

To the Graduate Council:

I am submitting herewith a dissertation written by William R. Forrester, Jr. entitled "A Cognitive Process Model of Industrial Buyer Responses to the Information Content of Three Sales Presentations." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.

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A COGNITIVE PROCESS MODEL OF INDUSTRIAL BUYER
RESPONSES TO THE INFORMATION CONTENT OF
THREE SALES PRESENTATIONS

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

William R. Forrester, Jr.

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TO
Angela, Katie, and Ellen

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ABSTRACT

Since the sales presentation is a focal point of personal selling efforts in industrial markets, it is important to understand the ways in which industrial buyers and buying groups respond to the presentation of sales material. Present understanding, however, is limited by the failure of past research to adequately examine the effects of sales presentation information content. No prior research has considered the possibility that industrial buyers may systematically differ in the way they respond to the information content of sales presentations as a function of differences in their buying task responsibilities and observational goals.

A conceptual model based in schematic information processing theory suggests that organizational buyers with different buying task responsibilities, mood states, and observational goals systematically differ in the ways in which they pay attention to, interpret, evaluate, and remember the information content of sales presentations.

Hypotheses derived from this conceptual model were tested by means of an experiment which was conducted in a field setting. Subjects were industrial buying task group members listening to tape recorded presentations as part of a hypothetical industrial purchase task. The experiment

employed a two by three repeated measures design with two covariates and multiple dependent measures. Data were analyzed using multivariate analysis of covariance procedures.

Results of the experiment provided some support for the model. Substantial findings of the study are:

- 1) Information content influenced subjects' message involvement, attention and arousal.

- 2) Schema complexity influenced the extremity of evaluation which subjects made about the salesperson, the vendor, and the presentation.

- 3) Mood had a strong influence on subjects' evaluation and inference making, but only for subjects in high arousal states.

- 4) There was only weak evidence to support the hypothesized effects of observational goals.

- 5) There was no evidence to support hypothesized interaction effects.

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CHAPTER 1

INTRODUCTION TO THE STUDY

There is widespread agreement among both marketing managers and marketing academicians that effectiveness in personal selling is of vital importance to firms engaged in the marketing of goods and services to industrial and organizational customers.

IMPORTANCE OF PERSONAL SELLING

To the industrial marketing manager, personal selling is of critical importance since it often plays a dominant role in industrial marketing strategy (Hutt and Speh, 1981). This dominance arises from the fact that information is the single most controllable factor in the industrial marketing mix (Moriarity and Golper, 1978), and from the fact that professional salespeople are viewed by industrial buyers as highly valued sources of information (Ozanne and Churchill, 1968, 1971). The preference which industrial buyers have for salespersons as information sources is most pronounced in modified rebuy and new task buying situations and in the vendor selection phase of the purchase decision process (Moriarity and Spekman, 1983); situations in which sales presentations constitute a focal point of the interaction between buying and selling firms.

The importance of personal sales effectiveness in industrial markets is further underscored by the costs involved in developing and maintaining a professional sales force. Results of a 1986 survey of selling costs reported in Sales and Marketing Management indicate that median direct sales costs, consisting of compensation, travel, and entertainment expenses, exceeded \$54,000 for industrial products salespersons in 1985. For sales engineers median direct sales costs exceeded \$73,000.

EFFECTIVENESS AS SALESPERSON PERSUASIVENESS

In the sales management literature, the term "effectiveness" is used synonymously with "influence." As defined by Weitz (1981), effectiveness in sales interactions consists of "the degree in which 'preferred solutions' of salespeople are realized across their customer interactions." This definition implies that influence in personal selling, as in other forms of personal interaction, depends upon the exercise of social power through such behaviors as the dispensation of punishments and rewards (French and Raven, 1959).

A salesperson's ability to influence a potential buyer through the dispensation of punishments or rewards is determined by a complex array of salesperson resources and

skills and an equally complex array of needs and aspirations exhibited by the potential buyer (Patchen, 1974).

While some recent work has investigated the exercise of social power in buyer seller relationships , (Spiro and Perrault, 1979, Capon and Swasy, 1977), the study of salesperson effectiveness has traditionally focused on the salesperson's persuasiveness. Studies concerned with salesperson persuasiveness are clearly more numerous than studies of other types of influence and current understanding of persuasiveness constitutes the core of present knowledge of effectiveness in sales interactions (Weitz, 1979; Weitz, 1981).

CURRENT UNDERSTANDING OF SALESPERSON PERSUASIVENESS

Much of our current understanding of salesperson persuasiveness must be credited to research in related disciplines. Marketing owes a particular debt to psychologists who, for the past four decades, have investigated the processes underlying general persuasive communications. At least five distinct approaches to the study of persuasive communications can be identified in their work: 1) the learning theory approach, 2) the perceptual theory approach, 3) the functional theory approach, 4) the consistency theory approach, and 5) the cognitive theory approach (Petty, Ostrum, and Brock, 1981, Smith, 1981).

Each of these approaches is discussed in the following chapter.

While each of these approaches has produced results applicable in the domain of personal selling, it is the cognitive response approach which has had the greatest influence on current thinking.

The success of the cognitive approach is due to its empirical rigor and conceptual flexibility. This conceptual flexibility rests in the fact that each of the other theories can be formulated in cognitive response terms (Petty, Ostrum, and Brock, 1981).

The basic premise of the cognitive approach, which was originally outlined by Greenwald (1968), is that the persuasiveness of a communication depends upon the thought processes of the persons receiving the communication. A substantial body of evidence has been compiled in support of this position, and Greenwald's premise is now generally accepted.

LIMITS TO PRESENT KNOWLEDGE OF SALESPERSON PERSUASIVENES

While marketing academicians generally recognize the importance of cognitive responses as determinants of effectiveness in sales presentations, in many ways, knowledge of the cognitive responses of industrial buyers to sales presentations remains severely limited.

These limitations are attributable to both conceptual and methodological shortcomings of prior research. These will be discussed in depth in the following chapter. In brief, the primary conceptual shortcoming is the failure of past research to consider and systematically examine ways in which industrial buyers' cognitive responses are influenced by the information content of sales presentations.

Methodological shortcomings are more numerous and are sufficiently serious to undermine both the internal and external validity of key research in the field. While both are important, it is the questionable external validity of past research which is most problematic for students of personal selling in the industrial context.

The applicability of past research results in the context of the industrial sales presentation is undermined by the fact that past research has often studied the behavior of industrial buyers and sellers in isolation from each other. Applicability is further weakened by the extensive use of student subjects, and by the fact that when actual buyers and sellers were used, most often it was in a retail rather than an industrial sales context.

PURPOSE OF THE STUDY

This dissertation begins the task of correcting these deficiencies. It reports the results of a study which was conducted in a field setting for the purpose of examining the effects of the information content of sales presentations on the cognitive responses of members of industrial buying groups.

CHAPTER 2

BACKGROUND TO THE STUDY

INTRODUCTION

The purpose of this chapter is to evaluate present understanding of the ways in which industrial buyers respond to sales presentations. The primary focus of this chapter is therefore, quite naturally, a review of literature from past research on personal selling. Since this is closely related to other work, this chapter will also acknowledge, selectively review, and critically assess the results of various studies in the closely related field of industrial buyer behavior, and the broader field of persuasive communications.

Framework for Review

The Yale paradigm is used as the framework for structuring this review. According to the Yale paradigm, the outcomes of a persuasive communication are determined by factors associated with; 1) its source, 2) its message content, and 3) the channel through which it reaches the receiver, as well as 4) characteristics of the person or persons who receive it (Hovland, Janis, and Kelley, 1953).

This paradigm has clearly influenced marketing scholars who have approached effectiveness in personal sales communications as a function of factors associated

with the salesperson, the sales presentation, the buyer, and characteristics of the buyer-seller interaction (Weitz, 1979, 1981).

THE SALESPERSON

None of the factors determining effectiveness in personal selling have been more thoroughly studied than those associated with the salesperson. Research attention has been focused on a variety of salesperson related factors including personal characteristics and behaviors, as well as other, contingent factors.

Socio-Demographic Characteristics

Socio-demographic characteristics such as sex, age, race, and education, as well as various personality variables such as empathy, aggressiveness, and ego-strength have received considerable research attention. Perhaps because of the political timeliness of issues concerning the acceptance of females in the workplace, some recent work has been done in an effort to better understand ways in which sales effectiveness may be influenced by the salesperson's sex. The question of sex influences on sales communications is not a new one, but the traditional approach to the study of this question has focused, rather narrowly, on the effects of the female salesperson's physical image (Wilson and Moore, 1979; Patzer, 1979).

Nevertheless, some of the more recent studies have begun to deal with effects of buyer's perceptions of the female salesperson's skills and capabilities (Qualls and Monoky, 1983; Lundstrom and Ashworth, 1983).

Other manifest personal characteristics of the salesperson such as age, race, and education have also received research attention. Various studies in this area have produced a substantial body of empirical results relating these variables to sales effectiveness, yet the validity of these findings is seriously undermined by the fact that results are inconsistent and suffer from a number of methodological limitations.

For example, while there have been many studies in which salesperson's age is significantly and systematically related to sales performance (Mosel, 1952; Kirchner et. al., 1960; Weaver, 1969), other studies attempting to confirm the importance of age have have failed to do so (Meranda and Clark, 1959; Tanofsky et.al., 1969; Lamont and Lundstrom, 1978). Perhaps even more problematic is the fact, that studies in the area have typically been atheoretical and have failed to control for rival hypotheses. Weitz (1979) notes:

Due to the atheoretical nature of most of (these) studies, it is difficult to relate the results from these studies directly to salesperson performance in personal selling. However, several of the characteristics that

have been considered can be theoretically related to a salesperson's ability to influence a customer. One might hypothesize that customers would have more respect for older, more knowledgeable, more educated salespeople. Salespeople possessing these characteristics would be perceived as more credible sources of information and thus be more effective at influencing customers.

Salesperson Personality

Due to widespread disappointment with the inconsistent and equivocal results of research focusing on manifest characteristics, attention turned to study of salesperson personality variables. Studies in this vein have focused on such diverse personality traits as intelligence (Miner, 1962; Ghiselli, 1969), sociability (Miranda and Clark, 1959) aggressiveness (Miranda and Clark, 1959; Harrell, 1960; Howells, 1968), ego strength, and self-esteem (Scheibelhut and Albaum, 1973; Lamont and Lundstrom, 1978).

Results of research in this area have proven to be inconsistent. In his comprehensive review of research on the effects of salesperson personality on performance, Weitz (1979) described the extent of these inconsistencies.

