere that could distort responses and reduce validity. Subjects were initially told that the author is conducting a study regarding a number of products a student might use, that participation is voluntary, and that envelopes containing questionnaires will be distributed but should not be opened at this time.

Four questionnaires, which related to the four advertisement and had been previously placed in envelopes, were then distributed throughout the class in the following order: one-sided pen ad, two-sided pen ad, one-sided calculator ad, two-sided calculator ad. The questionnaire can be found in Appendix E. The envelopes were pre-arranged in order so the participants would not realize they were receiving one of four different questionnaires.

After distributing the envelopes, participants were then asked to remove the consent form and only the consent form from their envelope and "take a few minutes to read it." To meet University of Windsor regulations, the consent form that was placed in each envelope informed the subjects that participation in this research was voluntary, all questions need not be answered, identification was not necessary, and the completion and returning of the questionnaire constituted consent to participate. The subjects were then told if they did not wish to participate they should remain idle for a few minutes.

Participants were then asked to remove page one, which consisted of Zaichkowsky's (1985) 20-item involvement scale to measure respondents involvement with either a calculator or a pen and a six-item question that evaluated the importance of the six calculator or pen attributes that were used in the ads. The six-item question served as a manipulation check to ensure that attribute importance evaluations did not differ significantly between subjects in the main experiment and those in the preliminary study. Once this was completed the subjects were told to put page number one back into the envelope and remove page two and read it.

Page two consisted of the test advertisement. After exactly one minute, subjects were asked to put page two back into the envelope and take out page three which consisted of an open-ended question whereby cognitive responses were collected in a manner similar to Wright (1973). The questionnaire asked subjects to list each thought that occurred to them as they were reading the advertisement, to ignore spelling, punctuation, and grammar, and to list all responses on a separate line. To reduce the possibility of subjects generating thoughts in response to the protocol task itself, subjects were given just three minutes in which to record their cognitive responses. This protected the validity of the measure. The essential idea is to allow sufficient time for complete recording of the honestly spontaneous thoughts, while both reducing the probability of listing purely reactive thoughts (Wright 1973) and to avoid the occurrence of thought recording. At the end of the three minute time period subjects were asked to place page three back into the envelope and remove pages four and five.

Pages four and five consisted of a variety of items designed to measure the cognitive and affective components of the subject's attitude toward the advertisement, behavioral intention (the conative component of the tricomponent attitude model), the subject's attitude toward the product, the subject's sex, and the amount the subject was willing to pay for the product. After completing these pages, the subjects were told to put them back into their envelope. All envelopes were then collected and the subjects were thanked for their participation.

3.6 Independent Variables

This study involved the use of four independent variables: the number of support arguments, the number of counterarguments, the number of source derogations, and the number of source bolsterings. These four independent variables are the spontaneous cognitive responses measured after reading the advertisement. Curiosity and non-classifiable statements were discarded.

All the cognitive response categories were defined by Wright (1973) except for source bolstering, which was defined by Belch (1981). As previously mentioned, operational definitions for these variables can be found in Appendix A.

Three qualified judges coded the cognitive responses independently and similarly to the approach used by Belch (1981). The judges were provided with the operational definitions of the cognitive responses and were thoroughly coached on the coding of responses. Similar to Belch (1981), unanimous and 2 of 3 agreements constituted acceptance of that cognition. Unanimous agreement was reached on 84.6% of the classifiable cognitions,

with 2 of 3 agreeing on 14.3% of the cognitions for an agreement of 98.9%. The cognitions that were totally disagreed upon (1.1%) were not used in the study. Non-classifiable cognitions accounted for 19% of the usable responses, thus the coding convention resulted in the coding of 81% of the usable responses.

3.7 Dependent Variables

This study involves the use of four dependent variables for advertising message acceptance: the cognitive component of the subject's attitude toward the advertisement, the affective component of the subject's attitude toward the advertisement, the subject's attitude toward the product, and the subject's behavioral intention (the conative component of the tricomponent attitude model).

3.7.1 Message Acceptance

A multiple-item scale was employed to measure message acceptance which was defined as the attitude the subject had towards the advertisement and towards the product advertised. Items were selected to tap the cognitive, conative, and affective components of attitude based on previous research (Baker and Churchill 1977; Okechuku and Wang 1988).

Six items were employed to measure the cognitive component of the subject's attitude toward the advertisement. The items were: believable, informative, clear, not offensive, tasteful, and truthful. Similarly, another six items were employed to measure the affective component of the subject's attitude toward the advertisement. These items were: interesting,

appealing, pleasant, impressive, persuasive, effective, and likeable. Each of the twelve items was measured on a 7-point bi-polar adjective scale.

Lastly, the conative component was measured by asking subjects to indicate the extent to which they would buy the product or seek it out. A final item was used to determine respondent's "overall reaction" to the advertisement. The conative items and the overall reaction were each measured on a 7-point semantic differential scale. All the items that were put in the questionnaire in reverse order were reverse scored prior to data analysis.

A factor analysis was completed on the cognitive and affective components of the attitude toward the advertisement. The purpose of a factor analysis, a popular interdependence technique, concerns the identification of the constructs that underlie the observed variables. SPSSX was employed to perform the factor analysis on the data which was split by product.

The factor analysis was executed by forcing the data for each product into either one of two factors which would correspond to the cognitive and affective constructs. Factor loadings above .5 were assumed to be significant for this sample size and a varimax rotation was employed to "clean up" the factor loadings. Table 3.5 contains the data for the rotated Pentel Pen factor matrix.

Factors one and two were identified as the affective component and cognitive component of attitude respectively. Examining the variables that loaded on to the affective component suggests that there is a problem. It was expected that the informative and clear items would have loaded on the cognitive component instead of the affective component. Fortunately though, the clear item is insignificant and the informative item is close to .5.

TABLE 3.5 Rotated Factor Matrix for the Pentel Pen

		Factor 1	Factor 2
	Appealing	.848	
	Persuasive	.834	
	Impressive	.834	
	Interesting	.810	
	Effective	.805	
	Likeable	.772	
	Pleasant	.708	
*	Informative	.562	
*	Clear		
	Not Offensive		.778
	Truthful		.656
	Believable		.634
	Tasteful		.562

Note: * indicates improper loading.

These variables will be discussed in the reliability analysis section. All variables that loaded on the cognitive factor were measures of cognition.

Table 3.6 contains the data for the rotated Caltronix Calculator factor matrix. Factor 1 and factor 2 were identified as the affective component and cognitive component of attitude toward the advertisement respectively. Examining the variables that loaded on to the affective component and the cognitive component suggests that everything is proper. All variables loaded as was expected. The variables that loaded unexpectedly on the affective component for the Pentel Pen loaded properly for the Caltronix Calculator.

A reliability analysis to determine the internal consistency of the items measuring the two constructs was undertaken using Cronbach's coefficient alpha in each product class. The initial stage of the reliability analysis was done on the variables the way they loaded in Table 3.5, the rotated Pentel Pen factor matrix. For the Pentel Pen, the cognitive construct had α=.5431 and the affective construct had α=.9023. However, the affective construct could

TABLE 3.6 Rotated Factor Matrix for the Caltronix Calculator

	Factor 1	Factor 2
Appealing	.838	
Interesting	.837	
Effective	.810	
Impressive	.791	
Persuasive	.763	
Likeable	.712	
Pleasant	.628	
Believable		.718
Not Offensive		.617
Tasteful		.577
Clear		.562
Truthful		.536
Informative		***

Note: *** indicates factor loading < 0.5 .

return α=.9038 if the cognitive item informative was deleted and α=.9083 if the cognitive item clear was removed from the affective variable list.

For the Caltronix Calculator, the cognitive construct had α=.5946 and the affective construct had α=.8868. However, the affective construct could return α=.8945 if the cognitive item clear was removed from the affective variable list in Table 3.5. The fact that internal consistency could be increased for the affective component for both products led to the notion that a reliability analysis using Cronbach's alpha should be undertaken again with the cognitive items that loaded into the Pentel Pen's affective construct forced into their proper construct.

A separate reliability analysis was completed for the two products based on the interesting, appealing, pleasant, impressive, persuasive, effective and likeable items underlying the affective construct and the believable, informative, clear, not offensive, tasteful, and truthful items underlying the cognitive construct. In three of four cases, the

internal consistency of the items underlying the construct increased. For the Pentel Pen, the cognitive component had α=.5777 (+.0346) and the affective component had α=.9142 (+.0119) and for the Caltronix Calculator, the cognitive component had α=.6869 (+.0923) and the affective component had α=.8996 (-.0128) but this could be increased to .9022 if the pleasant item was deleted.

This was done and the final list of variables for the affective construct were interesting, appealing, impressive, persuasive, effective and likeable and had α=.9107 for the Pentel Pen and α=.9022 for the Caltronix Calculator. The final list of items underlying the cognitive construct are: believable, informative, clear, not offensive, tasteful, and truthful, and had α=.5777 for the Pentel Pen and α=.6869 for the Caltronix Calculator.

The internal consistency of the items underlying the cognitive constructs for the two products are lower than expected and the internal consistency of the items underlying the affective components of both products are high and indicate a very reliable measure. The items that underlie each construct for both products were then averaged to obtain an overall measure for the dependent variable.

In a similar fashion, the attitude toward the product was analyzed using Cronbach's reliability coefficient alpha. The six item scale of good, good performance, likeable, distinctive, risky, and reliable had α=.8191 for the Caltronix Calculator and α=.8581 for the Pentel Pen. The removal of the risky item from the list of items further increased α to .8555 (+.0364) for the Caltronix Calculator and to .8824 (+.0243) for the Pentel Pen indicating another reliable measure. The items that were left were then averaged to obtain

an overall measure of attitude toward the product. The final reliability analysis can be found in Appendix F.

The conative component was calculated by averaging two questions that indicated purchase intention. The purpose of the following chapter is to analyze the findings of this research using the above mentioned methodology.

CHAPTER 4: DATA ANALYSIS AND RESULTS

The purpose of this chapter is to analyze the data that was collected for this research and discuss the results. This chapter is divided into eight sections. The first section discusses product involvement, the second section focuses on two manipulation checks, the third section addresses multi-collinearity, the fourth section provides a summary of the independent variables or cognitive responses and the fifth section discusses the dependent variables. The sixth section examines amount willing to pay, the seventh section discusses the results of eight different functional relationships between message acceptance and cognitive response, and the eighth section summarizes the functional relationships.

4.1 Product Involvement

As previously mentioned, Zaichkowsky's (1985) involvement scale was used to measure involvement with the product. The mean involvement for the product class calculator was 110.81 (σ=15.99) and for the product class pen was 91.01 (σ=20.41). Applying Zaichkowsky's (1985) distribution, the calculator was found to be classified as a fringe high involvement product and the pen a moderate involvement product. Zaichkowsky (1985) found the mean involvement for calculators to be 112. The distribution that Zaichkowsky (1985) compiled has an upper quartile of beginning at 111 and a sample mean of 90.

4.2 Manipulation Checks

Two manipulation checks were performed to assess the validity of the attribute importance levels. The first manipulation check was performed between the preliminary studies on the mean importance of pen (Table 3.2) and calculator attributes (Table 3.3) and the main experiment. The main experiment data was collected in question two on the questionnaire (Appendix E) where the subjects were asked to indicate how important they felt the six attributes were in the purchase of their respective product. Table 4.1 exhibits the mean importance ratings for the two products across the samples.

TABLE 4.1 Product Attribute Importance Variation

		Preliminary Test		Main Experiment	
Product	Attribute	μ	σ	μ	σ
Pen:	Consistency of Ink Flow	6.59	0.62 H	6.11	1.41 H
	Writing Performance	6.39	0.97 H	5.94	1.41 H
	Quality of Construction	5.39	1.19 M	4.99	1.49 M
	Writes at any Angle	4.76	1.70 M	4.45	2.00 M
	Appearance	3.87	1.49 L	4.10	1.76 L
	Colours Available	3.39	1.58 L	3.88	1.86 L
Calculator:	Reliability	6.31	1.29 H	6.46	1.04 H
	Value for money	6.03	0.89 H	6.04	1.14 H
	Weight	4.45	1.61 M	4.29	1.58 M
	Large button	4.41	1.27 M	3.84	1.69 M
	Dot matrix display	2.86	1.63 L	3.91	1.83 M
	Printing capabilities	2.76	1.79 L	3.42	1.83 L

Note: Ratings were collected on a seven-point scale; 7 = extremely important, 1 = not at all important. H = high importance attributes, M = moderate importance attributes, L = low importance attributes. Preliminary Test Data for the Pentel Pen from Gauthier (1989).

The subjects in the main experiment rated the pen in accordance with and in the same order as the preliminary test information. In other words, all levels of importance were found similar across the two independent studies.

For the calculator, the high importance attributes were indeed high importance attributes, and the medium importance attributes were medium importance attributes. Surprisingly, but insignificant for this research, a dot matrix display proved to be a moderate importance attribute in the main experiment instead of a low importance attribute as found in the preliminary study. A *t* test was performed on the main experiment result and the moderate importance attributes large buttons and dot matrix display proved to have significantly similar means. Fortunately though, this will not have any impact on the validity of the study. Had the moderate importance attributes that had been disclaimed proved to be high importance attributes, the study may have been in jeopardy for the calculator product.