Characteristics associated with forcefulness were significantly related to performance in seven studies but not significant in four studies. Characteristics related to social orientation were significant in four studies but insignificant in six studies. Education was significant in three studies, and insignificant in six studies. Age was significant in two studies and insignificant in five.

Contingent Salesperson Factors

The influence of general persuasive communications research is reflected in a third approach to the study of salesperson effectiveness in the selling context. Reflecting the influence of McGuire (1968) and the cognitive theorists, this approach focuses on buyer perceptions of the salesperson rather than on the salesperson's inherent characteristics or personality traits. Common to studies in this tradition is a concern with buyer perceptions of the salesperson's credibility and attractiveness.

Salesperson Credibility

In one of the earliest studies of credibility effects, Hovland and Weiss (1951) showed that immediately following exposure to a persuasive communication, subjects exhibited significantly greater attitude change in response to a high credibility source than in response to a low credibility source. As conceptualized by Hovland and his associates, credibility is determined by two factors; expertise and trust worthiness. Research has confirmed that these factors are also important in the personal selling domain.

Although research supports the position that successful sellers are perceived to have greater expertise than unsuccessful sellers, there are other factors which moderate expertise effects. Mowen and Brown (1978) have shown that successful sellers are perceived to have greater

sales ability when they exert low effort rather than high effort in developing sales presentations. Harmon and Coney (1982) have shown that differences in message content influence the magnitude of credibility effects. In a test of hypotheses suggested by cognitive response theory, they demonstrated that sellers with moderate credibility were more persuasive than high credibility salespersons when presenting a pro-attitudinal message (which called for product lease), and that high credibility salespersons were more persuasive in presenting a counter-attitudinal message (which advocated product purchase).

There remain, however, serious limitations to present understanding of credibility effects. Particularly troublesome is the fact that even though credibility and attractiveness have been studied more thoroughly than other source factors, research has been plagued by an inconsistency of results. Fishbein and Ajzen (1983) note:

Although a source low in credibility has seldom been found to produce more change than a high credibility source, some studies have reported a positive relation between credibility and amount of change, whereas others have reported no difference between high and low credibility sources.

Salesperson Attractiveness

A second contingent salesperson factor, attractiveness, has also been studied by marketing researchers. Interestingly, studies of salesperson attractiveness

effects have drawn heavily on recent stereotyping research and accompanying person perception theory.

Results of these studies confirm that attractiveness is a significant determinant of salesperson effectiveness. In a study using student subjects, Reingen, Gresham, and Kernan (1980) found that perceivers fashioned images of salespersons on the basis of their stereotyped intuitions about physical attractiveness and that "attractive salesmen" were judged to be more effective than "unattractive salesmen."

Fishbein and Ajzen (1983) note that just as there are inconsistencies in the results of credibility studies, there are similar inconsistencies which limit our understanding of attractiveness effects as well. In their review, they express the belief that these may be due to the failure of past research to adequately control for message content effects.

Research concerning the effects of such other source characteristics as attractiveness or power has, if anything, produced even less consistent findings than research on communicator credibility. We would again propose that factors of this kind may influence amount of change produced by some messages but not by others depending on the content of the message employed.

THE SALES PRESENTATION

In her review of the persuasive communications literature, Smith (1982) noted that researchers have considered the effects of at least five distinct classes of message related factors. Persuasion researchers have examined; 1) the relative impact of message content versus mediating influences, 2) the effects of repetitive exposure and exposure frequency, 3) relative effectiveness of one-sided versus two-sided arguments, 4) the relative impact of evidence content and source credibility, and 5) the effectiveness of high-intensity versus low-intensity fear appeals.

Message related factors have not been as thoroughly investigated by marketing researchers. In the marketing literature, consideration of message factors has largely been confined to studies examining the influence of various types of appeals and various presentation styles. Presentation style studies have centered on understanding the effects of variation within a range of formats extending from highly structured or "canned" styles on the one hand to open ended formats in which the seller is expected to make the presentation "extemporaneously."

As a result of these studies, there is now general agreement that the extemporaneous approach is most appropriate in consultative or technical types of sales in which

the salesperson's persuasive abilities are less important than his ability to solve buyer problems (Storholm, 1982). With the less structured and more extemporaneous approaches, the seller has greater latitude to engage adjusting sales behaviors in a number of dimensions which have been empirically linked with sales effectiveness. Research confirms that among these behavioral dimensions are: 1) adapting to the customer (Jolson, 75; Weitz, 81), 2) establishing an influence base (French and Raven, 1959; McCall, 1979). Other dimensions include choice of an influence technique (Capon and Swasy, 1977; Falbo, 1977; Spiro and Perrault, 1979). These factors are discussed in the section on buyer-seller interaction.

A second set of sales presentation issues concerns the effects of the message content of the sales presentation. These issues have received considerable attention in both marketing and persuasive communications research. Major message related issues which have prompted research attention in the past include: 1) issues concerning the effects of different types of appeals, 2) issues regarding the temporal duration of message effects, and 3) issues as to whether the message content is more important than cognitive responses to the message content. Only the first of these issues is discussed here; the second and third issues will be discussed in the next chapter.

One question which has interested researchers concerns whether to present only information which is supportive of one's position, or to present information counter to one's position as well. In one of the earliest attempts to answer this question, Hovland, Lumsdaine, and Sheffield (1949) demonstrated that the persuasiveness of one-sided versus two-sided arguments depended upon whether subjects were initially in agreement with the position advocated.

Other researchers have examined the role of fear arousing appeals in persuasive communications. McGuire (1968) described the relationship between fear and yielding to attempted persuasion as an inverted U shaped function, and argues that messages which induce moderate levels of fear are most effective. Leventhal and his associates have shown that the generalizability of this U-shaped relationship is affected by a number of moderating variables. These suggest that if long-term effects are desired, it may be advisable to initially expose subjects to messages invoking high levels of fear (Leventhal and Niles, 1965). Other results suggest that maximum effectiveness is possible only when fear inducing messages are linked with instructions which provide subjects with specific courses of action for reducing fear (Leventhal, Singer, and Jones 1965).

Regrettably, many of the findings of past research on

the effects of message content must be seriously questioned due to a crucial methodological shortcoming first noted by Fishbein and Ajzen (1983). It is ironic that although message factors have been extensively investigated, our understanding of message content effects remains severely limited. This limitation arises from the fact that manipulations of all message related variables (other than order of presentation) are confounded by variation of information content. Noting the amount of previous research on message content effects Fishbein and Ajzen state:

It is, therefore, somewhat disconcerting to find that message content has rarely been the focus of much attention. . . . To be sure, order of presentation, type of appeal (e.g., high versus low fear appeal), and other global features of the message have not escaped scrutiny; but few attempts have been made to take account of the items of information actually contained in the message. (Fishbein and Ajzen, 1981, p.339)

The failure of previous research to explicitly consider the information content of persuasive messages constitutes a serious limitation to our understanding of effectiveness in persuasive communications. It also suggests that many of the effects previously thought to be due to other factors may instead be attributable to variation in the arguments made during the sales presentation.

This limitation is evident even in works which have come to be regarded as classics in the field such as Janis

and Feshbach's (1953) study of high- versus low-level fear appeals in which fear level was manipulated via variation of the information content of the presentation. Fishbein and Ajzen continue:

Clearly, such variations in type of appeal are confounded with differences in the content of the communication. It follows that any effect of a message manipulation cannot be unambiguously attributed to the message factor in question; instead, it may be due to differences in the information provided.

A resolution of these problems is clearly needed, and although this alone constitute a sufficient justification for further research, these are not the only benefits to be gained. An increased understanding of message content effects is also likely to enable resolution of other empirical inconsistencies which remain in the literature.

BUYER-SELLER INTERACTION

Within the context of the sales presentation, salespersons communicate with buyers via direct face-to-face interaction in which each party seeks to influence the other. This dyadic interaction context constitutes the "channel" or medium through which the salesperson and buyer communicate.

Given the importance of personal selling as a tool for communicating with industrial markets, it is ironic that until recently issues centering on buyer-seller interaction

received little attention. Traditional approaches to the investigation of industrial buyer behavior have viewed the actions of buyers as independent from the actions of sellers (Johnston, 1981). Recognition of this shortcoming has resulted in a call for a dyadic approach in future research (Johnston, 1981; Johnston and Bonoma, 1981a, 1981b). This call has been echoed among sales management scholars who have noted that the personal selling literature suffers from a similar one-sidedness (Weitz, 81).

The dyadic interaction studies which have followed from this call have concerned themselves with two broad classes of issues. The first centers on the effects of buyer-seller similarity; the second on buyer-seller power relationships and influence strategies.

Buyer-Seller Similarity

One of the first statements of the importance of similarity among parties to persuasive communications can be found in the work of Festinger (1954) on attitude comparison. In its simplest form, Festinger's similarity hypothesis states that in choosing other people with whom to compare social attitudes, there is a preference for people whose attitudes are similar.

In an early study, Evans (1963) concluded that life insurance salespeople and their customers were more similar in cases in which interaction led to completed sales than

in interactions resulting in no sale. The results of other studies involving life insurance salespeople and their customers are comparable (Gadel, 1964; Riordan et.al., 1977.)

These studies, however, suffered from methodological limitations sufficiently serious to undermine both the internal and external validity of their results. Aside from questionable manipulations of the independent variable, one problem which has consistently undercut the internal validity of research in the area is a simple failure of to control for rival hypotheses. Work in cognitive dissonance reduction (Festinger, 1957) suggests that instead of similarity leading to sales, it is equally plausible that culmination of a sale leads to increases in perceptions of similarity.

Threatening the external validity of similarity research results is the failure of past research to study buyers and sellers simultaneously. External validity has also been compromised by the use of role-playing student subjects. Two such studies are those by Matthews et.al. (1972) and by Busch and Wilson (1976). Furthermore, many of the studies which have used "real world" buyers and sellers, such as those by Brock (1965) and by Woodside and Davenport (1974), have done so in retail rather than industrial sales situations.

BUYER RESPONSES

The dependent variables most frequently used in the study of persuasiveness and sales effectiveness are variables reflecting message reception and buyer yielding. Message reception has traditionally been operationalized using perceptual measures (attention, comprehension, and recall), while yielding, or acceptance of the sales argument has been measured in attitude change or behavioral terms.

Recognition of the importance of perceptual responses (attention, comprehension, recall, etc.) as determinants of attitude change eventually led to the systematic investigation of the ways in which receivers cognitively react to persuasive communications.