A second manipulation check was performed on the data that was collected in question 6 after exposure to the advertisement to determine if subjects perceived the performance of the product in a consistent manner with the way it was presented. Subjects were asked to indicate how they felt their respective product, either the Pentel Pen or the Caltronix Calculator, would perform on the various attributes. If the manipulation was effective, it would require that respondents assign a relatively high score to attributes reported positively and a relatively low score to the disclaimed attributes.

Table 4.2 contains the results for the *t* test procedure which revealed that for both products, the disclaimed attributes were manipulated properly. In other words, the respondents felt that the disclaimed product attributes performed significantly poorer ($p=.000$). Unexplainably, the subjects who were exposed to the two-sided pen ad significantly perceived the product to perform more poorly on writing performance than those who were exposed to the one-sided ad ($p=.000$).

TABLE 4.2 Disclaimed Attribute Importance Variation and *t* Test Results

Product		Attribute	μ_1	μ_2	*t* value	prob.
Pen	H	Writing Performance	5.63	4.61	4.49	.000 *
	L	Appearance	4.65	4.61	.14	.889
D	M	Quality of Construction	4.90	3.36	6.53	.000 *
	H	Consistency of Ink Flow	5.62	5.21	1.74	.084
	L	Colours Available	5.73	5.57	.70	.487
D	M	Writes at any Angle	5.59	2.36	13.08	.000 *
Calc.	H	Reliability of Ink Flow	4.98	4.87	.42	.675
	L	Printing Capabilities	4.43	4.74	-1.48	.141
D	M	Weight	4.95	3.07	7.00	.000 *
	H	Value for Money	4.43	3.36	-0.98	.329
	L	Dot Matrix Display	4.88	4.68	-0.75	.457
D	M	Large Buttons	5.29	3.01	7.99	.000 *

Note: Ratings were collected on a seven-point scale; 7 = extremely important, 1 = not at all important; D = disclaimed attributes, H = high importance attributes, M = moderate importance attributes L = low importance attributes, μ_1 = mean 1 sided sd, μ_2 = mean 2 sided sd, * = reject Ho: $\mu_1 = \mu_2$.

4.3 Multi-collinearity

Before a regression analysis was undertaken, a correlation coefficient matrix was constructed to address multi-collinearity. The correlation matrix, which can be found in Table 4.3, strongly indicates that multi-collinearity will not confound any regression attempts.

TABLE 4.3 Correlation Matrix for the Independent Variables

	SA	CA	SB	SD
SA	1.00			
CA	-.17**	1.00		
SB	-.04	-.17**	1.00	
SD	-.31**	-.07	-.09	1.00

Note: SA = Support Arguments; CA = Counterarguments; SB = Source Bolstering; SD = Source Derogation; C = Curiosity Statements; NC = Non-classifiable Statements; * = $p < .05$; ** = $p < .01$.

4.4 Summary of All Cognitive Response Types

Table 4.4 presents a summary of the means and standard deviations of all cognitive responses elicited by the respondents from the two types of products and two message appeals. Surprisingly, and contrasting to inoculation theory and previous research (Kamins and Marks 1987), the mean number of counterarguments increased significantly (t=3.51, p=.001) for the pen from the one-sided ad to the two-sided ad. This may be due to several reasons: (1) the two-sided ad may have been very novel to the subjects and therefore they may have become involved more with the advertisement and this may have lead to more counterarguments (Wright 1974a); and (2) the non-refutational ads may have led to strengthened cognitive defenses and hence increased counterarguments (Hass and Linder 1972).

Support argument decreased for the calculator from the one-sided ad to the two-sided ad (t=2.36, p=.02). This illustrates that the subjects tended to respond more favourably to the one-sided advertisement and possibly did not appreciate the means or the honesty used by the advertiser in the two-sided ad.

TABLE 4.4 Summary of Mean Number of Cognitive Responses

	PEN 1-SIDED		PEN 2-SIDED		CALC. 1-SIDED		CALC. 2-SIDED	
	μ	σ	μ	σ	μ	σ	μ	σ
SA	1.15	1.33	.76	1.15	1.08	1.45	.57	1.13
CA	.49	.88	1.13	1.24	1.08	1.28	1.29	1.40
SB	.56	.82	.45	.69	.24	.66	.28	.73
SD	.51	1.01	.76	1.20	.85	1.32	1.22	1.39

Note: SA=Support Arguments; CA=Counterarguments; SB=Source Bolsterings; SD=Source Derogations.

The overall average of 4.51 cognitive responses per subject is quite consistent with this type of time limited study. Other studies have achieved responses per subject ranging from 2.94 to 10. The higher response per subject studies tend to have longer time limits and more extensive copy which generates more cognitive responses (Olson, Toy, and Dover, 1978).

4.5 Summary of Dependent Variables

The dependent variables are summarized by product class and appeal type in Table 4.5. It is interesting to note that affective acceptance (t=2.49, p=.014), conative acceptance (t=2.82, p=.006), and attitude toward the brand (t=5.26, p=.000) for the pen and cognitive acceptance (t=2.03, p=.044) and attitude toward the brand (t=2.30, p=.023) for the calculator exhibit a significantly higher attitudinal acceptance of the one-sided ad. This may be due to the non-refutational advertisement used in this research and it indicates a failure in providing support for the superiority of the two-sided appeal. Other research has supported this result (Belch 1981; Golden and Alpert 1987).

TABLE 4.5 Summary of Dependent Variable Means

	PEN 1-SIDED		PEN 2-SIDED		CALC. 1-SIDED		CALC. 2-SIDED	
	μ	σ	μ	σ	μ	σ	μ	σ
COG	5.38	.78	5.16	.91	5.19	.94	4.85	1.04
AFF	4.09	1.37	3.51	1.44	3.54	1.33	3.20	1.37
PI	3.67	1.53	2.93	1.63	2.87	1.59	2.61	1.54
ATB	5.02	1.02	3.96	1.35	4.28	1.30	3.80	1.17

Note: Ratings were averaged from seven-point scales; 7=high, 1=low; COG=Cognitive Responses; AFF=Affective Responses; PI=Conative or Purchase Intention; ATB=Attitude Toward the Brand.

4.6 Amount Willing to Pay

The amount a subject was willing to pay for their respective product was collected on an open ended question and the results summarized in Table 4.6. It can be seen that the amount the respondent would be willing to pay decreased significantly for the two-sided pen ad (t=2.18, p=.031) but not for the two-sided calculator ad.

TABLE 4.6 Summary of Amount Willing to Pay

PEN 1-SIDED		PEN 2-SIDED		CALC. 1-SIDED		CALC. 2-SIDED	
μ	σ	μ	σ	μ	σ	μ	σ
2.76	2.23	1.93	2.26	31.45	25.71	25.01	22.20

4.7 Model Results

Eight models in all were tested to determine the best functional relationship between message acceptance and cognitive response. The three linear models tested were a fully indexed compensatory model, a split indexed compensatory model, and a straight compensatory model. The five non-linear models tested consisted of a non-linear conjunctive model, a non-linear straight disjunctive model, a non-linear split indexed disjunctive model, a non-linear fully indexed disjunctive model, and a parabolic model. The following subsections outline each model.

4.7.1 Model 1: Fully Indexed Compensatory

The underlying assumption of the fully indexed compensatory model is all cognitive responses are equally weighed by the receiver to arrive at message acceptance. The model

is mathematically formulated as:

$$\text{Acceptance} = w_{\text{acceptb}} \Sigma_i (SA_i - CA_i + SB_i - SD_i) \qquad (2.1)$$

where w_{acceptb} is the weight assigned to the overall combination of the cues. Table 4.7.1 contains the results for this model.

TABLE 4.7.1 Model 1 Fully Indexed Compensatory Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED	p
.073	COG = .102 (SA-CA+SB-SD) + 5.29	.0127
.337	AFF = .356 (SA-CA+SB-SD) + 3.86	.0000
.166	PI = .286 (SA-CA+SB-SD) + 3.49	.0002
.172	ATB = .193 (SA-CA+SB-SD) + 4.90	.0002

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED	p
.055	COG = .099 (SA-CA+SB-SD) + 5.22	.0273
.406	AFF = .386 (SA-CA+SB-SD) + 3.76	.0000
.211	PI = .319 (SA-CA+SB-SD) + 3.14	.0000
.331	ATB = .328 (SA-CA+SB-SD) + 4.18	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: ONE-SIDED	p
.191	COG = .153 (SA-CA+SB-SD) + 5.28	.0001
.235	AFF = .237 (SA-CA+SB-SD) + 3.68	.0000
.334	PI = .336 (SA-CA+SB-SD) + 3.09	.0000
.217	ATB = .225 (SA-CA+SB-SD) + 4.41	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: TWO-SIDED	p
.085	COG = .121 (SA-CA+SB-SD) + 5.05	.0085
.329	AFF = .295 (SA-CA+SB-SD) + 3.69	.0000
.216	PI = .283 (SA-CA+SB-SD) + 3.11	.0000
.310	ATB = .246 (SA-CA+SB-SD) + 4.21	.0000

Note: COG = Cognitive attitude component; AFF = Affective attitude component; PI = Purchase intention or conative attitude component; ATB = Attitude Toward the Brand; R^2 is the adjusted R^2

For this model, the weight attached to the overall index indicates the emphasis the respondent places on this type of index mediating message acceptance. An examination of the adjusted R^2 reveals results comparable to Wright's (1973) print mode results for soybean derivative products. For example, Wright (1973) achieved an R^2 of .33 for believability, .21 for likeability, and .25 for purchase intention when using this type of functional relationship.

This research attained an R^2 for the one-sided calculator ad of .19 for cognitive acceptance, .23 for affective acceptance, and .33 for purchase intention. Although different cognitive structure measures and different products were used, the R^2 values in both studies provide an indication of the order of magnitude of the relationship between cognitive responses and the various measures of advertising acceptance.

4.7.2 Model 2: Split Indexed Compensatory

The receiver may critically analyze information in a general linear framework whereby the message directed thoughts and source directed thoughts are indexed before weights are assigned. This model is mathematically formulated as follows:

$$\text{Acceptance} = w_{saca}\Sigma_i(SA_i\text{-}CA_i) + w_{sbsd}\Sigma_i(SB_i\text{-}SD_i) \qquad (2.2)$$

where w_{saca} and w_{sbsd} are the weights assigned to the respective indexed cues. These weights may be either positive or negative, and as seen from the results in Table 4.7.2, the coefficients in all cases were positive.

4.7.2.1 The Cognitive Component

For the cognitive component of the pen ads and for the two-sided calculator ad, the source index was significant. For the one-sided calculator ad, the cognitive component is a function of the message and source index with the latter having a larger weight. This model indicates that the subject's beliefs were associated with source factors rather than message factors.

TABLE 4.7.2 Model 2 Split Indexed Compensatory Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED						p
.070	COG =	0	NSACA +	.165	NSBSD +	5.36	.0212
.394	AFF =	.208	NSACA +	.581	NSBSD +	3.94	.0000
.122	PI =	.340	NSACA +	0	NSBSD +	3.47	.0016
.199	ATB =	.358	NSACA +	0	NSBSD +	5.01	.0000

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED						p
.046	COG =	.0	NSACA +	.156	NSBSD +	5.21	.0389
.407	AFF =	.331	NSACA +	.465	NSBSD +	3.77	.0000
.211	PI =	.441	NSACA +	0	NSBSD +	3.09	.0000
.323	ATB =	.350	NSACA +	.297	NSBSD +	4.18	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: ONE-SIDED						p
.197	COG =	.115	NSACA +	.220	NSBSD +	5.32	.0002
.247	AFF =	.176	NSACA +	.347	NSBSD +	3.74	.0000
.328	PI =	.364	NSACA +	.282	NSBSD +	3.05	.0000
.212	ATB =	.289	NSACA +	0	NSBSD +	4.28	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: TWO-SIDED						p
.134	COG =	0	NSACA +	.244	NSBSD +	5.07	.0012
.337	AFF =	.232	NSACA +	.384	NSBSD +	3.72	.0000
.209	PI =	.323	NSACA +	.233	NSBSD +	3.10	.0002
.313	ATB =	.201	NSACA +	.311	NSBSD +	4.23	.0016

Note: COG = Cognitive attitude component; AFF = Affective attitude component; PI = Purchase intention or conative attitude component; ATB = Attitude Toward the Brand; NSACA = (SA-CA); NSBSD = (SB-SD); R^2 is the adjusted R^2.

4.7.2.2 The Affective Component

The affective component was mediated in all cases by both the message and source index with consistently larger weights placed on the latter. This indicates that the subject's overall liking of the ad is based primarily on source factors and to a lesser extent on message factors.

4.7.2.3 The Conative Component

Purchase intention is mediated by the message index for the pen ads and on both the message and source index for the calculator ads. The larger weights in this latter case were

placed on the message index. Thus, purchase intention appears to be primarily a function of message factors, as would be expected.

4.7.2.4 Attitude Toward the Brand

The one-sided pen ad and the one-sided calculator ad were mediated by the message index while the two-sided ads were mediated by both the message and source index. This indicates that the subjects place some importance on source factors in the two-sided ads; either positively or negatively in arriving at an attitude toward the brand.

4.7.3 Model 3: Straight Compensatory

The underlying assumption of the compensatory model is all four cognitive response types are combined by the receiver linearly to arrive at message acceptance, and therefore the variance in acceptance can be explained solely in terms of the volume of support arguments, counterarguments, source bolstering, and source derogation. The model is mathematically formulated as follows:

$$\text{Acceptance} = w_{sa}\Sigma_i SA_i + w_{ca}\Sigma_i CA_i + w_{sb}\Sigma_i SB_i + w_{sd}\Sigma_i SD_i \qquad (2.3)$$

where w_{sa}, w_{ca}, w_{sb}, and w_{sd} are the weights assigned by the regression analysis to these cue types. The relationship should take the form of positive coefficients for support argument and source bolstering and negative coefficients for source derogation and counterargument. This should be the case because an increase in support argument or source bolstering should increase message acceptance and similarly, an increase in counterargument or source

derogation should reduce message acceptance. As exhibited in the results of Table 4.7.3, in all cases the coefficients had the expected sign.

TABLE 4.7.3 Model 3 Straight Compensatory Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED										p
.079	COG =	0	SA +	0	CA +	.110	SB +	0	SD +	5.21	.0100
.398	AFF =	0	SA -	.413	CA +	.65	SB -	.599	SD +	0	.0000
.112	PI =	.305	SA -	.407	CA +	0	SB +	0	SD +	3.55	.0065
.194	ATB =	0	SA +	0	CA +	.281	SB -	.410	SD +	5.09	.0002

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED										p
0	COG =	0	SA +	0	CA +	0	SB +	0	SD +	4.25	
.412	AFF =	.535	SA +	0	CA +	.416	SB -	.408	SD +	3.43	.0000
.205	PI =	.479	SA -	.409	CA +	0	SB +	0	SD +	3.02	.0002
.279	ATB =	.396	SA -	.332	CA +	0	SB -	.272	SD +	4.24	.0000

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: ONE-SIDED										p
.263	COG =	.223	SA +	0	CA +	0	SB -	.226	SD +	5.14	.0000
.231	AFF =	.356	SA +	0	CA +	.728	SB +	0	SD +	2.97	.0000
.384	PI =	.470	SA -	.294	CA +	.989	SB +	0	SD +	2.47	.0000
.257	ATB =	.295	SA -	.284	CA +	.503	SB +	0	SD +	4.14	.0002

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: TWO-SIDED										p
.093	COG =	0	SA +	0	CA +	0	SB -	.245	SD +	5.14	.0062
.305	AFF =	.377	SA +	0	CA +	.486	SB -	.309	SD +	3.22	.0000
.168	PI =	.546	SA +	0	CA +	.523	SB +	0	SD +	2.18	.0010
.277	ATB =	0	SA -	.290	CA +	0	SB -	.409	SD +	4.67	.0000

Note: COG = Cognitive attitude component; AFF = Affective attitude component; PI = Purchase intention or conative attitude component; ATB = Attitude Toward the Brand; R^2 is the adjusted R^2.

4.7.3.1 The Cognitive Component

For the one-sided pen ad, the cognitive component is a function of source bolstering. There was no relationship between the cognitive component of the two-sided pen ad and cognitive response. For the one-sided calculator ad, the cognitive component is a function of support argument and source derogation, while the cognitive component for the two-sided calculator ad is a function of source derogation.

4.7.3.2 The Affective Component

For the one-sided pen ad, the affective component of attitude toward the advertisement is a function of counterarguing, source derogation, and source bolstering. The affective component of the two-sided pen ad was a function of support argument, source bolstering and source derogation. For the one-sided calculator ad, the affective component is a function of support arguing and source bolstering and for the two-sided calculator ad, the affective component is a function of support arguing, source bolstering, and source derogation. In all cases except the two-sided pen ad, the weight attached to the source bolstering variable had the most influence and in the case of the two-sided pen ad, the weight attached to source bolstering was the second largest. This suggests that source factors are very important in determining the overall attitude towards the ad.

4.7.3.3 The Conative Component

Purchase intention was mediated most heavily by support arguments and counterarguments for the pen ads and by support arguments and source bolstering as well as some counterarguing for the calculator ads.

4.7.3.4 Attitude Toward the Brand

All four of the treatment groups had different sets of mediators for attitude toward the brand. Source derogation appears in three of four functional relationships indicating that it is a relatively important mediator of brand attitude for this model.

4.7.4 Model 4: Conjunctive

The underlying assumption of the conjunctive model is all four cognitive response types are combined for maximum acceptance when there are equal amounts for the independent variables so that this approximation approaches a multiple cutoff procedure and hence, there is no allowance for compensation. The model is mathematically formulated as follows:

$$\log(\text{Acceptance}) = w_{sa}\Sigma_i\log(SA_i) + w_{ca}\Sigma_i\log(CA_i) + w_{sb}\Sigma_i\log(SB_i) + w_{cd}\Sigma_i\log(SD_i) \quad (2.4)$$

where w_{sa}, w_{ca}, w_{sb}, and w_{cd} are the weights assigned to these cue types. A problem with this type of model occurs when a cognitive response is zero because the log of zero is undefined. For this model, any zero response was approximated as .0001 .

A mathematical interpretation of this transformation is natural and useful: it equals the percentage of change in the dependent variable associated with a 1 percent change in the independent variable. The coefficients are in effect estimates of the elasticity of response of a given variable with respect to the dependent variable.

The relationship for the weights should take the form of positive coefficients for the log of support argument and source bolstering and negative coefficients for the log of source derogation and counterargument. As can be seen from the results in Table 4.7.4, the coefficients in all cases had the expected sign.

4.7.4.1 The Cognitive Component

The cognitive component for all of the four treatment groups was characterized by different weights on different mediators and there was no pattern present except for the fact

that the weight attached to the log of counterargument was zero in each case. The log of the source directed cognitive responses proved more substantial in the mediating of the respondent's beliefs.

TABLE 4.7.4 Model 4 Conjunctive Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED										p
.140	LCOG =	.008	LSA +	0	LCA +	.009	LSB +	0	LSD +	.761	.0022
.399	LAFF =	0	LSA -	.026	LCA +	.031	LSB -	.039	LSD +	.470	.0000
.145	LPI =	.031	LSA -	.036	LCA +	0	LSB -	0	LSD +	.460	.0018
.149	LATB =	0	LSA +	0	LCA +	0	LSB -	.022	LSD +	.626	.0005

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED										p
	LCOG =	0	LSA +	0	LCA +	0	LSB +	0	LSD +	0	
.294	LAFF =	.048	LSA +	0	LCA +	.028	LSB +	0	LSD +	.685	.0000
.136	LPI =	.041	LSA +	0	LCA +	.033	LSB +	0	LSD +	.572	.0025
.181	LATB =	.029	LSA +	0	LCA +	.027	LSB +	0	LSD +	.705	.0004

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: ONE-SIDED										p
.263	LCOG =	.013	LSA +	0	LCA +	0	LSB -	.013	LSD +	.703	.0000
.132	LAFF =	0	LSA +	0	LCA +	.031	LSB -	.026	LSD +	.558	.0030
.182	LPI =	0	LSA -	.042	LCA +	.053	LSB +	0	LSD +	.504	.0005
	LATB =	0	LSA +	0	LCA +	0	LSB +	0	LSD +	0	

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: TWO-SIDED										p
.195	LCOG =	0	LSA +	0	LCA +	.013	LSB -	.019	LSD +	.688	.0003
.288	LAFF =	0	LSA -	.030	LCA +	0	LSB -	.042	LSD +	.356	.0000
.172	LPI =	.045	LSA -	.036	LCA +	0	LSB +	0	LSD +	.419	.0009
.193	LATB =	.019	LSA -	.016	LCA +	0	LSB -	.018	LSD +	.558	.0007

Note: LCOG = log of cognitive attitude component; LAFF = log of affective attitude component; LPI = log of purchase intention or the conative attitude component; LATB = log of attitude toward the brand; LSA = log(SA); LCA = log(CA); LSB = log(SB); LSD = log(SD); R^2 is the adjusted R^2.

4.7.4.2 The Affective Component

The affective component in all cases was also characterized by different weights on different mediators and there was no pattern present. However, it appears that source factors tend to be a strong mediator of the affective component.

4.7.4.3 The Conative Component

The log of source derogation had no mediating effect in any of the cases for purchase intention. The results were characterized by heavy weighting of support arguing for both pen ads and the two-sided calculator ad. The one-sided calculator ad was mediated most heavily by source bolstering instead of support argument.

4.7.4.4 Attitude Toward the Brand

Again, there appears to be no particular pattern of relationship between the logs of the cognitive responses and attitude toward the brand. Each case used a different set of mediators as well as a different set of weights. The weight attached to counterargument did decrease for the two-sided calculator ad while the weight attached to source derogation increased. The weight attached to source derogation decreased and the weight attached to support argument increased for the two-sided pen ad compared to the one-sided pen ad.

4.7.5 Model 5: Straight Disjunctive

The straight disjunctive model posits that a message will have a high acceptance or rejection if it contains an extremely high score on only one of the following attributes: support arguments, counterarguments, source derogation, and source bolstering. This function may be thought of as a maximum evaluation function, since the subject is evaluated on his best response, and is mathematically formulated as follows:

$$\log(\text{Acceptance}) = w_{sa}\Sigma_i \log(a_i - SA_i) + w_{ca}\Sigma_i \log(a_i - CA_i) + w_{sb}\Sigma_i \log(a_i - SB_i) + w_{sd}\Sigma_i \log(a_i - SD_i) \quad (2.5$$

where w_{sa}, w_{ca}, w_{sb}, and w_{sd} are the weights assigned to these cue types and a_i refers to an arbitrary constant greater than largest number of any cognitive response (a_i-1 > SA,CA,SB,SD). For this model and for subsequent models, a_i was chosen to be 8.

The relationship for the weights should take the form of positive coefficients for the log of support argument and source bolstering and negative coefficients for the log of source derogation and counterargument. As can be seen from the results in Table 4.7.5, the signs of the coefficients were contrary to what was expected in all cases. This would indicate that

TABLE 4.7.5 Model 5 Straight Disjunctive Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED					p
.069	LCOG = 0	LESA + 0	LECA + 0	LESB + .368	LESD + 1.04	.0151
.413	LAFF = 0	LESA + .880	LECA - 1.10	LESB + 1.21	LESD - .274	.0000
.114	LPI =-.529	LESA + 1.18	LECA + 0	LESB + 0	LESD - .087	.0059
.192	LATB = 0	LESA + 0	LECA - .421	LESB + .616	LESD + .522	.0003

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED					p
.041	LCOG = 0	LESA + 0	LECA + 0	LESB + .196	LESD + .538	.0492
.381	LAFF =-.836	LESA + 0	LECA - 1.04	LESB + .847	LESD + 1.41	.0000
.192	LPI =-.832	LESA + 1.11	LECA + 0	LESB + 0	LESD + .177	.0003
.271	LATB = .571	LESA + .621	LECA - .866	LESB + .452	LESD + .912	.0000

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: ONE-SIDED					p
.214	LCOG =-.223	LESA + 0	LECA + 0	LESB + .239	LESD + .690	.0001
.200	LAFF =-.416	LESA + 0	LECA - 1.22	LESB + .440	LESD + 1.57	.0004
.265	LPI =-.796	LESA +.550	LECA - 2.18	LESB + 0	LESD + 2.53	.0000
.212	LATB =-.355	LESA +.419	LECA - .788	LESB + 0	LESD + 1.25	.0003

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: TWO-SIDED					p
.061	LCOG = 0	LESA + 0	LECA +	LESB + .257	LESD + .463	.0221
.228	LAFF =-.587	LESA + 0	LECA + .486	LESB + .684	LESD + .409	.0001
.077	LPI =-1.06	LESA + 0	LECA + 0	LESB + 0	LESD + 1.26	.0127
.268	LATB = 0	LESA +.426	LECA + 0	LESB + .683	LESD - .351	.0000

Note: LCOG = log of cognitive attitude component; LAFF = log of affective attitude component; LPI = log of purchase intention or the conative attitude component; LATB = log of attitude toward the brand; LESA = log(8-SA); LECA = log(8-CA); LESB = log(8-SB); LESD = log(8-SD); R^2 is the adjusted R^2.

as the amount of counterarguments and source derogations increase, the dependent variable (message acceptance) decreases. Similarly as support argument and source bolstering increase, the dependent variable or message acceptance increases. There is no further need to analyze the disjunctive model. The maximum evaluation criterion, as stipulated by the straight disjunctive model, does not operate with cognitive responses mediating message acceptance.