The Cognitive Response School

The origin of the cognitive response approach to persuasion research is credited to Greenwald who questioned the traditional assumption that persuasiveness is determined by the factors associated with the source, the message, and the channel per se. Rather, he argued, people interpret the information content of communications and relate it to their own knowledge structures, and in so doing, generate arguments which support or refute the message (Greenwald, 1968). Greenwald argued that

persuasion was determined, not by the content of the message, but by the content of these interpretative and evaluative cognitive reactions.

Early Studies of Cognitive Response

Early studies of cognitive responses are separable into four theoretically distinct approaches: 1) the learning theory approach, 2) the perceptual theory approach, 3) the functional theory approach, and 4) consistency theory approaches (Petty, Ostrum, and Brock, 1982). Common to all these early approaches is the implicit assumption that persuasion is equivalent to attitude change.

For a comprehensive review of the literature associated with each of these traditional approaches, the reader is referred to the summaries by Petty, Ostrum, and Brock (1981), and by Smith (1982).

Cognitive Responses Defined

At least two definitions of cognitive responses may be found in current use. According to the first, cognitive response consists of "all the thoughts that pass through a person's mind while he or she anticipates, listens to, or reflects on a communication" (Petty, et.al., 1982). This definition is consistent with the traditional approaches to the study, but implies temporal bounds and is, therefore, more restrictive than the second definition, which is more

consistent with current schematic approaches to cognitive responses.

It is the second of these definitions which will be used in this study. According to this definition, cognitive responses are "units of information pertaining to an object or issue and, as such, are the results of information processing and structuring activities" (Cacioppo, Harkins, and Petty, 1981). Examples of cognitive responses fitting this second definition are recognitions, associations, elaborations, ideas, and images.

Information processing and structuring activities and their influence on cognitive responses are discussed in the following chapter.

CHAPTER 3

SCHEMATIC INFORMATION PROCESSING AND COGNITIVE RESPONSES

Recent work in cognitive psychology, particularly in the area of social cognition, has shown the importance of schematic information processing on cognitive responses to communications. This chapter defines the concept of cognitive schemas and discusses the ways in which schematic processing impacts cognitive outcomes.

CHARACTERISTICS OF SCHEMATIC INFORMATION PROCESSING

Cognitive Schemas Defined

Cognitive schemas are commonly described as being similar to a number of other, closely related constructs including scripts, frames, prototypes, personal constructs, and thematic structures (Smith, 1982). Perhaps for this reason there is no universally agreed upon definition of cognitive schemas. There is, however, general agreement that cognitive schemas are knowledge structures which may be thought of as hierarchially arranged networks of mental representations. Current thinking is reflected in the definition offered by Taylor and Crocker (1981).

A schema is a cognitive structure that consists in part of the representations of some defined stimulus domain. The schema contains general knowledge about that domain, including a speci-

fication of the relationships among its attributes, as well as specific examples or instances of the stimulus domain.

The structure of schemas may be thought of as pyramidal and organized hierarchially with more abstract or general information at the top and categories of more specific information nested within the general categories (Taylor and Crocker, 1981). The lowest level consists of specific examples or instances of the schema. This structure integrates lower level units of information into a higher level unit with greater cohesion and meaning (Cohen and Ebbesen, 1979).

Contents of Cognitive Schemas

Research findings suggest that the mental representations contained in cognitive schemas may be quite diverse and can take a variety of forms. These forms range from simple visual images to the effects of past processing such as beliefs, evaluative judgements, and behavioral intentions (Smith, 1981; Shrank and Abelson, 1977; Wyer and Srull, 1981).

EFFECTS OF SCHEMATIC PROCESSING

Schemas affect information processing by determining what information will be attended to, how incoming information will be encoded, and how the information will be positioned in memory (Smith, 1981).

Encoding and Attention

First, schemas determine what stimuli in an information stream will be attended to. Selective attention appears to be guided by cognitive schemas which determine the ways in which a stream of incoming stimuli will be "chunked up" or encoded (Cohen, 1981). Encoding appears to be influenced by both intrinsic and comparative characteristics of the stimuli (McArthur, 1981).

Some of the earliest work in selective attention investigated the effects of intrinsic properties of stimuli such as brightness, color, and size (Titchener, 1908). The role of schemas in selective attention is supported by more recent work which has also considered the comparative properties of stimuli. This work indicates that people selectively attend to stimuli which are complex, novel, and unit forming (McArthur, 1981).

Interpretation

After attention, schemas determine how the stimuli will be interpreted. Schemas provide an interpretive framework for determining the "meaning" of the stimuli and influence how the stimuli are stored in memory (Cohen, 1981). When a stimulus configuration is matched against a schema, elements in the configuration come to be ordered in a manner that reflects the structure of the schema. This allows the perceiver to fill in information about the

stimulus object which is missing (Hamilton, 1981; Taylor and Crocker, 1981).

Recall

Finally, schemas affect the speed and accuracy of information recall. When an effort is made to retrieve information about the stimuli from memory, the relevant schemata will be reactivated and used to fill in forgotten or never seen behavioral features or relationships (Cohen, 1981; Hamilton, 1981).

DETERMINANTS OF SCHEMATIC PROCESSING

An understanding of the factors which influence the ways in which schematic processing takes place provides insight into likely differences among industrial buyers. This section discusses three groups of factors which have been shown to influence schematic processing: 1) schema accessibility factors, 2) observational goals, and 3) schema complexity. Relationships discussed in this section are represented in Figure 3.1.

Schema Accessibility

Schema (construct) accessibility may be defined as "the readiness with which a stored construct is utilized in information processing; i.e. schema accessibility is concerned with stored constructs, their utilization in

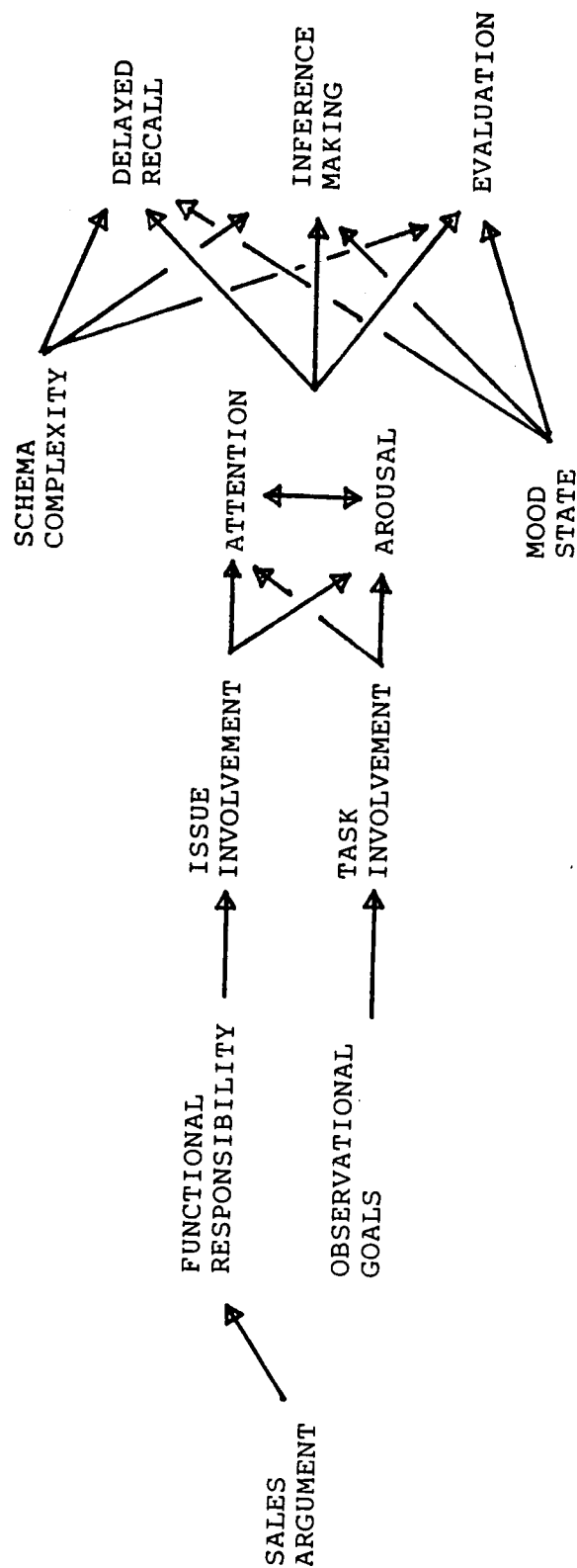


FIGURE 3.1: A COGNITIVE PROCESS MODEL OF INDUSTRIAL BUYER RESPONSES TO SALES PRESENTATIONS

information processing, and the likelihood of such utilization" (Higgins and King, 1981).

It is reasonable to expect that two schema accessibility factors, recency of activation and frequency of activation, are systematically related to the work division within industrial organizations. While additional factors such as expectations, motivation, and salience, may also influence schema accessibility under some circumstances (Higgins and King, 1981), activation recency and frequency are related to work performed by industrial buyers.

Research has shown that recent activation of a construct can increase its accessibility. Activation recency has been described as analogous to a layered storage bin (Wyer and Srull, 1981). According to this analogy, if information about a person or event has been retrieved from long term memory and reencoded or reorganized, the revised schema will be deposited on top of any previous information in the bin pertaining to that person or event. This new representation is more likely to be retrieved for subsequent processing than the original (Wyer and Srull, 1981).

Activation frequency also affects schema accessibility. Higgins and King (1981) note:

The more frequently a construct is activated, the more accessible it will become. If the repeated activation is massed over a short

period, then the accessibility effects will be relatively momentary. If repeated activation is dispersed over a long period, then the accessibility effects will be relatively prolonged.

Because it is likely that people develop cognitive schemas containing mental representations of the work that they engage in, and because people in different departments of industrial organizations do different types of work, it is quite likely that industrial buying task group members representing different organizational functions or departments process information using schemas with different contents. The recency of activation hypothesis suggests that each member would likely process information using schemas containing the representations related to his or her own work.

The expectation that one would find systematic differences in work centered cognitive schemas along functional lines is further strengthened by the frequency of activation argument since people are almost certain to activate schemas for their own work more frequently than any schemas they may have for the work of others.

Observational Goals

Recent research indicates that in addition to understanding the buyer's functional responsibilities, a second requisite for understanding cognitive responses to sales presentations is a knowledge of the buyer's observational

goals. The ways in which observational goals influence information processing are specified in theories discussed by Cohen (1981).

Cohen defines an observational goal as "the purpose for which an individual plans to use the information gathered from the observation of another's behavior" and proposes a taxonomy of observational goals comprised of three categories; 1) information seeking or learning goals, 2) personality analysis goals, and 3) judgement goals. According to the theory, specification of an observational goal is associated with activation of a schema which allows attention to focus on those categories of behavior that are relevant for the perceiver's purpose (Wyer and Srull, 1981).