4.7.6 Model 6: Split Indexed Disjunctive

The underlying assumption of the split indexed disjunctive model is that support arguments and counterarguments are subtracted from one another to form a message index and similarly, source bolstering and source derogation are also subtracted from one another to form a source index before an overall maximum acceptance level is achieved. A high acceptance level will be achieved if the individual has a high score on either the message index or the source index. The model is mathematically formulated as follows:

$$\log(\text{Acceptance}) = w_{saca}\Sigma_i \log(a_i-(SA_i-CA_i)) + w_{sbsd}\Sigma_i \log(a_i-(SB_i-SD_i)) \qquad (2.6)$$

where w_{saca} and w_{sbsd} are the weights assigned to the respective indexes and a_i is an arbitrary constant chosen so that $a_i-1 > (SA_i-CA_i)$ and $a_i-1 > (SB_i-SD_i)$. For this research, $a_i=8$. The weights assigned to the indexes may be either positive or negative, and as can be seen from the results in Table 4.7.6, all coefficient signs are negative.

4.7.6.1 The Cognitive Component

For the cognitive component of the pen ads and for the two-sided calculator ad, the

source index was the primary mediator. Both the message index and the source index mediated the cognitive component for the one-sided calculator advertisement. This indicates that the subject's beliefs were associated with the source factors rather than the message factors.

TABLE 4.7.6 Model 6 Split Indexed Disjunctive Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED					p
.064	LCOG =	0	LESACA -	.273	LESBSD + .96	.0183
.376	LAFF =	-.356	LESACA -	1.38	LESBSD + 2.13	.0000
.100	LPI =	-.756	LESACA +	0	LESBSD + 1.15	.0040
.180	LATB =	0	LESACA -	.649	LESBSD + 1.27	.0002

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED					p
.050	LCOG =	0	LESACA -	.284	LESBSD + .96	.0331
.374	LAFF =	-.628	LESACA -	1.40	LESBSD + 2.35	.0000
.174	LPI =	-1.10	LESACA +	0	LESBSD + 1.39	.0002
.260	LATB =	-.650	LESACA -	.801	LESBSD + 1.89	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: ONE-SIDED					p
.179	LCOG =	-.161	LESACA -	.355	LESBSD + 1.18	.0005
.204	LAFF =	-.319	LESACA -	.948	LESBSD + 1.67	.0002
.236	LPI =	-.747	LESACA -	.889	LESBSD + 1.87	.0001
.160	LATB =	-.440	LESACA -	0	LESBSD + .99	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: TWO-SIDED					p
.109	LCOG =	0	LESACA -	.399	LESBSD + 1.05	.0032
.287	LAFF =	-.530	LESACA -	.937	LESBSD + 1.83	.0000
.172	LPI =	-.873	LESACA -	.670	LESBSD + 1.79	.0009
.244	LATB =	-.386	LESACA -	.625	LESBSD + 1.50	.0000

Note: LCOG = log of Cognitive attitude component; LAFF = log of Affective attitude component; LPI = log of Purchase intention or conative attitude component; LATB = log of Attitude Toward the Brand; LESACA = log (8-(SA-CA)); LESBSD = log (8-(SB-SD)); R^2 is the adjusted R^2.

4.7.6.2 The Affective Component

The overall attitude toward the ad was mediated in all cases by both indexes with consistently larger weights placed on the source index. This indicates that the subject's

overall favourability of the ad is mediated more strongly by source factors than message factors.

4.7.6.3 The Conative Component

Purchase intention is mediated by the message index for the pen ads and by both the message index and the source index for the calculator ads. In the case of the calculator ads, the larger weights were placed on the message index. Thus, purchase intention appears to be primarily a function of message factors, as would be expected.

4.7.6.4 Attitude Toward the Brand

The one-sided pen ad and the one-sided calculator ad were mediated by the message index while the two-sided ads were mediated by both indexes. This indicates that source factors and message factors appear important in the meditating of two-sided ads.

4.7.7 Model 7: Fully Indexed Disjunctive

The underlying assumption of the fully indexed disjunctive model is the receiver combines all cue types and this index represents the subject's best response, which is the maximum evaluation criteria. The model is mathematically formulated as:

$$\log (\text{Acceptance}) = w_{sacasdsb} \log \Sigma_i(a_i-(SA_i-CA_i+SB_i-SD_i)) \qquad (2.7)$$

where $w_{sacasbsd}$ is the weight assigned to the overall combination of the cues and a_i is an arbitrary constant chosen to be 8 for this research. Table 4.7.7 contains the results for this model.

TABLE 4.7.7 Model 7 Fully Indexed Disjunctive Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED					p
.065	LCOG	=-.113	log(8-(SA-CA+SB-SD))	+	.83	.0177
.281	LAFF	=-.652	log(8-(SA-CA+SB-SD))	+	1.13	.0000
.124	LPI	=-.625	log(8-(SA-CA+SB-SD))	+	1.03	.0015
.139	LATB	=-.280	log(8-(SA-CA+SB-SD))	+	.92	.0000

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED					p
	LCOG	= 0	log(8-(SA-CA+SB-SD))	+	0	
.312	LAFF	=-.794	log(8-(SA-CA+SB-SD))	+	1.23	.0000
.194	LPI	=-.839	log(8-(SA-CA+SB-SD))	+	1.16	.0001
.157	LATB	=-.625	log(8-(SA-CA+SB-SD))	+	1.14	.0000

R^2	PRODUCT: CALC ADVERTISEMENT: ONE-SIDED					p
.167	LCOG	=-.212	log(8-(SA-CA+SB-SD))	+	.90	.0002
.167	LAFF	=-.481	log(8-(SA-CA+SB-SD))	+	.94	.0002
.250	LPI	=-.790	log(8-(SA-CA+SB-SD))	+	1.10	.0000
.174	LATB	=-.381	log(8-(SA-CA+SB-SD))	+	.95	.0002

R^2	PRODUCT: CALC ADVERTISEMENT: TWO-SIDED					p
.071	LCOG	=-.193	log(8-(SA-CA+SB-SD))	+	.86	.0118
.275	LAFF	=-.679	log(8-(SA-CA+SB-SD))	+	1.11	.0000
.180	LPI	=-.783	log(8-(SA-CA+SB-SD))	+	1.10	.0002
.237	LATB	=-.471	log(8-(SA-CA+SB-SD))	+	1.01	.0000

Note: LCOG = log of Cognitive attitude component; LAFF = log of Affective attitude component; LPI = log of Purchase intention or conative attitude component; LATB = log of Attitude Toward the Brand; R^2 is the adjusted R^2.

As previously mentioned with this type of index, the weight attached to the index is not meaningful when attempting to draw conclusions regarding cognitive response and message acceptance. It is impossible to isolate message or source factors.

4.7.8 Model 8: Parabolic

The underlying assumption of the parabolic model is all four cognitive response types are combined by the receiver parabolically to arrive at message acceptance, and therefore the variance in acceptance can be explained solely in terms of the squared amount of support

argument, counterargument, source bolstering, and source derogation. The model is mathematically formulated as follows:

$$\text{Acceptance} = w_a\Sigma_i SA_i^2 + w_a\Sigma_i CA_i^2 + w_b\Sigma_i SB_i^2 + w_d\Sigma_i SD_i^2 \qquad (2.8)$$

Although slightly more complicated to understand, this transformation indicates that the message acceptance increases or decreases along a parabolically represented structure. The coefficients should be positive for support argument and source bolstering and negative for source derogation and counterargument. As seen in table 4.7.8, this was indeed the case.

TABLE 4.7.8 Model 8 Parabolic Regression Results

R^2	PRODUCT: PEN ADVERTISEMENT: ONE-SIDED					p
	COG = 0	SA^2 + 0	CA^2 + 0	SB^2 + 0	SD^2 + 0	
.340	AFF = 0	SA^2 - .144	CA^2 + .222	SB^2 - .185	SD^2 + 4.27	.0000
	PI = 0	SA^2 + 0	CA^2 + 0	SB^2 + 0	SD^2 + 0	
.184	ATB = 0	SA^2 + 0	CA^2 + .119	SB^2 - .129	SD^2 + 5.08	.0008

R^2	PRODUCT: PEN ADVERTISEMENT: TWO-SIDED					p
.047	COG = 0	SA^2 + 0	CA^2 + 0	SB^2 - .043	SD^2 + 5.24	.0000
.287	AFF = .117	SA^2 + 0	CA^2 + 0	SB^2 - .101	SD^2 + 3.48	.0000
.167	PI = .094	SA^2 - .126	CA^2 + 0	SB^2 + 0	SD^2 + 3.10	.0007
.245	ATB = .092	SA^2 - .103	CA^2 + 0	SB^2 - .063	SD^2 + 4.20	.0001

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: ONE-SIDED					p
.179	COG = .045	SA^2 + 0	CA^2 + 0	SB^2 - .045	SD^2 + 0	.0000
.172	AFF = .070	SA^2 + 0	CA^2 + .255	SB^2 + 0	SD^2 + 3.18	.0006
.280	PI = .112	SA^2 + 0	CA^2 + .405	SB^2 + 0	SD^2 + 2.34	.0000
.153	ATB = .058	SA^2 - .061	CA^2 + 0	SB^2 + 0	SD^2 + 4.26	.0013

R^2	PRODUCT: CALCULATOR ADVERTISEMENT: TWO-SIDED					p
.050	COG = 0	SA^2 + 0	CA^2 + 0	SB^2 - .045	SD^2 + 0	.0062
.247	AFF = .092	SA^2 + 0	CA^2 + .105	SB^2 - .067	SD^2 + 3.21	.0001
.100	PI = .139	SA^2 + 0	CA^2 + .116	SB^2 + 0	SD^2 + 2.36	.0028
.239	ATB = 0	SA^2 - .054	CA^2 + 0	SB^2 - .094	SD^2 + 4.31	.0000

Note: COG = Cognitive attitude component; AFF = Affective attitude component; PI = Purchase intention or conative attitude component; ATB = Attitude Toward the Brand; R^2 is the adjusted R^2.

4.7.8.1 The Cognitive Component

The cognitive component was mediated primarily by source derogation. In the case

of the one-sided calculator advertisement, support argument mediated equally with source derogation but in the opposite direction. In general, the source derogation proved the most significant across all cases for mediating cognitive message acceptance.

4.7.8.2 The Affective Component

The affective component was not characterized by any response pattern. All weights were placed on different variables and each function used different variables. However, in three of four cases source bolstering was the most important factor, and in the two-sided pen ad, support argument was the most important. It appears that the overall acceptance of the ad for this model is mediated most heavily by source factors.

4.7.8.3 The Conative Component

Purchase intention was mediated by support argument and counterargument for the calculator ads and by support argument and source derogation for the two-sided pen ad. There was no relationship for the one-sided pen ad.

4.7.8.4 Attitude Toward the Brand

Attitude toward the brand was mediated by the source factors for the one-sided pen ad and by the message factors for the two-sided pen ad. The one-sided calculator ad was mediated also by message factors while the two-sided calculator ad was mediated by counterargument and source derogation. There appears to be no specific pattern of relationship for this construct.

4.8 Summary of Models

It could be hypothesized that subjects could become more involved with the two-sided advertisements and this would cause an increase in explained variance. It could also be hypothesized that since the calculator is a higher involvement product, that explained variance would be much higher. Upon examining the adjusted R^2 for all the models with respect to one-sided versus two-sided advertisements and the product classes pen versus calculator suggest that there is no support for these hypotheses as 56% of the adjusted R^2 for two-sided ads were greater and 53% of the adjusted R^2 were greater for the high involvement product calculator.

Table 4.8 contains the overall summary of all the models and it includes the model number, the functional relationship between cognitive response and message acceptance, the classification, and the name of the model.

4.8.1 Selecting the Best Models

To select the best overall model for both products and message appeals, it was necessary to perform pairwise *t* tests on the explained variance for every attitude component for each product and message appeal across every model. To simplify the procedure, only the models with the highest explained variance were compared.

For the one-sided pen advertisement, the cognitive component of model 4 ($R^2=.140$) had a significantly better explained variance than model 3 ($R^2=.079$) ($p=.01$). Hence, model 4 was chosen as the best model in terms of explained variance for the cognitive component of the one-sided pen advertisement.

TABLE 4.8 Functional Summary of Models

Model	Functional Relationship	Classification
1	$A = w(SA-CA+SB-SD)$	Linear: Fully Indexed Compensatory
2	$A = w(SA-CA)+w(SB-SD)$	Linear: Split Indexed Compensatory
3	$A = wSA+wCa+wSB+wSD$	Linear: Straight Compensatory
4	$\log A = w\log SA + w\log CA + w\log SB + w\log SD$	Non-Linear: Conjuctive
5	$\log A = w\log(8-SA) + w\log(8-CA) + w\log(8-SB) + w\log(8-SD)$	Non-Linear: Straight Disjunctive
6	$\log A = w\log(8-(SA-CA)) + w\log(8-(SB-SD))$	Non-Linear: Split Indexed Disjunctive
7	$\log A = w\log(8-(SA-CA+SB-SD))$	Non Linear: Fully Indexed Disjunctive
8	$A = wSA^2+wCA^2+wSB^2+wSD^2$	Non-Linear: Parabolic

Note: A = attitude measure; w = weight attached to that cue type; SA = number of support arguments; CA = number of counterarguments; SB = number of source bolsterings; SD = number of source derogations.

Similarly, for the affective component of the one-sided pen advertisement, models 2 (R^2=.394) and 3 (R^2=.398) were significantly similar in explained variance (p=.53), as well as were models 3 and 4 (R^2=.399) (p=.13). Models 2 and 4 were also significantly similar in mean for this component (p=.11). Thus, models 2, 3, and 4 were chosen as the best models for this component. Tables 4.8.1 to 4.8.4 show the rival models for each criterion variable for each product and each appeal type, as well as pairwise *t* tests of the rival models.

TABLE 4.8.1 One-Sided Pen Ad: Best Models

Criterion	Rival Models	*t* Prob	Model Chosen
COG	M4(R^2=.140), M3(R^2=.079)	.01	M4
AFF	M2(R^2=.394), M3(R^2=.398) M2(R^2=.394), M4(R^2=.399) M3(R^2=.394), M4(R^2=.399)	.53 .11 .13	M2,M3 M2,M4 M3,M4
PI	M1(R^2=.166), M4(R^2=.145)	.02	M1
ATB	M2(R^2=.199), M3(R^2=.194)	.08	M2,M3

Note: COG = cognitive acceptance, AFF = affective acceptance; PI = purchase intention, ATB = attitude toward the brand.

TABLE 4.8.2 Two-Sided Pen Ad: Best Models

Criterion	Rival Models	*t* Prob	Model Chosen
COG	M1(R^2=.055), M2(R^2=.046) M1(R^2=.055), M8(R^2=.047) M2(R^2=.046), M8(R^2=.047)	.57 .77 .97	M1,M2 M1,M8 M2,M8
AFF	M1(R^2=.406), M2(R^2=.407) M1(R^2=.406), M3(R^2=.412) M2(R^2=.407), M3(R^2=.412)	.67 .44 .55	M1,M2 M1,M3 M2,M3
PI	M1(R^2=.211), M2(R^2=.211) M1(R^2=.211), M3(R^2=.205) M2(R^2=.211), M3(R^2=.205)	.92 .88 .72	M1,M2 M1,M3 M2,M3
ATB	M1(R^2=.331), M2(R^2=.323)	.81	M1,M2

Note: COG = cognitive acceptance; AFF = affective acceptance; PI = purchase intention; ATB = attitude toward the brand.

TABLE 4.8.3 One-Sided Calculator Ad: Best Models

Criterion	Rival Models	*t* Prob	Model Chosen
COG	M3(R^2=.263), M4(R^2=.263)	.75	M3,M4
AFF	M1(R^2=.235), M2(R^2=.247) M1(R^2=.235), M3(R^2=.231) M2(R^2=.235), M3(R^2=.231)	.38 .80 .73	M1,M2 M1,M3 M2,M3
PI	M3(R^2=.384), M2(R^2=.334)	.07	M2,M3
ATB	M3(R^2=.257), M1(R^2=.217)	.01	M3

Note: COG = cognitive acceptance; AFF = affective acceptance; PI = purchase intention; ATB = attitude toward the brand.

TABLE 4.8.4 Two-Sided Calculator Ad: Best Models

Criterion	Rival Models	z Prob	Model Chosen
COG	M4(R^2=.195), M2(R^2=.134)	.00	M4
AFF	M1(R^2=.329), M2(R^2=.337)	.49	M1,M2
	M1(R^2=.329), M3(R^2=.305)	.95	M1,M3
	M2(R^2=.337), M3(R^2=.305)	.40	M2,M3
PI	M1(R^2=.216), M2(R^2=.209)	.42	M1,M2
ATB	M1(R^2=.310), M2(R^2=.313)	.50	M1,M2
	M1(R^2=.310), M3(R^2=.277)	.70	M1,M3
	M2(R^2=.313), M3(R^2=.277)	.48	M2,M3

Note: COG = cognitive acceptance, AFF = affective acceptance, PI = purchase intention, ATB = attitude toward the brand

Table 4.8.5 summarizes the previous four tables and also exhibits the most robust models selected for each product category and appeal type. For example, models 2, 3, and 4 were selected as the most robust for the one-sided pen advertisement. The models were selected using a frequency criteria. In other words, the model or models that appeared the most were selected to best define the functional relationship between message acceptance and cognitive response.

TABLE 4.8.5 Summary: Best Models

Criterion	Pen: One-Sided	Pen: Two-Sided	Calculator: One-Sided	Calculator Two-Sided
COG	M4	M1,M2,M8	M3,M4	M4
AFF	M2,M3,M4	M1,M2,M3	M1,M2,M3	M1,M2,M3
PI	M1	M1,M2,M3	M2,M3	M1,M2
ATB	M2,M3	M1,M2	M3	M1,M2,M3
Selected:	M2,M3,M4	M1,M2	M3	M1,M2,M3

Note: COG = cognitive acceptance; AFF = affective acceptance; PI = purchase intention; ATB = attitude toward the brand.

4.8.2 Best Models: One-Sided Pen Ad

The best models in terms of explanatory power for the one-sided pen advertisement are models 2, 3, and 4. Model 2 (split indexed compensatory) implies that for a one-sided moderate involvement product, a source index mediates the cognitive component of attitude toward the ad. This indicates that the subject's beliefs were associated with source factors rather than message factors. The affective component was mediated by both the message and source index with consistently larger weights placed on the latter. This indicates that the subject's overall liking of the ad is based primarily on source factors and to a lesser extent on message factors. Purchase intention is mediated by the message index. Thus, purchase intention appears to be primarily a function of message factors, as would be expected. The message index also fully mediated attitude toward the brand.

Model 3 (straight compensatory) implies for a one-sided moderate involvement product, source bolstering fully mediates the cognitive component. The affective component of attitude toward the advertisement is a function of counterarguing, source derogation, and source bolstering. In this case, the weight attached to the source bolstering variable had the most influence. This suggests that source factors are very important in determining the overall attitude towards the ad. Purchase intention was mediated most heavily by message factors. Attitude toward the brand is fully mediated by the source factors.

Model 4 (conjunctive) implies that for a one-sided moderate involvement product, source bolstering fully mediates the cognitive component of attitude toward the ad. The affective component is mediated heavily by source derogation, less heavily by source bolstering, and the least by counterargument. Purchase intention is a function of the

approximately equally weighted variables support argument and counterargument and attitude toward the brand is a function of source derogation. It appears that source factors have a strong mediating impact upon affect but when behaviour is considered, the message factors become important.

4.8.3 Best Models: Two-Sided Pen Ad

The best model in terms of explanatory power for the two-sided pen ad are models 1 and 2. Model 1 (fully indexed compensatory) implies that for a two-sided moderate involvement product, the combination of all cognitive responses fully mediates all four attitude measures.

Model 2 (split indexed compensatory) implies that for a two-sided moderate involvement product, the source factors fully mediate the cognitive component of attitude toward the ad. The affective component is mediated by both the source and message factors. Purchase intention is mediated fully by the message factors and attitude toward the brand is mediated most heavily by the message factors and somewhat less heavily by the source factors. It appears that the source factors are important in determining beliefs and that purchase intention is based solely on the message factors.

4.8.4 Best Models: One-Sided Calculator Ad

The best model in terms of explanatory power for the one-sided calculator ad appears to be model 3. Model 3 (straight compensatory) implies that for a one-sided high involvement product, support argument and source derogation fully mediate the cognitive

component of attitude toward the ad. The affective component is mediated heavily by support argument and source bolstering. Purchase intention is mediated by support argument, counterargument, and most heavily by source bolstering. The attitude toward the brand is a function of the same mediators as purchase intention. It appears that the source-directed thoughts are not as important for a higher involvement product compared to the moderate involvement product as indicated by the shifting of weights to message directed responses.

4.8.5 Best Models: Two-Sided Calculator Ad

The best model in terms of explanatory power for the two-sided calculator ad are models 1, 2, and 3. Model 1 (fully indexed compensatory) implies that for a two-sided high involvement product, the combination of all cognitive responses fully mediates all four attitude measures.

Model 2 (split indexed compensatory) implies that for a two-sided ad of a high involvement product, the source directed thoughts mediate the cognitive component of attitude toward the ad. The affective component is more heavily mediated by the source factors than the message factors. Purchase intention is mediated by both the message factors and the source factors. Attitude toward the brand is mediated less heavily by the message factors and somewhat more heavily by the source factors. It appears that the overall means used by the advertiser is important in moderating beliefs and that purchase intention is moderated more heavily by message factors.

Model 3 (straight compensatory) implies for two-sided high involvement product, source derogation fully mediates the cognitive component of attitude toward the ad. The

affective component is a function of support arguing, source bolstering, and source derogation. The weight attached to the source bolstering variable had the most influence and this suggests that source factors are very important in determining the overall attitude towards the ad. Purchase intention was mediated most heavily by support arguments and source bolstering as well as counterarguing. Both counterarguing and source derogation mediated attitude towards the brand.

4.8.6 Overall Best Model Summary

To summarize, message acceptance for the one-sided pen ad is best explained by model 2 (linear: split indexed compensatory), model 3 (linear: straight compensatory), and model 4 (non-linear: non-compensatory conjunctive model.) It appears that consumers combine their cognitive responses in three methods: (1) in an indexing procedure whereby source factors are combined and message factors are combined before an overall acceptance is achieved; (2) in a straight linear compensatory procedure whereby all factors have different weights and are combined to arrive at message acceptance; and (3) in a non-linear cutoff procedure whereby there is no compensation.

Message acceptance for the two-sided pen ad is best explained linearly by model 1, the fully indexed compensatory model, and model 2, the split indexed compensatory model. Consumers either combine each cognitive response with a uniform weight or the message factors and source factors are addressed separately and then combined to arrive at message acceptance.

Message acceptance for the one-sided calculator ad is best explained linearly by model 3, the straight compensatory model. Consumers weigh each cognitive response separately and then simply combine all their cognitive responses in an additive fashion to arrive at message acceptance.

The two-sided calculator ad was best explained by model 1 (linear: fully indexed compensatory), model 2 (linear: split indexed compensatory), and model 3 (linear: straight compensatory). It appears that consumers combine their cognitive responses in three methods: (1) in a straight compensatory procedure whereby all cognitive responses have uniform weights; (2) in an indexing procedure whereby source factors are combined and message factors are combined before an overall acceptance is achieved; and (3) in a straight linear compensatory procedure whereby all factors have different weights and are combined to arrive at message acceptance.

In general, it is evident that linear models are indeed the most robust models for mediating cognitive response and message acceptance. They are superior in ease of understanding and also explanatory power. If it was necessary to select a model for both product categories and appeal types, model 2 would be the most appropriate choice. It is a robust model, has high explanatory power in most circumstances, and by attaching a weight to each index, it provides an understandable insight into the processes that mediate cognitive response and message acceptance. In other words, it is simple to isolate the impact of message factors from source factors when observing the relationship between cognitive response and message acceptance.

CHAPTER 5: SUMMARY, IMPLICATIONS, AND FUTURE RESEARCH

This final chapter is divided into three sections: summary, implications, and future research. The first section summarizes the findings of the research and the second section discusses implications of the research. The last section outlines the limitations of this study and areas for future research.

5.1 Summary

This study sought to develop functional relationships between message acceptance and cognitive responses for alternate message appeals and two different product classes: a pen and a calculator. Highly specific hypotheses were not considered possible given the current state of theory. The scope of this research was limited to the testing of specific models including: three compensatory linear models, one non-linear conjunctive model, three non-linear disjunctive models, and one non-linear parabolic model. The tricomponent attitude model and attitude toward the brand were employed as measures of message acceptance.

The study found that message acceptance for the one-sided pen ad is best explained by model 2, the split indexed compensatory model, model 3, the straight compensatory model, and model 4, the conjuctive model. The two-sided pen ad is best explained by model 1, the fully indexed compensatory model, and model 2, the split indexed compensatory model. Message acceptance for the one-sided calculator ad is best explained by model 3, the straight compensatory model. For the two-sided calculator ad, message acceptance is best

explained by model 1, the fully indexed compensatory model, model 2, the split indexed compensatory model, and model 3, the straight compensatory model. Overall, model 2, the split indexed compensatory model was the most robust model and proved uncomplicated to understand.

Although the main objective of the study was to find the best functional form of message acceptance, several conclusions were formed based on one-sided and two-sided advertisements and on product category. The two-sided pen ad was found to evoke more counterarguing, indicating that it was not as well received. This is most likely due to the non-refutational format used in this study. Similarly, the two-sided calculator ad was found to evoke less support arguing.

The dependent variables reinforced the notion that the two-sided ads were not well received as the affective acceptance and attitude toward the brand for the pen and the cognitive acceptance and attitude toward the brand measures for the calculator decreased for the two-sided ads. The amount the subjects were willing to pay decreased significantly for the subjects exposed to the two-sided pen ad.

Many functionally different models were equally able to explain message acceptance as a function of cognitive response. This may in fact be due to a lack of variability in the independent measures which had means typically less than one with standard deviations of approximately one.

The cognitive responses demonstrated various degrees of intensity. For example, one respondent's source derogation response to a two-sided calculator ad was "the calculator in the picture looked old." Another respondent's source derogation response to the same ad was

"this is the worst ad I have ever seen." The two responses, although totally different in intensity, both rated a one when counting the responses. To capture response intensity, subjects could be asked to rate the intensity of their response on a 7-point equal interval scale. Previous research has indicated a moderate improvement in explanatory power when only a three-point intensity scale was used (Wright 1973).