Cohen's position is not without empirical support. There is a notable consistency in research results indicating that persons with impression formation goals encode incoming information differently than people observing the same information stream with task learning goals, and that subjects instructed to learn tasks are more accurate at recalling details of the task performed (Cohen and Ebbesen, 1979; Jeffery and Mischel, 1979).

Schema Complexity Effects

Results of research in social cognition indicate that the complexity of schemas used in information processing

influences the outcomes of schematic information processing, particularly affective outcomes.

The term schema complexity has been used to indicate complexity with regard to a variety of the structural characteristics or representational contents of cognitive structures. These include the number of dimensions represented within a schema, the number of hierarchical levels represented, the numbers of nodes contained, the distances between these nodes, and the numbers of associations between them (Linville, 1982). As conceptualized by Linville, schema complexity is domain specific rather than a general personality trait. This indicates that a person may possess complex schemas in certain domains but less complex schemas in others.

The importance of schema complexity lies in its impact on affective responses. Research in social cognition has produced ample empirical evidence in support of the complexity-extremity hypothesis. This hypothesis holds that there is an inverse relationship between the complexity of schemas used to process information within a domain and the extremity of affective responses in that domain (Linville, 1982). Thus, the more complex the schema, the more moderate the judgement.

The implications of schema complexity for examining systematic interindividual differences within an industrial

buying task group arise from the relationship between schema complexity and expertise. Since schemas are knowledge structures reflecting an individual's experiences with a particular domain, it is reasonable to expect that schema complexity within a domain increases with experience or expertise in that domain.

This evolutionary process is described by Fiske and Kinder (1981) who investigated knowledge acquisition by experts. They found that, among experts, practice and experience led not only to new knowledge, but also to more complex ways of organizing that knowledge.

Not only is there more information, but it is organized more complexly. Experts know more, but they also make more connections. . . . The development of integrated knowledge structures is one way to explain the paradox of the expert; that is, why knowing a lot in a particular domain does not necessarily make it harder to remember any one thing. The escalation of information need not interfere with rapid retrieval, if the information is organized.

The tendency for schemas to increase in complexity with increases in experience, and the association between schema complexity and extremity of affective responses have implications of interest in this study. It seems likely that industrial buying task group members representing different departments should exhibit systematic variation in the extremity of their affective responses to sales presentations. This is because buying task group members

(engineers and accountants, for example) can be expected to have cognitive schemas corresponding to the work they perform in the organization and because there are differences in the extent to which the information contained in sales presentations is applicable to these different types of work. Thus, an engineer attending a sales presentation which emphasizes the financial strength of a supplier, for example, might be expected to make a more extreme evaluation of that supplier's financial position than would an accountant attending the same presentation.

EFFECTS OF INVOLVEMENT

Recent work by attitude researchers has shown that a receiver's "involvement" with the topic of a communication significantly influences that receiver's cognitive responses. This work has demonstrated that involvement enhances information processing and that it can act as an important mediator of forewarning and message repetition effects (Petty and Cacioppo, 1979; Caldini and Petty, 1981; Sawyer, 1981). This section defines involvement and discusses its importance in determining cognitive responses to sales presentations.

It is interesting to note that involvement is closely related to another concept which has played an important role in past conceptualizations of industrial buyer

behavior, the concept of perceived risk. Bloch and Richins (1983) discuss the similarities between involvement and the "amount at stake" or "consequences" dimension of perceived risk.

Perceived risk has been conceptualized as an individual level factor which influences the industrial buying processes (Webster and Wind, 1972; Sheth, 1973). It has been shown, for example, that risk perceptions influence communication patterns within the buying task group (Cardozo and Cagley, 1971; Choffray and Johnston, 1979; Lehmann and O'Shaughnessy, 1974; Spekman and Ford, 1977, Spekman and Stern, 1979). There is also evidence to indicate that at a given stage in the purchase decision process, and for a given product class, risk perceptions vary among people representing different organizational departments and with different functional responsibilities (Upah, 1980).

Perceived risk is generally viewed as a two dimensional construct. These two dimensions have been called "inherent risk" and "handled risk" (Bettman, 1973), but within the domain of industrial buyer behavior, they are now usually referred to as "uncertainty" and "consequences." "Uncertainty" refers to lack of information about the likelihood that a course of action will be followed by undesirable outcomes, while "consequences"

refers to how intensely undesirable these outcomes would be (Choffray and Johnston, 1979).

There are two distinct types of involvement, arising from two different ways in which a person can attach importance to a persuasive communication. Issue involvement, which has also been called "ego involvement" or "personal involvement" denotes the importance attached to the subject of the communication. Response involvement reflects the importance attached by the individual to his or her own response to the communication (Petty and Cacioppo, 1979).

Involvement is thought to affect information processing in more than one way. One way is through the effects of involvement on susceptibility to attitude change (Petty and Cacioppo, 1979). According to the traditional view, increasing involvement is associated with a narrowing of the receivers latitude of message acceptance and increased resistance to attitude change (Sherif and Cantril, 1947; Sherif and Hovland, 1961).

A more recent conceptualization holds that involvement influences information processing through the availability of cognitive schemas. This view holds that involved persons differ from the uninvolved in the nature of the schemas available, the ease with which such schemas are activated, and the facility with which such schemas are

invoked in information processing (Fiske and Kinder, 1981).

Some clarification as to the mechanism through which involvement effects arise is offered by recent research on the role of the self in information processing. This work confirms a strong link between involvement and attention, and suggests that when information is relevant to some area that is important to the perceiver, that information is focused on and elaborated upon with information from the perceiver's own schemas (Marcus and Smith, 1981).

CHAPTER 4

HYPOTHESES

This chapter presents hypotheses suggested by the model of industrial buyer cognitive responses to sales presentations which was described earlier. This model holds that industrial buyer responses to sales presentations are determined by four variables: 1) the extent to which the arguments contained in the sales presentation match the buyer's functional responsibilities, 2) the goals which the buyer seeks to accomplish by observing the sales presentation, 3) the complexity of the cognitive schemas which are available to the buyer for processing information from the presentation, and 4) the buyer's mood.

The first hypotheses to be presented focus on the unidimensional effects of each of these four variables considered in isolation. Following the specification of unidimensional hypotheses, more complex hypotheses will be specified. These subsequent hypotheses are multidimensional and focus on the simultaneous effects of all four variables.

HYPOTHESIS I: EFFECTS OF INFORMATION CONTENT

This hypothesis holds that buyers will systematically differ in the importance they attach to the subject matter

of sales presentations, and that these differences in perceived importance are associated with differences in attention and arousal.

Theory holds that the importance attached by a message recipient to the subject of a communication; i.e., message involvement, depends upon the extent to which the recipient believes that there are personal consequences associated with the subject of the communication. This suggests that industrial buyers differ in the importance they attach to arguments which are frequently offered in sales presentations since these arguments typically stress specific supplier capabilities, such as technical expertise, or dependability, which have different consequences for buyers with different functional responsibilities.

Theory also shows that people are more attentive to subject matter which is perceived to be of personal importance and that attention and arousal covary. For these reasons, we expect that message involvement, attention, and arousal will be higher when sales presentation arguments match buyers' functional responsibilities than when they do not. Specific sub-hypotheses are stated below and are represented in Figure 4.1.

Hypothesis 1A

Issue involvement scores will be higher when there is a match between sales presentation information information

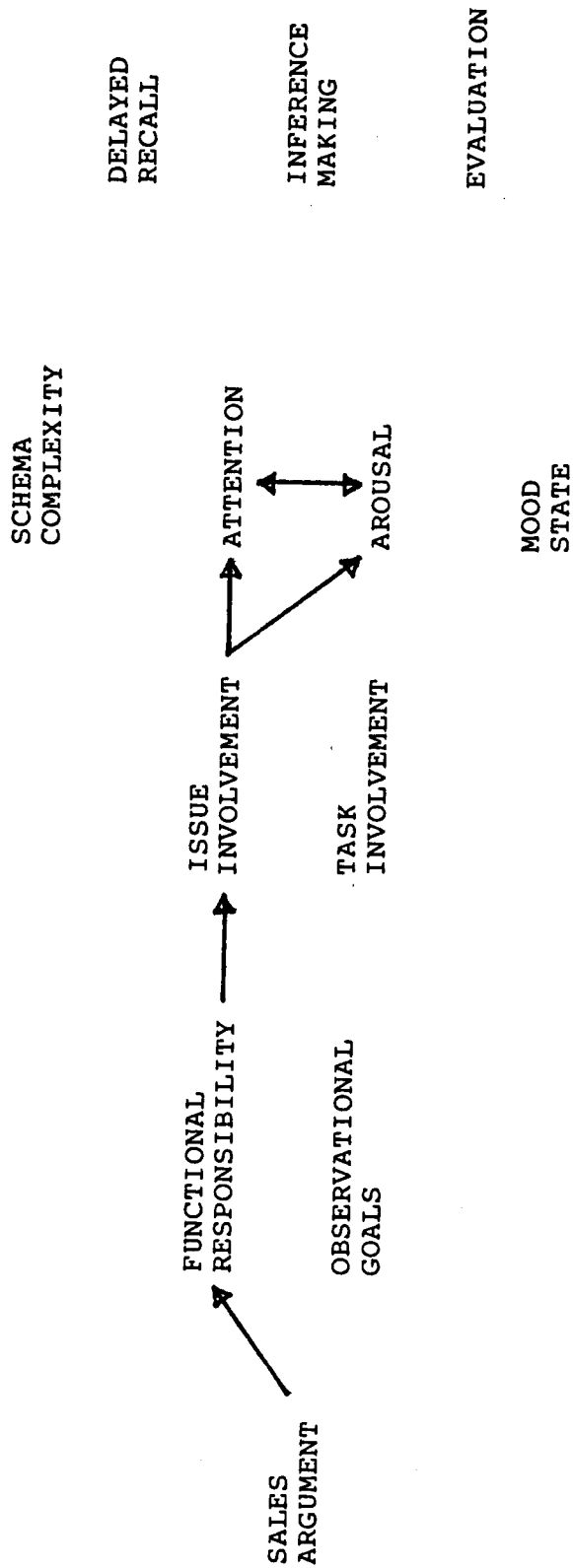


FIGURE 4.1: EFFECTS OF MATCHING SALES PRESENTATION CONTENT TO FUNCTIONAL RESPONSIBILITY ON INVOLVEMENT, ATTENTION, AND AROUSAL

content and buyers' functional responsibilities than when there is not.

Hypothesis 1B

Attention scores will be higher when sales presentation content matches functional responsibilities than when it does not.

Hypothesis 1C

Arousal scores will be higher when sales presentation content matches functional responsibilities than when it does not.

Hypothesis 1D

Attention and arousal will covary.

Hypothesis 1E

Delayed recall scores will be higher when there is a match between sales presentation content and functional responsibility than when there is not.

Hypothesis 1F

Inference making scores will be higher when sales presentation content matches functional responsibility than when it does not.

Hypothesis 1G

Presentation evaluation scores will be less extreme when sales presentation content matches functional responsibility than when it does not.

Hypothesis 1H

Supplier evaluation scores will be less extreme when sales presentation content matches functional responsibility than when it does not.

Hypothesis 1I

Salesperson evaluation scores will be less extreme when sales presentation content matches buyer functional responsibility than when it does not.

HYPOTHESIS II: EFFECTS OF OBSERVATIONAL GOALS

As noted earlier, the concept of involvement is closely related to the concept of perceived risk. Theory suggests that a person's involvement with a particular task varies as a function of consequences associated with task outcomes, and that involvement is positively associated with attention and arousal.

Consequently, involvement differences may help to explain some of the observed consequences of different observational goals. It seems reasonable that people would find the objective of evaluating a supplier to be more involving than the objective of merely learning about the supplier. For these reasons, task involvement, attention, and arousal are expected to be higher for subjects observing sales presentations with evaluative goals than for those who observe the sales presentation with learning

goals. Specific sub-hypotheses are stated below and are represented in Figure 4.2.

Hypothesis 2A

Task involvement scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the learning goal group..

Hypothesis 2B

Attention scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the learning goal group.

Hypothesis 2C

Arousal scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the learning goal group.

Hypothesis 2D

Attention scores and arousal scores will covary.

Hypothesis 2E

Delayed recall scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the group receiving the learning manipulation.

Hypothesis 2F

Inference making scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the learning goal group.

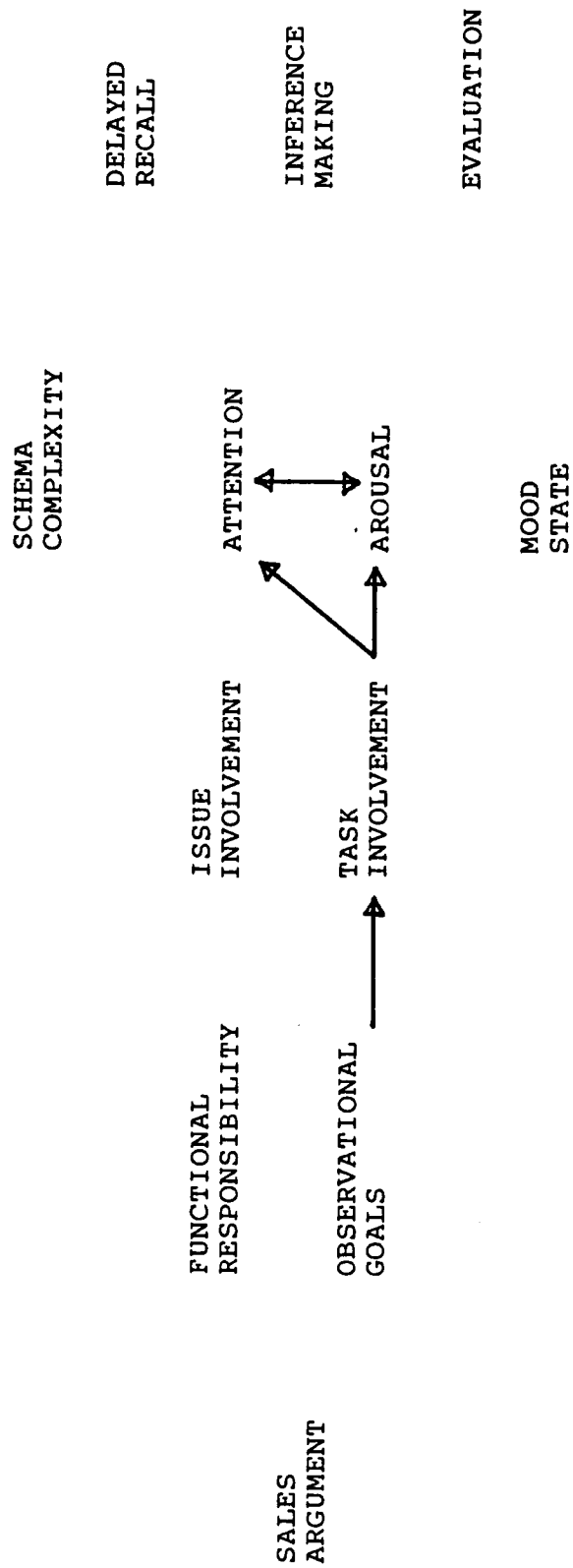


FIGURE 4.2: EFFECTS OF OBSERVATIONAL GOALS ON INVOLVEMENT, ATTENTION, AND AROUSAL

Hypothesis 2G

Presentation evaluation scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the group receiving the learning goal manipulation.

Hypothesis 2H

Supplier evaluation scores will be higher for buyers in the group receiving the evaluation goal manipulation than for buyers in the group receiving the learning goal manipulation.

Hypothesis 2I

Salesperson evaluation scores will be higher for buyers who receive the evaluation goal manipulation than for buyers in the learning goal group.

HYPOTHESIS III: EFFECTS OF SCHEMA COMPLEXITY

Present theory suggests that certain information processing effects are associated with schema complexity. Research findings suggest that; 1) the availability of cognitive schemata facilitates information retrieval, 2) that schema complexity is positively associated with inference making, and 3) that schema complexity is inversely related to evaluative extremity.

The relationship between schema complexity and information recall is explainable in terms of the number of

linkages between memory nodes which are present in complex schemas. Since complex schemas contain more linkages between pieces of information than simple schemas, a retrieval cue will activate more of the linkages in complex schemas than in simple ones, and more information will be available from memory.

Research on inference making indicates that when a person perceives that a stimulus object "fits" a particular cognitive structure, the object comes to be perceived as having characteristics associated with the structure. Fitting a stimulus object to a complex schema (a schema with relatively many dimensions or characteristics for the object) should, therefore, result in a larger number of inferences being made about the object than fitting it to a simple schema.

Finally, research indicates an inverse relationship between schema complexity and evaluative extremity. People with simple schemas are more likely to make extreme evaluations of an object than people with complex schemas. This is because simple schemas have fewer evaluative positions than complex schemas and it is, therefore, more unlikely that an object will be evaluated at a middle position. Specific sub-hypotheses are stated below and are presented in Figure 4.3.

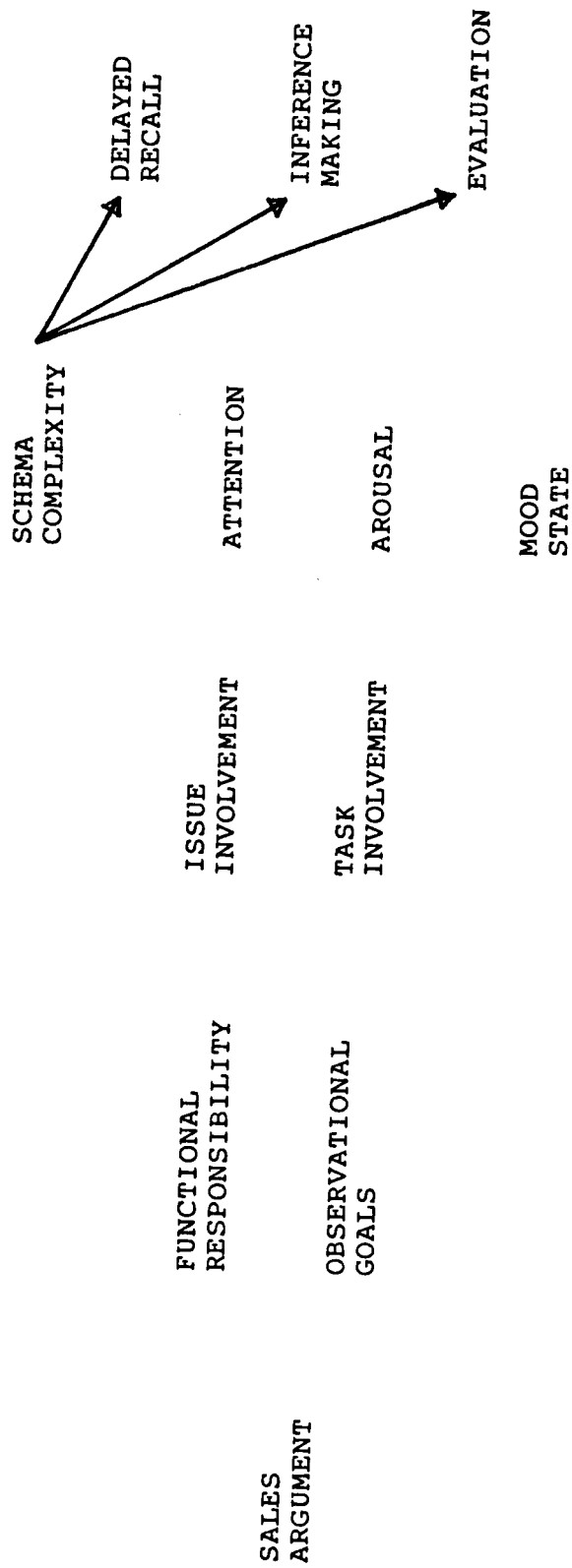


FIGURE 4.3: EFFECTS OF SCHEMA COMPLEXITY ON COGNITIVE OUTCOMES

Hypothesis 3A

Because subjects are more schematically complex in their own areas of functional responsibility than in areas which are the responsibility of other subjects, schema complexity scores will be higher when the information content of the message matches functional responsibility than when it does not.

Hypothesis 3B

Delayed recall scores and schema complexity scores will covary.

Hypothesis 3C

Inference making scores and schema complexity scores will covary.

Hypothesis 3D

Scores indicating the extremity of presentation evaluations will be high when schema complexity scores are low.

Hypothesis 3E

Scores indicating the extremity of vendor evaluations will be high when schema complexity scores are low.

Hypothesis 3F

Scores indicating the extremity of salesperson evaluations will be high when schema complexity scores are low.

HYPOTHESIS IV: EFFECTS OF MOOD

Recent research in cognitive social psychology provides evidence that cognitive consequences of information processing are significantly influenced by the mood state which exists while processing takes place. While there remains some uncertainty as to whether positive or negative mood states are always linked to states of arousal, there can be little doubt that mood states influence; 1) the types of information retrieved from memory, 2) engagement in inference making, and 3) the favorability of evaluative judgements.