The adjusted R^2 reveals results comparable to Wright's (1973) print mode results for soybean derivative products. For example, Wright (1973) achieved an R^2 of .33 for believability, .21 for likeability, and .25 for purchase intention. This research attained an R^2 for the one-sided calculator ad of .19 for cognitive acceptance, .23 for affective acceptance, and .33 for purchase intention. Although different cognitive structure measures and different products were used, the R^2 values in both studies provide an indication of the order of magnitude of the relationship between cognitive responses and the various measures of advertising acceptance.

5.2 Implications

The implications of this study lie in consumer persuasion. In general, it appears that to increase purchase intention, message factors are important, and to increase cognitive acceptance, source factors are important. Similarly, it appears that to increase affective acceptance, source factors are more important than message factors, and to increase attitude toward the brand, message factors are more important than source factors.

This research demonstrates the robustness of linear models for modelling cognitive responses as a function of message acceptance. The implications for researchers of consumer

persuasion are that a combined message index and source index is the most robust mediator of message acceptance.

The marketer of a moderate involvement product would be more successful in placing emphasis on source factors for message acceptance for a lower involvement product than for a higher involvement product. Similarly, the marketer who uses a two-sided advertising technique must be careful with regards to message content and source factors so that counterargument and source derogation are reduced.

5.3 Limitations and Recommendations for Future Research

It is appropriate to conclude by pointing out some major limitations of this study that restrict generalizability. Student subjects were used and although relevant product classes were depicted in the experimental print advertisements, the author hesitates to generalize to all consumers and all types of products and advertisement methods. A more natural setting for the ad, such as on a page with a magazine article, may have proved beneficial.

In addition, the reliability of the cognitive component was somewhat lower than expected and may have affected the results of this study. Further, the study involved a laboratory test setting. Also, when the subjects listed their cognitive responses, recitation of facts may have occurred instead of spontaneous cognitive response.

There has been limited research in this field and the author believes that there is a lack of variability in the independent measures and the intensity of cognitive responses are not being captured. A future study could take the form of comparing the explained variance of the number of cognitive responses and the explained variance of the sum of cognitive

responses multiplied by a subject assigned intensity factor on a 7 point scale. The procedure would take the same basic approach as this study, only the subjects would assign an intensity to the cognitive response after the three minute time limit. Also, as Wright (1973) suggested, maybe the inventory of cognitive responses needs to be elaborated.

APPENDIX A: Cognitive Response Definitions

This appendix contains operational definitions for the five cognitive response variables that are used in this study. The definitions for counterargument, support argument, source derogation, and curiosity thoughts are based on Wright (1973) and the definition for source bolstering based on Belch (1981).

Counterarguments: Statements which are directed against the idea of or use of the products in the advertising communication and which:

(a) state a specific unfavourable consequence of using the product.
(b) state a specific undesirable attribute of the product.
(c) suggest an alternative method for handling one of the problems cited in the advertising message.
(d) state a specific favourable or desirable consequence or attribute of an alternative product.
(e) challenge the accuracy or validity of a specific argument contained in the advertising message.

These statements may take the form of declarative sentences or rhetorical questions. If the statement is in the form of a rhetorical question, its intention should be argumentive or to express doubt or disbelief.

The following types of statements are not to be considered as counterarguments.

(a) simple statements of dislike for the product idea
(b) emotional reactions which are not accompanied by any of the types of statements discussed above.
(c) statements falling into any of the other categories (source derogations--support arguments--expressions of curiosity).

Support Arguments: Statements which are directed in favour of the idea or use of the product in the advertising message and which:

(a) state a specific favourable consequence of using the product or a favourable reason for using the product.
(b) state a specific desirable attribute of the product.
(c) suggest an undesirable consequence of not using the product.
(d) reaffirm the accuracy or validity of an argument presented in the advertisement.

The following types of statements are not to be considered as support arguments.

(a) simple statements of liking for the product.
(b) positive emotional reactions unaccompanied by any of the above types of statements.

Source Derogations:

(A) Statements expressing distrust or derogation of advertisements or the advertisers.

(b) Statements expressing dislike for the overall means used by the advertiser in the presentation.

Source Bolstering: The positive counterpart of source derogation in that the thought is positive in valence and is directed toward the advertiser or the approach taken by the advertiser rather than toward the message "per se".

Curiosity: Statements expressing interest in additional information about the product. These curiosity expressions are distinguishable form rhetorical question counterargument by your judgement on the subject's intent. If the intent was to question validity, express disbelief, or point out a counterargument, the statement is a counterargument. If the intent is to honestly inquire about more information, it is a curiosity statement.

APPENDIX B: Pen and Calculator Brand Familiarity Questionnaire

Please indicate how familiar you are with the following brands of pens by circling the appropriate number.

	Low Familiarity						High Familiarity
1. Cross pens	1	2	3	4	5	6	7
2. Papermate pens	1	2	3	4	5	6	7
3. Parker pens	1	2	3	4	5	6	7
4. Sheaffer pens	1	2	3	4	5	6	7
5. Pentel pens	1	2	3	4	5	6	7
6. Uni-Point pens	1	2	3	4	5	6	7
7. Faber-Castel pens	1	2	3	4	5	6	7
8. Bic pens	1	2	3	4	5	6	7

Please indicate how familiar you are with the following brands of calculators by circling the appropriate number.

	Low Familiarity						High Familiarity
1. Cassio calculators	1	2	3	4	5	6	7
2. Sharp calculators	1	2	3	4	5	6	7
3. Hewlett Packard calculators	1	2	3	4	5	6	7
4. Caltronix calculators	1	2	3	4	5	6	7
5. Texas Instrument calculators	1	2	3	4	5	6	7
6. Selectric calculators	1	2	3	4	5	6	7
7. Tandy calculators	1	2	3	4	5	6	7
8. Brother calculators	1	2	3	4	5	6	7

APPENDIX C: Calculator Attribute Questionnaire

Please [illegible] below please circle the number which you feel best describes the importance of the following product characteristics in the purchase of a calculator.

	Not Important						Extremely Important
1. State of the art	1	2	3	4	5	6	7
2. Brand Name	1	2	3	4	5	6	7
3. Reliability	1	2	3	4	5	6	7
4. Price	1	2	3	4	5	6	7
5. Durability	1	2	3	4	5	6	7
6. Pocket size	1	2	3	4	5	6	7
7. Battery powered	1	2	3	4	5	6	7
8. Programmable	1	2	3	4	5	6	7
9. Warrantee	1	2	3	4	5	6	7
10. Weight	1	2	3	4	5	6	7
11. Appearance	1	2	3	4	5	6	7
12. Value for money	1	2	3	4	5	6	7
13. Style	1	2	3	4	5	6	7
14. Quality of construction	1	2	3	4	5	6	7
15. High degree of functions	1	2	3	4	5	6	7
16. High tech	1	2	3	4	5	6	7
17. Comfort in holding	1	2	3	4	5	6	7
18. Solar powered	1	2	3	4	5	6	7
19. User friendly	1	2	3	4	5	6	7
20. Large memory	1	2	3	4	5	6	7
21. Printing capabilities	1	2	3	4	5	6	7
22. Dot matrix display	1	2	3	4	5	6	7
23. Reverse Polish notation	1	2	3	4	5	6	7
24. Liquid quartz display	1	2	3	4	5	6	7
25. Large buttons	1	2	3	4	5	6	7

APPENDIX D: Test Advertisements

One-sided pen ad:

You'll appreciate the smooth and consistent ink flow of the PENTEL pen. The overall writing performance of the PENTEL pen is second to none. The PENTEL pen is well constructed and is capable of writing at any angle. It has a pleasant appearance and is available in several colours.

GET IT WRITE, BUY A PENTEL PEN!

Two-sided pen ad disclaiming moderately important attributes:

Although the PENTEL pen is not the best pen available in terms of quality of construction and it is not capable of writing at every angle, it does possess several appealing characteristics.

You will appreciate the consistent ink flow of the PENTEL pen. The overall writing performance of the PENTEL pen is second to none. It has a pleasant appearance and is available in several colours.

GET IT WRITE, BUY A PENTEL PEN!

One-sided calculator ad:

You'll appreciate the reliability of the CALTRONIX calculator. With regard to value for money, the CALTRONIX calculator is second to none. The CALTRONIX calculator is light weight with large buttons. It has a dot matrix display and printing capabilities.

GET IT RIGHT, BUY A CALTRONIX CALCULATOR!

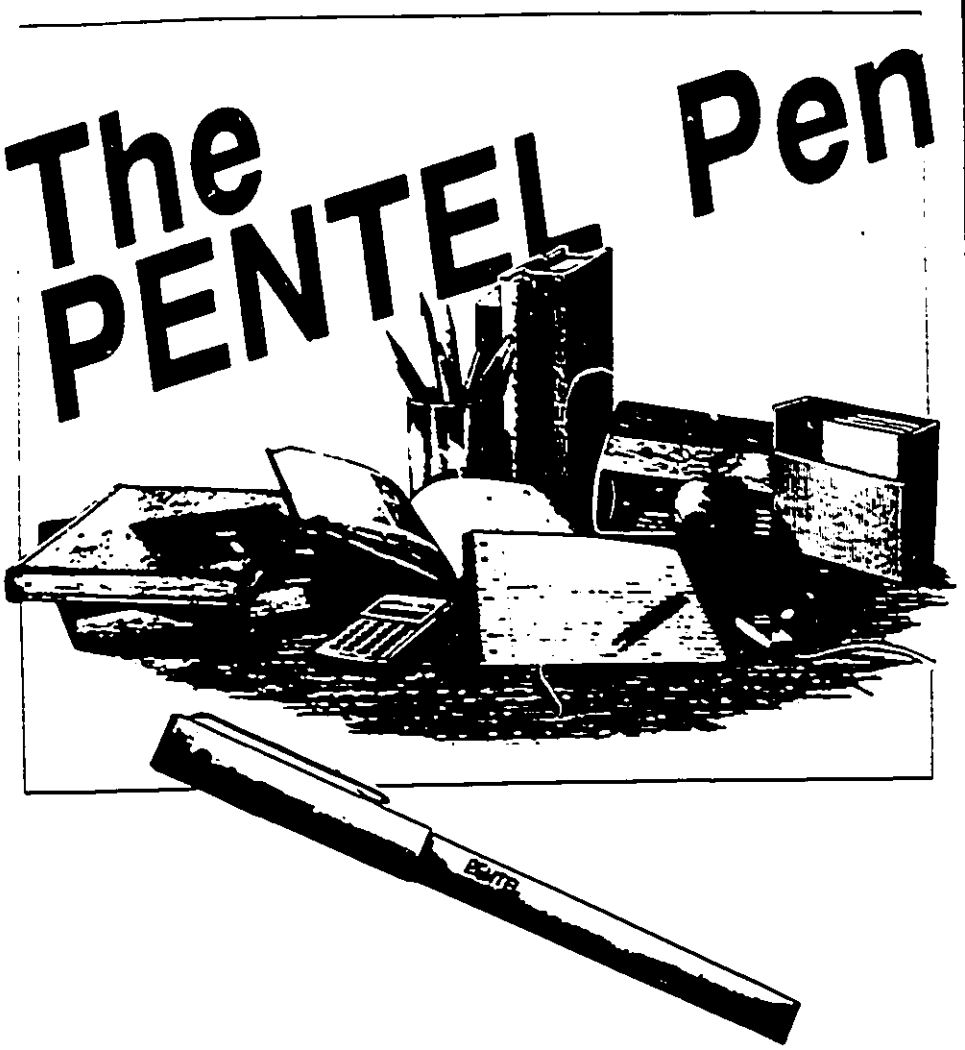
Two-sided calculator ad disclaiming moderately important attributes:

Although the CALTRONIX calculator is not the best calculator available in terms of having light weight and large buttons, it does possess several appealing characteristics.

You'll appreciate the reliability of the CALTRONIX calculator. With regard to value your money, the CALTRONIX calculator is second to none. It has a dot matrix display and printing capabilities.

GET IT RIGHT, BUY A CALTRONIX CALCULATOR!

The PENTEL Pen

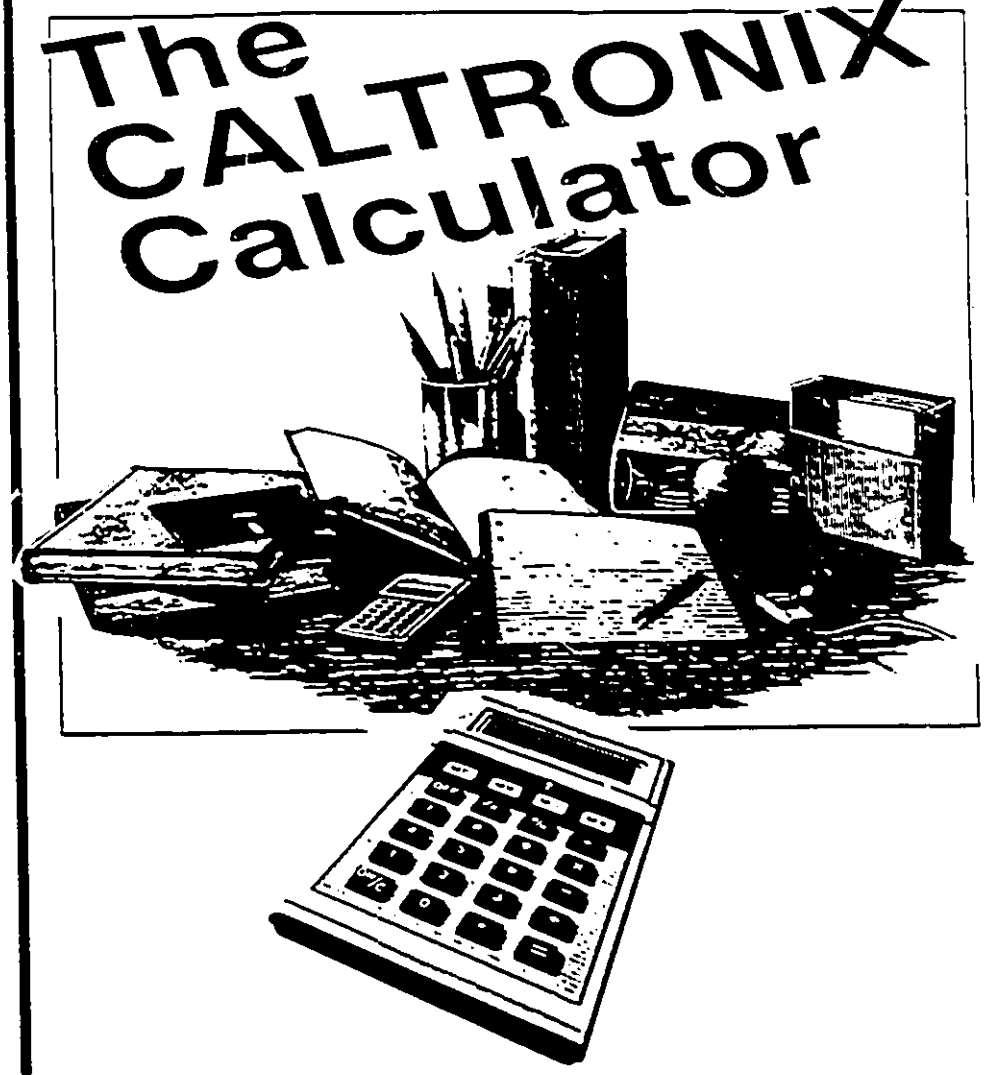


Although the PENTEL pen is not the best pen available in terms of quality of construction and it is not capable of writing at every angle, it does possess several appealing characteristics.

You'll appreciate the consistent ink flow of the PENTEL pen, and the excellent writing performance. It has an attractive appearance and is available in several colours.

GET IT WRITE, BUY A PENTEL PEN!

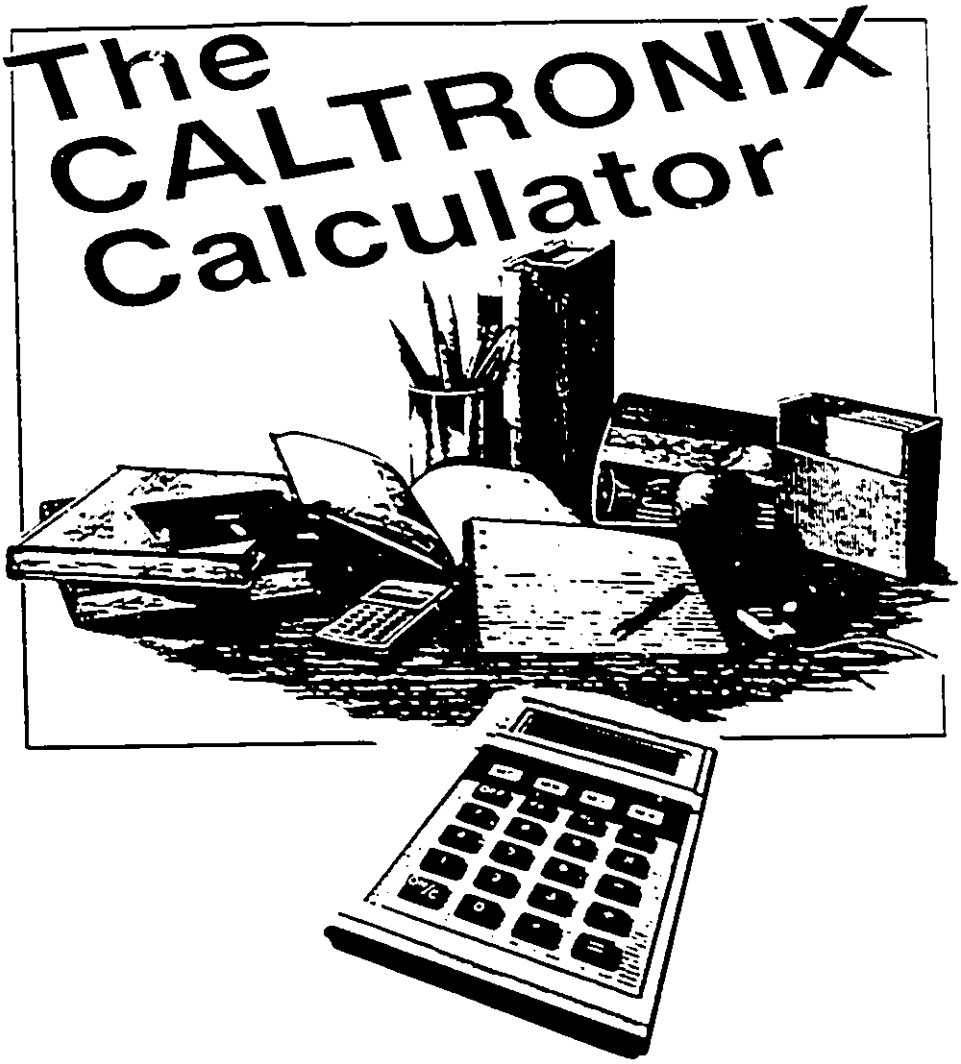
The CALTRONIX Calculator



You will appreciate the reliability of the CALTRONIX calculator. With regard to value for money, the CALTRONIX calculator is second to none. The CALTRONIX calculator is light weight with large buttons. It has a dot matrix display and printing capabilities.

GET IT RIGHT, BUY A CALTRONIX CALCULATOR!

The CALTRONIX Calculator



Although the CALTRONIX calculator is not the best calculator available in terms of having light weight and large buttons, it does possess several appealing characteristics.

You'll appreciate the reliability of the CALTRONIX calculator. With regard to value for your money, the CALTRONIX calculator is second to none. It has a dot matrix display and printing capabilities.

GET IT RIGHT, BUY A CALTRONIX CALCULATOR!

APPENDIX E: Main Experiment Questionnaire

PENS

1. [illegible] the scales below please check the space which you feel best describes the way you feel about pens

important ___:___:___:___:___:___:___ unimportant

of no concern ___:___:___:___:___:___:___ of concern to me

irrelevant ___:___:___:___:___:___:___ relevant

means a lot to me ___:___:___:___:___:___:___ means nothing to me

useless ___:___:___:___:___:___:___ useful

valuable ___:___:___:___:___:___:___ worthless

trivial ___:___:___:___:___:___:___ fundamental

beneficial ___:___:___:___:___:___:___ not beneficial

matters to me ___:___:___:___:___:___:___ doesn't matter

uninterested ___:___:___:___:___:___:___ interested

significant ___:___:___:___:___:___:___ insignificant

vital ___:___:___:___:___:___:___ superfluous

boring ___:___:___:___:___:___:___ interesting

unexciting ___:___:___:___:___:___:___ exciting

appealing ___:___:___:___:___:___:___ unappealing

mundane ___:___:___:___:___:___:___ fascinating

essential ___:___:___:___:___:___:___ nonessential

undesirable ___:___:___:___:___:___:___ desirable

wanted ___:___:___:___:___:___:___ unwanted

not needed ___:___:___:___:___:___:___ needed

2. On each of the scales below, please circle the number which you feel best describes the importance to you of each of the following characteristics when purchasing a pen.

	Not Important						Extremely Important
a. Writing performance	1	2	3	4	5	6	7
b. Appearance	1	2	3	4	5	6	7
c. Quality of construction	1	2	3	4	5	6	7
d. Consistency of ink flow	1	2	3	4	5	6	7
e. Colors available	1	2	3	4	5	6	7
f. Writes at any angle	1	2	3	4	5	6	7

[illegible] that occurred to you as you were reading the [illegible] in the spelling, punctuation, and grammar. List each [illegible] on a separate line.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

4. In each of the scales below, please check the space which you feel best describes the advertisement you just read.

Interesting ___:___:___:___:___:___:___ Dull

Unappealing ___:___:___:___:___:___:___ Appealing

Pleasant ___:___:___:___:___:___:___ Unpleasant

Unbelievable ___:___:___:___:___:___:___ Believable

Impressive ___:___:___:___:___:___:___ Unimpressive

Uninformative ___:___:___:___:___:___:___ Informative

Clear ___:___:___:___:___:___:___ Confusing

Offensive ___:___:___:___:___:___:___ Not offensive

Persuasive ___:___:___:___:___:___:___ Not Persuasive

Ineffective ___:___:___:___:___:___:___ Effective

Tasteful ___:___:___:___:___:___:___ Tasteless

Likeable ___:___:___:___:___:___:___ Not Likeable

Truthful ___:___:___:___:___:___:___ Untruthful

What is your overall reaction to the advertisement you just read (please check).

Unfavourable ___:___:___:___:___:___:___ Favourable

5. On each of the scales below, please check the space which you feel best describes the <u>pen</u> that was advertised.

Bad ___:___:___:___:___:___:___ Good

Good performance ___:___:___:___:___:___:___ Poor performance

Not likeable ___:___:___:___:___:___:___ Likeable

Distinctive ___:___:___:___:___:___:___ Ordinary

Risky ___:___:___:___:___:___:___ Not risky

Reliable ___:___:___:___:___:___:___ Unreliable

What is your overall reaction to the PENTEL pen? (please check.)

Extremely Unfavourable ___:___:___:___:___:___:___ Extremely Favourable

6. [illegible] the scale below please circle the number which you feel best describes how the PENTEL pen would perform on the following characteristics.

	Would perform poorly						Would perform well
a. Writing performance	1	2	3	4	5	6	7
b. Appearance	1	2	3	4	5	6	7
c. Quality of construction	1	2	3	4	5	6	7
d. Consistency of ink flow	1	2	3	4	5	6	7
e. Colors available	1	2	3	4	5	6	7
f. Writes at any angle	1	2	3	4	5	6	7

7. If you were buying a quality pen, how likely would you be to buy the PENTEL pen? (please check.)

Extremely Likely ___:___:___:___:___:___:___ Extremely Unlikely

8. If you were buying a quality pen, would you actively seek out the PENTEL pen? (please check.)

No, definitely not ___:___:___:___:___:___:___ Yes, definitely

9. How much, between $0.00 and $15.00, would you be willing to pay for the PENTEL pen?

__ __.__ __

10. Your Sex: Male____ Female____

Thank you very much for your cooperation!

CALCULATORS

[illegible]

important ___ ___ ___ ___ ___ ___ ___ unimportant

of no concern ___:___:___:___:___:___:___ of concern to me

irrelevant ___:___:___:___:___:___:___ relevant

means a lot to me ___:___:___:___:___:___:___ means nothing to me

useless ___:___:___:___:___:___:___ useful

valuable ___:___:___:___:___:___:___ worthless

trivial ___:___:___:___:___:___:___ fundamental

beneficial ___:___:___:___:___:___:___ not beneficial

matters to me ___:___:___:___:___:___:___ doesn't matter

uninterested ___:___:___:___:___:___:___ interested

significant ___:___:___:___:___:___:___ insignificant

vital ___:___:___:___:___:___:___ superfluous

boring ___:___:___:___:___:___:___ interesting

unexciting ___:___:___:___:___:___:___ exciting

appealing ___:___:___:___:___:___:___ unappealing

mundane ___:___:___:___:___:___:___ fascinating

essential ___:___:___:___:___:___:___ nonessential

undesirable ___:___:___:___:___:___:___ desirable

wanted ___:___:___:___:___:___:___ unwanted

not needed ___:___:___:___:___:___:___ needed

2. On each of the scales below, please circle the number which you feel best describes the importance to you of each of the following characteristics when purchasing a calculator.