Mood influences recall of information from memory through its effects on information availability. Isen (1975) notes that when people are in a particular mood state, material consistent with that mood state is more accessible, and therefore more likely to be remembered than at other times. This suggests that a person would be better able to recall the statements contained in sales presentation when in a positive mood state than at other times since sales presentations invariably contain statements which are positively toned. The same logic extends to the formation of evaluative judgements.

Inference making is an indirect consequence of mood state. Research supports the position that moderate levels

of arousal facilitate cognitive processing, including inference making, and there is some evidence in support of the position that mood states, whether positive or negative, lead to increased arousal. Specific sub-hypotheses are stated below and are shown Figure 4.4.

Hypothesis 4A

Arousal scores will covary with scores indicating mood intensity; i.e. with mood score extremity.

Hypothesis 4B

Mood scores and delayed recall scores will covary.

Hypothesis 4C

Mood scores and inference making scores will covary.

Hypothesis 4D

Mood scores and presentation evaluation scores will covary.

Hypothesis 4E

Mood scores and supplier evaluation scores will covary.

Hypothesis 4F

Mood scores and salesperson evaluation scores will covary.

HYPOTHESIS V: EFFECTS OF TREATMENTS
ON AROUSAL AND ATTENTION

This hypothesis holds that the effects of sales presentation match to functional responsibility, and observational goals upon arousal and attention are additive.

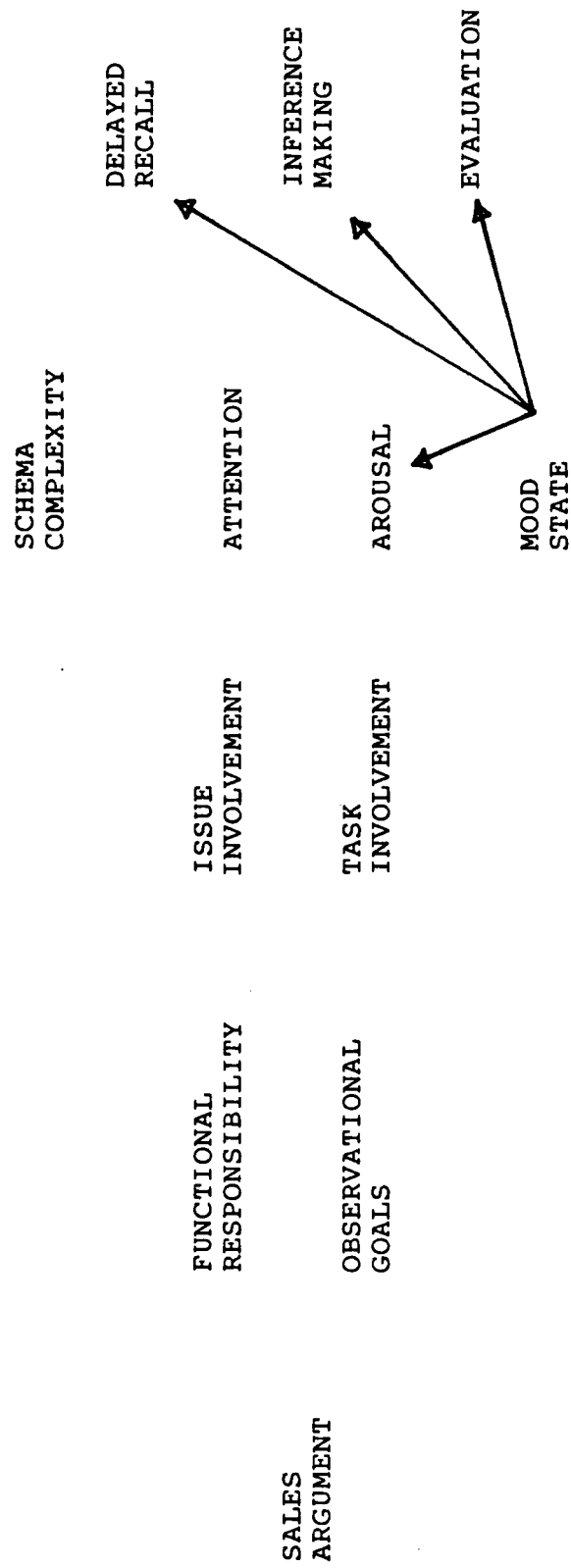


FIGURE 4.4: EFFECTS OF MOOD STATE ON AROUSAL AND COGNITIVE OUTCOMES

Specific sub-hypotheses are stated below and are represented in Figure 4.5. Treatment groups referred to in the following hypothesis statements correspond to the treatment groups as defined in Table 4.1.

Hypothesized differences among treatment groups rest on the assumption that the magnitude of effects of the two factors are the same. This assumption makes it possible to assess combined effects of different levels of the two factors. In the sub-hypotheses below, treatment group similarities and differences were derived by assigning (within each factor) an arbitrary value of zero to the factor level with the lowest expected impact on the response variables, and an arbitrary value of one to the remaining factor level. Total of these values is zero for treatment group one, one for treatment groups two and three, and two for treatment group four.

Hypothesis 5A

Attention scores and arousal scores will covary.

Hypothesis 5B

Attention and arousal scores for the subjects in treatment group 1 will be lower than for those of any other treatment group.

Hypothesis 5C

Attention and arousal scores for subjects in treatment groups 2 and 3 will be lower than those of subjects in

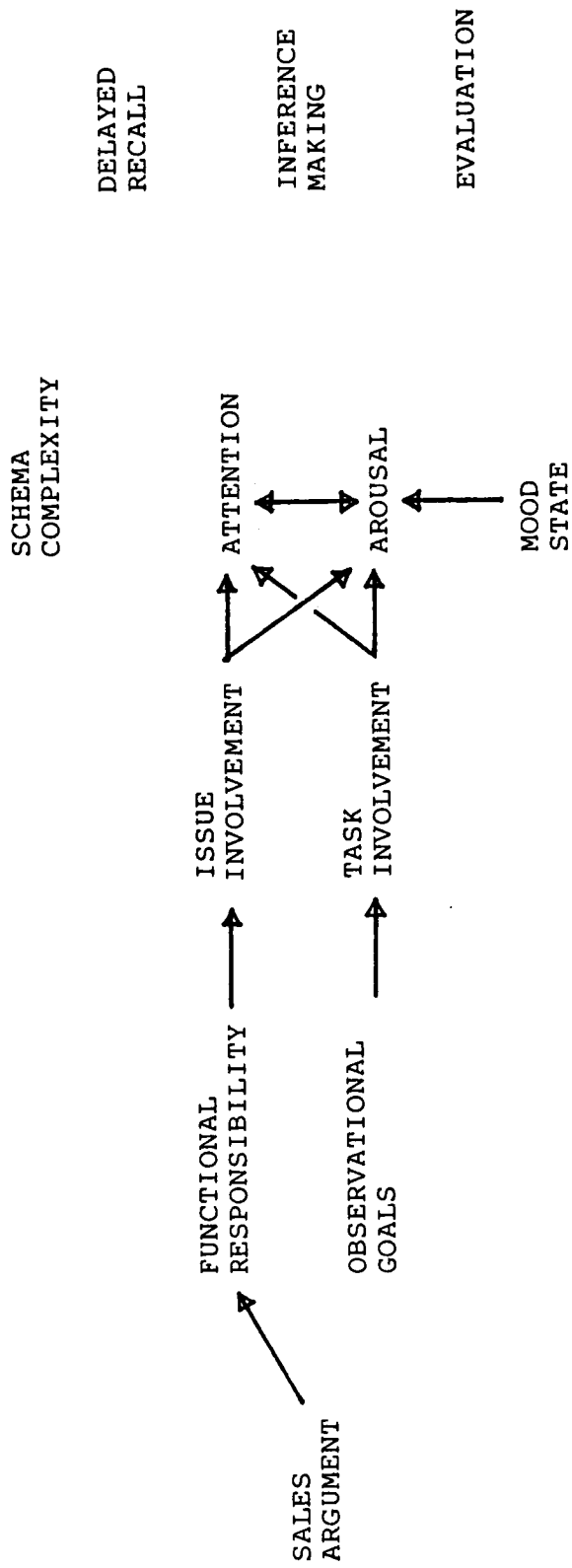


FIGURE 4.5: COMBINED EFFECTS OF INFORMATION CONTENT, OBSERVATIONAL GOALS, AND MOOD STATE ON ATTENTION AND AROUSAL

TABLE 4.1: TREATMENT GROUPS

Treatment Group	Presentation Responsibility Category	Observational Goal Manipulation
1	Non-match	Learning
2	Non-match	Evaluation
3	Match	Learning
4	Match	Evaluation

treatment group 4 but higher than those of subjects in treatment group 1.

Hypothesis 5D

Attention and arousal scores for subjects in treatment group 4 will be higher than those for subjects in any other group.

HYPOTHESIS VI: EFFECTS OF TREATMENTS ON INFERENCES AND RECALL

The rationale underlying this hypothesis is that the effects of the two factors on delayed recall and inferences are additive. The dependent variables should, therefore, differ most between treatment groups 1 and 4 since these groups have no treatments in common. The treatment groups referred to in the following hypothesis statements correspond to the treatment groups defined in Table 4.1.

Hypothesis 6A

Delayed recall scores and inference scores will covary.

Hypothesis 6B. Delayed recall and inference making scores for the subjects in treatment group 1 will be lower than for those of any other treatment group.

Hypothesis 6C

Delayed recall and inference scores for subjects in treatment groups 2 and 3 will be lower than those for the

subjects in treatment group 4 but higher than those for the subjects in treatment group 1.

Hypothesis 6D

Delayed recall and inference scores for subjects in treatment group 4 will be higher than those for subjects in any other group.

HYPOTHESIS VII: EFFECTS OF TREATMENTS ON EVALUATIONS

The rationale underlying this hypothesis is that the effects of the two factors on evaluations of the sales presentation, the vendor, and the salesperson are additive. The dependent variables should, therefore, differ most between treatment groups 1 and 4 since these groups have no treatments in common. The treatment groups referred to in the following hypothesis statements correspond to the treatment groups defined in Table 4.1.

Hypothesis 7A

Presentation evaluation scores, vendor evaluation scores, and salesperson evaluation scores will covary.

Hypothesis 7B

Evaluation scores for the subjects in treatment group 1 will be lower than for those of any other treatment group.

Hypothesis 7C

Evaluation scores for subjects in treatment groups 2 and 3 will be lower than those of subjects in treatment

group 4 but higher than those of subjects in treatment group 1.

Hypothesis 7D

Evaluation scores for subjects in treatment group 4 will be higher than those for subjects in any other group.

CHAPTER 5

RESEARCH METHODOLOGY

RESEARCH ENVIRONMENT

Research Design

An experiment was conducted in order to empirically test the set of hypotheses presented in Chapter 4. The experiment was conducted in a field setting, and employed a repeated measures design which treated sales presentation information content as a three-level within-subjects factor, observational goals as a two-level between-subjects factor, and both schema complexity and mood as covariates. The study investigated effects of these variables on multiple dependent measures. An illustration representing this design is presented as Figure 5.1.

Three issues merit special consideration in repeated measures designs, and all were carefully considered before making the decision to treat the variables as proposed. These issues are: 1) possible order effects of the proposed treatments on individual subjects and the availability of workable procedures for controlling these effects, 2) sample size (and participating firm co-operation) requirements resulting from the assignment of between-subjects factors to independent groups, and 3) implications of the chosen design in terms of the complexity of the subsequent

Sales Presentation Information Content

Learning Group Subjects	<u>Engineering</u>	<u>Finance</u>	<u>Purchasing</u>
1	$\hat{Y}_{1,e}$	$\hat{Y}_{1,f}$	$\hat{Y}_{1,p}$
2	$\hat{Y}_{2,e}$	$\hat{Y}_{2,f}$	$\hat{Y}_{2,p}$
.	.	.	.
.	.	.	.
.	.	.	.
34	$\hat{Y}_{34,e}$	$\hat{Y}_{34,f}$	$\hat{Y}_{34,p}$
Evaluation Group Subjects			
35	$\hat{Y}_{35,e}$	$\hat{Y}_{35,f}$	$\hat{Y}_{35,p}$
36	$\hat{Y}_{36,e}$	$\hat{Y}_{36,f}$	$\hat{Y}_{36,p}$
.	.	.	.
.	.	.	.
.	.	.	.
68	$\hat{Y}_{68,e}$	$\hat{Y}_{68,f}$	$\hat{Y}_{68,p}$

Note: Entries are shown as estimates to reflect adjustment for the covariates (mood state and schema complexity).

FIGURE 5.1: EXPERIMENTAL DESIGN

analysis (Mook, 1982; Johnston and Pennypacker, 1980; Kimmell, 1975; Runkle and McGrath, 1972).

Product Class

Since industrial buyers with different functional responsibilities were expected to differ in the schematic complexity of criteria which they applied in evaluating the hypothetical purchase schematic information processing effects were given careful consideration in choosing a product class for use in this study. Engineers, purchasing agents, and accountants, for example, were expected to systematically differ in their ability to apply technical, financial, or supplier capability criteria to the evaluation of purchase benefits.

In order to systematically investigate these differences in a field experiment setting, it was desirable to identify a product of sufficient importance to the firm to merit consideration by a group of buyers with different responsibilities. In addition, it was important to choose a product to which different types of evaluative criteria could be applied.

An industrial lighting system was chosen as the product for consideration in this study, because a lighting system satisfies both of these criteria. First, the product is one which can be evaluated "technically." Industrial lighting system attributes such as the amount of

light produced, the intensity of that light, and the resulting level of illumination offer benefits which can be quantified and precisely expressed with such terms as lumens, candlepower, footcandles, and foot-lamperts (Allephin, 1973). Secondly, purchase of this product involves a commitment to a long-term relationship between buyer and seller since an in-place lighting system has a service life of 12 to 15 years during which time buyers repeatedly turn to the seller for the physical materials and technical expertise needed to maintain the system. Under such circumstances, the capabilities of competing vendors are carefully scrutinized (Hutt and Speh, 1982).

Finally, lighting system purchases warrant financial analysis since the decision to convert lighting systems is a capital investment decision to which various financial criteria, such as return on investment and qualification for various tax credits, are applicable.

Participating Firms

Data collection took place in the Fall of 1985 at facilities of a cross-section of manufacturing firms located in middle and eastern Tennessee. The fourteen firms which agreed to participate in the study comprised a convenience sample of firms with 500 or more employees listed in the 1985 edition of the Tennessee Directory of Manufacturers. Standard Industrial Classification (S.I.C.)

codes and code descriptions for these firms are included in the APPENDIX.

Operating executives in these firms were contacted and asked to participate in the study. At this initial contact stage, an effort was made to accurately represent the purposes of the study but in a manner which would minimize possibilities of experimenter demand effects or compromise to subsequent experimental manipulations. Consequently, the information which they were given about the nature and purpose of the study was considerably less specific than information concerning requirements for participation. In asking for a commitment to participate, these executives were told the following:

- 1) that this was an academic study designed to identify ways in which people with different backgrounds differ in their responses to sales presentations,
- 2) that participation would involve people from their organization listening to three tape recorded sales presentations and then recording their reactions on a questionnaire type, pencil and paper instrument,
- 3) that the presentations centered on different aspects of a hypothetical lighting system purchase, and
- 4) that the entire exercise would take from one hour to an hour and a half, and would require no commitment to further participation for return visits or follow-ups.

After providing this information, these contacts were asked for a commitment to participate in the study. At this point, those not wishing to participate were thanked, and those agreeing were given guidelines for providing subjects. These guidelines are described in the following section.

As a matter of professional courtesy, each of these same initial contacts was sent a personal letter expressing thanks for participation in the study. These letters, which also explicitly thanked the individual participants, were sent to each firm as soon as data collection had been completed.

Subjects

In practice, it is likely that there is wide firm-to-firm variation in the composition of industrial buying groups engaged in lighting system purchases. Since the central focus of this research was on the effects of individual buyer differences rather than on issues related to departmental interaction and group dynamics, it was more important to maximize systematic differences between individual subjects than to achieve proportional departmental representation. Therefore, it was not considered necessary to specify departments from which subjects should be drawn.

Quite the contrary, since it is reasonable to expect wide firm-to-firm variation in the organizational positions

of the people who perform these basic functions, researcher specification of organizational departments could easily have led to improper subject selection. For example, responsibility for making technical judgements about a lighting system purchase might rest with the chief production engineer in one firm, a quality control assistant in a second firm, and a purchasing agent in a third. Because it was critical that the functions performed by subjects in this experiment be correctly identified, subject functional groups in this experiment were formed by management of the participating firms rather than by researcher specification.

At the time that the executive contacts agreed to participate in the study by providing, as subjects, employees in their firm whom they would trust to gather information and make judgements about; 1) technical aspects of a lighting system purchase, 2) financial aspects of a lighting system purchase, and 3) selecting a lighting system supplier. They were told that because of experimental design considerations, it was necessary to have two subjects from each of the three decision areas.

Seventy-six individuals were selected in this manner, and all provided data in accordance with experimental procedures. Sixty-eight of these sets of responses were found to be useable. Distribution of these sixty-eight

subjects with respect to organizational department and hierarchical level are shown in Tables 5.1 and 5.2.

EXPERIMENTAL PROCEDURES

Independent variables in this experiment consisted of one within-subjects factor, one between-subjects factor, and two covariates. Each subject listened to three tape recorded sales presentations. Under this arrangement, the information content of one sales presentation matched the buyers responsibility area and the information content of the two remaining presentations did not. Since each subject in the experiment was exposed to all three sales presentations, the three levels of information content constituted the within-subjects factor.

Buyer's goals were also manipulated in the study. One group of subjects was assigned the goal of "learning" about the product and the vendor and a separate group was assigned the task of "evaluating" the product and the vendor. Buyer's observational goals, therefore, constituted a two-level independent groups factor. Complexity of cognitive schemas available to the buyer for processing information from the sales presentation, and the buyers' moods were measured and treated as covariates.

TABLE 5.1: DISTRIBUTION OF SUBJECTS BY FUNCTIONAL AREA AND ORGANIZATIONAL DEPARTMENT

Functional Area	Production Operations	Industrial Engineering	Engineering Design	General Management	Finance	Purchasing	TOTAL
Engineering	12	1	12	1	0	0	26
Finance	0	0	0	1	19	0	20
Purchasing	0	0	0	0	0	22	22
TOTAL	12	1	12	2	19	22	68

TABLE 5.2: DISTRIBUTION OF SUBJECTS BY FUNCTIONAL AREA AND ORGANIZATIONAL LEVEL

Functional Area	Top	Upper Middle	Middle	Senior Staff	Junior Staff	First Line	TOTAL
Engineering	2	1	6	5	5	7	26
Finance	0	1	5	7	3	4	20
Purchasing	1	7	5	5	3	1	22
TOTAL	3	9	16	17	11	12	68

Dependent variables considered in this study were: 1) attention, 2) arousal, 3) message involvement, 4) task involvement, 5) presentation evaluation, 6) vendor evaluation, 7) sales person evaluation, 8) delayed recall, and 9) inference making.

Procedures to manipulate the two factors and to measure the covariates and dependent variables are discussed below. The sequence in which manipulation and measurement took place is summarized in Figure 5.2.

SCRIPT DEVELOPMENT PROCEDURES

Scripts from which the sales presentation tapes were made are presented in the APPENDIX. These tapes were developed from information gathered in an extensive series of interviews conducted during the summer of 1985. These interviews were undertaken to develop a more thorough understanding of processes involved in the purchase (and sale) of industrial lighting systems.

In order to learn more about lighting systems from the viewpoint of the purchasing firm, a series of interviews was conducted with engineering, finance, and purchasing personnel from manufacturing firms located in Knoxville, Tennessee. These firms engaged in the manufacture of a variety of products and comprised a convenience sample of firms with 500 or more employees. These interviews focused

1. Measure schema complexity for the three vendor/product dimensions.
2. Assign subjects to observational goal groups.
3. Measure involvement with the assigned observational goal.
4. Measure Mood.
5. Play tape recorded sales presentation script stressing the first of the three vendor/product dimensions.
6. Measure arousal, attention, message involvement reactions to the first presentation, followed by subject evaluations of the sales presentation, the salesperson, and the vendor.
7. Conduct a manipulation check on the information content of the sales presentation.
8. Repeat steps 5 through 8 for the second and third presentations.
9. Administer inference making measure.
10. Administer delayed recall measure.

FIGURE 5.2 MANIPULATION AND MEASUREMENT SEQUENCE

on identifying; 1) the manner in which such a purchase would be initiated, 2) who would participate in the various purchase decisions, 3) the information needs and interests of these participants, and 4) the criteria they would use in judging the product, the supplier, salespersons, and sales presentations.

To learn more about procedures used in selling lighting systems, a series of meetings and interviews was conducted with the sales staff of a regional electrical equipment distributor. These interviews covered various aspects of lighting equipment sales situations from the seller's perspective, but focused on the content of typical sales presentations for this type of product. This clarified the techniques used in opening, making, and closing this type of presentation.