	Not Important						Extremely Important
a. Reliability	1	2	3	4	5	6	7
b. Printing capabilities	1	2	3	4	5	6	7
c. Weight	1	2	3	4	5	6	7
d. Value for money	1	2	3	4	5	6	7
e. Dot matrix display	1	2	3	4	5	6	7
f. Large buttons	1	2	3	4	5	6	7

[illegible] all the thoughts that occurred to you as you were reading the [illegible] statement. Ignore spelling, punctuation, and grammar. List each "thought" on a separate line.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

j. _____

4. In each of the scales below, please check the space which you feel best describes the advertisement you just read

Interesting ___:___:___:___:___:___:___ Dull

Unappealing ___:___:___:___:___:___:___ Appealing

Pleasant ___:___:___:___:___:___:___ Unpleasant

Unbelievable ___:___:___:___:___:___:___ Believable

Impressive ___:___:___:___:___:___:___ Unimpressive

Uninformative ___:___:___:___:___:___:___ Informative

Clear ___:___:___:___:___:___:___ Confusing

Offensive ___:___:___:___:___:___:___ Not offensive

Persuasive ___:___:___:___:___:___:___ Not Persuasive

Ineffective ___:___:___:___:___:___:___ Effective

Tasteful ___:___:___:___:___:___:___ Tasteless

Likeable ___:___:___:___:___:___:___ Not Likeable

Truthful ___:___:___:___:___:___:___ Untruthful

What is your overall reaction to the advertisement you just read (please check).

Unfavourable ___:___:___:___:___:___:___ Favourable

5. On each of the scales below, please check the space which you feel best describes the <u>calculator</u> that was advertised.

Bad ___:___:___:___:___:___:___ Good

Good performance ___:___:___:___:___:___:___ Poor performance

Not likeable ___:___:___:___:___:___:___ Likeable

Distinctive ___:___:___:___:___:___:___ Ordinary

Risky ___:___:___:___:___:___:___ Not risky

Reliable ___:___:___:___:___:___:___ Unreliable

What is your overall reaction to the CALTRONIX calculator? (please check.)

Extremely Unfavourable ___:___:___:___:___:___:___ Extremely Favourable

[illegible] the CALTRONIX calculator would perform on the following dimensions:

	Would perform poorly						Would perform well
a. [illegible]	1	2	3	4	5	6	7
b. Printing capabilities	1	2	3	4	5	6	7
c. Weight	1	2	3	4	5	6	7
d. Value for money	1	2	3	4	5	6	7
e. Dot matrix display	1	2	3	4	5	6	7
f. Large buttons	1	2	3	4	5	6	7

7. If you were buying a quality pen, how likely would you be to buy the CALTRONIX calculator? (please check.)

Extremely Likely ___:___:___:___:___:___:___ Extremely Unlikely

8. If you were buying a quality pen, would you actively seek out the CALTRONIX calculator? (please check.)

No, definitely not ___:___:___:___:___:___:___ Yes, definitely

9. How much, between $0.00 and $150.00, would you be willing to pay for the CALTRONIX calculator?

___ ___.___ ___

10 Your Sex: Male____ Female____

Thank you very much for your cooperation!

APPENDIX F: Reliability Analysis

RELIABILITY ANALYSIS - SCALE (POSITIVE) - PENTEL PEN

			MEAN	STD DEV	CASES
1.	Q4H	NOT OFFENSIVE	5.[illegible]	1.35	140
2.	Q4D	BELIEVABLE	4.[illegible]	1.53	140
3.	Q4M	TRUTHFUL	5.17	1.37	140
4.	Q4K	TASTEFUL	4.87	1.55	140
5.	Q4F	INFORMATIVE	5.22	1.40	140
6.	Q4G	CLEAR	5.43	1.61	140

CORRELATION MATRIX

		Q4H	Q4D	Q4M	Q4K	Q4F	Q4G
1.	Q4H	1.0					
2.	Q4D	.34	1.0				
3.	Q4M	.23	.29	1.0			
4.	Q4K	.30	.05	.15	1.0		
5.	Q4F	.13	.13	.04	.16	1.0	
6.	Q4G	.17	.10	.05	.31	.28	1.0

OF CASES=140

STATISTICS FOR SCALE	MEAN	VARIANCE	STD DEV	VARIABLES
	31.55	26.49	5.14	6

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	5.25	4.87	5.90	1.02	1.20	.13

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	2.28	1.90	2.60	.70	1.37	.07

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.42	.08	.83	.75	10.28	.05

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.18	.04	.34	.30	8.31	.01

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
QH4	25.65	18.42	.42	.21	.4863
Q4D	26.62	19.90	.30	.18	.5393
Q4M	26.37	21.30	.25	.11	.5589
Q4K	26.67	19.41	.33	.17	.5252
Q4F	26.32	21.20	.25	.09	.5591
Q4G	26.12	19.40	.31	.15	.5366

RELIABILITY COEFFICIENTS 6 ITEMS
ALPHA = .5803 STANDARDIZED ITEM ALPHA = .5777

RELIABILITY ANALYSIS - SCALE AFFECTIVE - PENTEL PEN

			MEAN	STD DEV	CASES
1.	Q4B	APPEALING	3.64	1.74	143
2.	Q4E	IMPRESSIVE	3.62	1.51	143
3.	Q4J	EFFECTIVE	3.91	1.81	143
4.	Q4I	PERSUASIVE	3.64	1.85	143
5.	Q4A	INTERESTING	3.72	1.86	143
6.	Q4L	LIKEABLE	4.25	1.53	143

CORRELATION MATRIX

		Q4B	Q4E	Q4J	Q4I	Q4A	Q4L
1.	Q4B	1.0					
2.	Q4E	.67	1.0				
3.	Q4J	.65	.63	1.0			
4.	Q4I	.60	.64	.74	1.0		
5.	Q4A	.76	.66	.54	.59	1.0	
6.	Q4L	.61	.161	.59	.51	.58	1.0

= OF CASES=143

STATISTICS FOR SCALE	MEAN	VARIANCE	STD DEV	VARIABLES
	22.81	73.80	8.59	6

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	3.80	3.62	4.25	.63	1.17	.06

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	2.98	2.29	3.48	1.18	1.51	.28

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1.86	1.42	2.49	1.07	1.75	.09

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.62	.51	.76	.25	1.49	.01

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q4B	19.16	50.90	.79	.68	.8852
Q4E	19.18	54.22	.77	.60	.8905
Q4J	18.89	50.95	.75	.64	.8919
Q4I	19.16	50.83	.73	.62	.8948
Q4A	19.08	50.42	.75	.64	.8929
Q4L	18.55	55.75	.68	.49	.9016

RELIABILITY COEFFICIENTS 6 ITEMS
ALPHA = .9092 STANDARDIZED ITEM ALPHA = .9107

RELIABILITY ANALYSIS - SCALE (ALPHA) - DALTRONIX CALCULATOR

			MEAN	STD DEV	CASES
1.	Q4H	NOT OFFENSIVE	5.81	1.48	136
2.	Q4D	BELIEVABLE	4.63	1.60	136
3.	Q4M	TRUTHFUL	5.02	1.53	136
4.	Q4K	TASTEFUL	4.74	1.57	136
5.	Q4F	INFORMATIVE	4.60	1.72	136
6.	Q4G	CLEAR	5.33	1.61	136

CORRELATION MATRIX

		Q4H	Q4D	Q4M	Q4K	Q4F	Q4G
1.	Q4H	1.0					
2.	Q4D	.25	1.0				
3.	Q4M	.00	.54	1.0			
4.	Q4K	.44	.22	.14	1.0		
5.	Q4F	.13	.29	.16	.38	1.0	
6.	Q4G	.22	.21	.16	.35	.45	1.0

OF CASES=136

	MEAN	VARIANCE	STD DEV	VARIABLES
STATISTICS FOR SCALE	30.17	35.71	5.97	6

	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
ITEM MEANS	5.02	4.60	5.81	1.21	1.26	.22
ITEM VARIANCES	2.53	2.21	2.96	.75	1.34	.06
INTER-ITEM COVARIANCES	.68	.00	1.33	1.33	-681.4	.13
INTER-ITEM CORRELATIONS	.26	.00	.54	.54	-632.1	.02

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q4H	24.36	28.35	.32	.26	.6767
Q4D	25.52	25.37	.48	.38	.6272
Q4M	25.14	28.28	.30	.32	.6825
Q4K	25.43	25.41	.49	.32	.6243
Q4F	25.57	24.86	.45	.29	.6345
Q4G	24.84	25.77	.44	.25	.6388

RELIABILITY COEFFICIENTS 6 ITEMS
ALPHA = .6889 STANDARDIZED ITEM ALPHA = .6869

RELIABILITY ANALYSIS - SCALE APPETITIVE - (ALPHA) MATRIX "ALPHA.DAT"

			MEAN	STD DEV	CASES
1.	Q4B	APPEALING	3.32	1.66	138
2.	Q4E	IMPRESSIVE	3.22	1.55	138
3.	Q4J	EFFECTIVE	3.42	1.76	138
4.	Q4I	PERSUASIVE	3.23	1.72	138
5.	Q4A	INTERESTING	3.15	1.67	138
6.	Q4L	LIKEABLE	3.84	1.54	138

CORRELATION MATRIX

		Q4B	Q4E	Q4J	Q4I	Q4A	Q4L
1.	Q4B	1.0					
2.	Q4E	.65	1.0				
3.	Q4J	.61	.70	1.0			
4.	Q4I	.55	.59	.82	1.0		
5.	Q4A	.70	.58	.54	.54	1.0	
6.	Q4L	.54	.58	.61	.50	.51	1.0

OF CASES=138

STATISTICS FOR SCALE	MEAN	VARIANCE	STD DEV	VARIABLES
	20.20	66.39	8.14	6

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	3.36	3.15	3.84	.71	1.29	.06

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	2.74	2.39	3.10	.71	1.29	.08

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1.66	1.33	2.51	1.17	1.87	.08

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.60	.50	.82	.32	1.64	.00

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q4B	16.87	46.70	.74	.61	.8830
Q4E	16.97	47.74	.75	.59	.8817
Q4J	16.77	44.21	.81	.77	.8721
Q4I	16.97	46.17	.73	.69	.8847
Q4A	17.05	47.58	.69	.55	.8912
Q4L	16.36	49.63	.65	.45	.8955

RELIABILITY COEFFICIENTS 6 ITEMS

ALPHA = .9023 STANDARDIZED ITEM ALPHA = .9022

RELIABILITY ANALYSIS: SCALE ATB - PENTEL PEN

			MEAN	STD DEV	CASES
1.	Q5A	[illegible]	4.69	1.50	143
2.	Q5B	GOOD PERFORMANCE	4.97	1.58	143
3.	Q5C	LIKEABLE	4.59	1.53	143
4.	Q5D	DISTINCTIVE	3.66	1.83	143
5.	Q5F	RELIABLE	4.53	1.53	143

CORRELATION MATRIX

		Q5A	Q5B	Q5C	Q5D	Q5F
1.	Q5A	1.0				
2.	Q5B	.83	1.0			
3.	Q5C	.84	.77	1.0		
4.	Q5D	.38	.30	.41	1.0	
5.	Q5F	.70	.69	.66	.36	1.0

OF CASES=143

STATISTICS FOR SCALE	MEAN	VARIANCE	STD DEV	VARIABLES
	22.46	42.61	6.52	5

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	4.49	3.66	4.97	1.30	1.35	.24

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	2.56	3.66	3.35	1.08	1.47	.19

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1.48	.89	1.98	1.09	2.22	.16

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.60	.30	.84	.53	2.74	.04

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q5A	17.76	27.05	.84	.80	.8121
Q5B	17.49	27.20	.78	.72	.8268
Q5C	17.87	27.08	.82	.74	.8170
Q5D	18.80	30.94	.40	.19	.8723
Q5F	17.93	28.40	.72	.55	.8413

RELIABILITY COEFFICIENTS 5 ITEMS
ALPHA = .8733 STANDARDIZED ITEM ALPHA = .8824

RELIABILITY ANALYSIS - SCALE ATB - ZALTRONIX CALCULATOR

			MEAN	STD DEV	CASES
1.	Q5A	GOOD	4.13	1.61	138
2.	Q5B	GOOD PERFORMANCE	4.46	1.48	138
3.	Q5C	LIKEABLE	3.94	1.55	138
4.	Q5D	DISTINCTIVE	2.82	1.77	138
5.	Q5F	RELIABLE	4.86	1.52	138

CORRELATION MATRIX

		Q5A	Q5B	Q5C	Q5D	Q5F
1.	Q5A	1.0				
2.	Q5B	.70	1.0			
3.	Q5C	.83	.67	1.0		
4.	Q5D	.51	.47	.49	1.0	
5.	Q5F	.48	.55	.40	.28	1.0

= OF CASES=138

STATISTICS FOR SCALE	MEAN	VARIANCE	STD DEV	VARIABLES
	20.22	39.91	6.31	5

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	4.04	2.82	4.86	2.03	1.72	.58

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	2.54	2.20	3.15	.94	1.42	.13

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1.36	.77	2.09	1.32	2.71	.13

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	.54	.28	.83	.54	2.92	.02

ITEM TOTAL STATISTICS:

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
Q5A	16.09	24.42	.80	.74	.7814
Q5B	15.76	26.25	.75	.58	.8000
Q5C	16.27	25.51	.76	.71	.7962
Q5D	17.39	27.01	.52	.29	.8618
Q5F	15.36	29.24	.50	.32	.8509

RELIABILITY COEFFICIENTS 5 ITEMS
ALPHA = .8521 STANDARDIZED ITEM ALPHA = .8555

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