Lighting system design specialists with a national lighting equipment manufacturer were also contacted during the course of script development. These persons were particularly helpful in clarifying the parameters of a "typical" lighting system improvement purchase in terms of building size, mounting heights, target light output levels, etc., and in providing technically correct engineering and financial data in accordance with these parameters.

The scripts were pre-tested in the early fall of 1985

in firms with 500 or more employees with manufacturing facilities located in Knoxville, Tennessee. They were then modified in accordance with pretest subject reactions.

WITHIN-SUBJECTS FACTOR

Sales presentation information content was the experimental stimulus of primary interest in this study. Three tape recorded sales presentations were played to each of the participating subjects. The information content of the tapes was manipulated by varying statements in the text which constituted the tape's script. Each of the scripts consisted of a set of statements emphasizing benefits to be gained by purchasing a replacement lighting system from a hypothetical vendor.

Sales Presentation Information Content

In an effort to maximize systematic variance, the arguments known to be of interest to buyers with different functional responsibilities were separated into separate tapes. One tape consisted of arguments structured as technical descriptions of the benefits of product purchase. A second tape contained arguments describing financial benefits to be derived from product purchase. The final presentation stressed the attractiveness of the hypothetical vendor on key dimensions identified during preliminary interviews.

Each of the tape recorded presentations was played to each of the subjects in the study. Order of presentation was random. These presentations were regarded as matching or not matching each buyer's functional responsibilities as presented in Figure 5.3.

BETWEEN-SUBJECTS FACTOR

Observational Goals

Observational goals were manipulated via written instructions to the subjects. Prior to playing the tape recorded sales presentations, each subject was handed a written statement specifying one of two observational goals to be accomplished while listening to the three tapes. The subject was instructed to listen to three presentations either; 1) "to become familiar with" or "learn about" this vendor and product, or 2) "to make an evaluation of" this vendor and product.

Subjects were selected for the study in multiples of two. Within each participating firm, an effort was made to obtain two subjects from each of the three functional responsibility groups. A fully cooperating firm was, therefore, one which provided two buyers with design responsibilities, two with purchasing responsibilities, and two with financial analysis responsibilities.

For each buying responsibility pair, one subject was

Information Content	Observational Goal	
	Evaluation	Learning
Match	HIGH	MIDDLE
Non- Match	MIDDLE	LOW

Note: Cell entries denote expected ranges of dependent variable scores.

FIGURE 5.3: COMBINED EFFECTS OF TREATMENTS ON INVOLVEMENT, ATTENTION, AROUSAL AND COGNITIVE RESPONSES

assigned to the learning goal group, the other to the evaluation goal group. This assignment of subjects to observational goal groups was randomized.

COVARIATES

Schema Complexity

Since it is difficult to exercise experimental control over schema effects in a field setting, the best available option was to treat schema complexity as a covariate. Treatment of schema complexity as a covariate constitutes a form of statistical control in the case in which experimental control is unachievable (Kerlinger, 1964).

Because buyers were expected to be more schematically complex within their own functional responsibility areas, there existed a possibility for a confounding effect of schema complexity on match of sales presentation content to functional responsibility. In order to control for this potentially confounding effect, schema complexity was regarded as a within-subject covariate which varied across message content treatments.

Procedures reported by Linville (1982) were used for measuring schema complexity. These procedures are based on work by Kanwar (1981) and involved a timed word association exercise in which subjects listed thoughts that come to mind in response to triggering cues such as the words

"CAPITAL EQUIPMENT SALESPERSONS", and "SUPPLIERS OF CAPITAL EQUIPMENT." The number of thoughts listed by a subject in response to a triggering cue was used as a measure of the schematic complexity for the domain with which the cue was associated. The complete set of triggering cues which was used to elicit responses in the schema domains of interest is contained in Part I of the instrument which appears in the APPENDIX.

It should be noted that measuring the complexity of the three types of schemas acts as a schema activation or "triggering" cue immediately prior to presentation of the experimental stimuli. As a consequence, recency of activation was the same for each of the subjects for each of the types of schemas. By using this procedure it was ,therefore, possible to control for some of the extraneous effects of differing schema accessibility.

Mood State

Buyer mood was measured using a four item scale developed and reported by Saliagas (1984). An example of this scale is presented in the APPENDIX. The reliability Coefficient Alpha for these four items was 0.79.

Mood was specified as an exogenous variable in the conceptual model presented in the preceding chapter and was not expected to vary in response to experimental stimuli.

Consequently it was treated as a within-subject covariate which remained constant across treatments.

INTERMEDIATE RESPONSE VARIABLES

Task Involvement

Procedures for manipulating observational goals were discussed above. Measurements were taken to determine the personal importance subjects attached to performance of the assigned observational goals. These checks served as measures of each subject's level of task involvement.

Attention

Attention was measured using a five-item scale reported by Fiske in a 1980 study of attention to print advertising. Using these items, subjects rated the degree of attention elicited by the taped presentations using 9-point scales which ranged from "not at all" to "very much." Reliability Coefficient Alphas for these five items was 0.85. An example of the attention measure is presented in the APPENDIX.

Arousal

Arousal was measured using a ten item, D.E.S. (Differential Emotion Scale) developed by Izard (1972). Using these items subjects rated the degree to which they felt "aroused", "spirited", etc. on a 9-point scale varying

from "not at all" to "very much." Reliability Coefficient Alpha was 0.91 for these ten items.

MEASURES OF COGNITIVE RESPONSES

Delayed Recall

After hearing and recording their reactions to the last of the three taped sales presentations, subjects were asked to turn to page 28 in the instrument and answer as many of the questions as they could. Subjects were given three and one-half minutes for this task.

Subjects responses to the nine items were examined and classified as correct or incorrect by two Clemson University graduate students acting as independent raters under guidelines prepared by the experimenter. Delayed recall scores were calculated by summing the number of correct responses.

The measurement of item-specific information in memory via unaided and unprompted recall, constitutes more rigorous approach to memory measurement than recognition measures (Hunt and Einstein, 1981; Postman, 1975; Postman, et.al., 1975), and was chosen for use in this study in an effort to maximize differences in measured memory.

Inference Making

In order to assess the extent to which subjects had made inferences about the vendor, subjects were asked to

indicate how likely it was that the vendor possessed four attributes about which no information was provided in the tapes. If subjects had made no inferences, one would expect that their response would be at the mid-point of the likelihood scale reflecting that the vendor's possession of the attribute was neither very likely nor very unlikely. Conversely if subjects had made inferences one would expect their scores to deviate from this mid-point. In keeping with this logic, inference making was measured by calculating, for each of the items, the absolute value of deviations from the likelihood scale mid-point, and summing these for all the items.

Reliability Coefficient Alpha for the four items of the vendor inference making scale was 0.78. Reliability for the salesperson inference making scale was maximized by restricting the scale to only the first three items. Coefficient Alpha for these three items was 0.86.

Sales Presentation Evaluation

The subjects evaluative judgements of the sales presentation were measured using the presentation evaluation measures included in the APPENDIX. The items in this empirically based measure correspond to eight dimensions (such as believability, informativeness, persuasiveness, etc.) upon which sales presentations are evaluated (Leigh, 1981). In order to maximize the reliability of this

measure the fifth item of the scale, which referred to the presentation's emotionality, was eliminated. Coefficient Alpha for the remaining six items was 0.80.

Supplier Evaluation

The subject's evaluative judgements of the supplier were measured using the eight item supplier evaluation scale developed by Leigh (1981), Coefficient Alpha for these eight items was 0.89.

Salesperson Evaluation

The subjects evaluative judgements of the salesperson were measured using scales corresponding to eleven dispositional traits (such as trustworthiness, dependability, and friendliness) which are used by industrial buyers to rate sales representatives (Leigh, 1981), plus one global rating item. Coefficient Alpha for the twelve items of this scale was 0.89.

CHAPTER 6

RESULTS

INTRODUCTION

The chapter begins with a description of the analytical procedures which were used to test experimental results for statistical significance. It proceeds with a brief review of each hypothesis and an examination and discussion of test outcomes.

ANALYTICAL PROCEDURES

Issues

Multivariate analysis of covariance procedures were used to analyze data produced in the experiment. Multivariate tests make use of more information than corresponding univariate tests and, consequently, are the preferred tests where the multiple dependent measures are correlated (Hair, et. al. 1979). Yet, the validity of MANCOVA tests, like that of other tests, depends upon the extent to which various preconditions and underlying assumptions are satisfied. For an abbreviated review of these underlying assumptions, the reader is directed to Bray & Maxwell (1985) or for a more thorough review to Carroll (1961).

While a comprehensive review is beyond the scope of

this section, at least three issues merit special attention; 1) specification of dependent variable groups, 2) specification of a model, and 3) interpretation of results. Each of these issues is discussed in the following sections.

Definition of Dependent Variable Groups

One of the conditions that determines the applicability of multivariate analysis of covariance procedures is the interrelatedness of dependent variables (Pedhauzer, 1982; Huck et al., 1974). To satisfy this condition, it was necessary to disaggregate the dependent variables into separate internally related sets. This was accomplished using both a priori and a posteriori methods.

As described in the literature review chapter, theory indicates that one would expect to find high interrelatedness among measures of first order response variables, evaluation variables, and inference variables. In fact, this expectation is reflected in the research design for the study. First order responses and evaluation variables were treated as within-subject variables, while inferences were treated as between-subjects variables. Validation of group structures therefore began by separating the between subject response variables from the within subject response variables.

Next, the within-subject responses to each of the

three presentations were cluster analyzed to confirm the expectation that they would disaggregate into two distinct clusters. The disjoint clustering of variables was accomplished using the SAS VARCLUS procedure which produces a principal components factor analysis with oblique rotation. Results of these analyses are presented in Table 6.1 through Table 6.6.

These tables indicate that the variables clustered exactly as expected in responses to both the finance and purchasing presentations, and for all variables except one in response to the engineering presentation. Data in Table 6.1 show that attention, the one variable which failed to cluster as expected, made a lower contribution to variance explanation than any other variable loading on the cluster of evaluation variables.

Finally, variables within these sets were correlated in an effort to further validate this three group structure. Correlation coefficients for dependent variable pairs are presented as Tables A.1 through A.6 in the APPENDIX. These data show that correlation coefficients have values of at least 0.25 for all cases which are statistically significant.

Collectively, these results are interpreted as confirming the three group structure which had been

TABLE 6.1

VARIABLE TO CLUSTER CORRELATIONS
(ENGINEERING PRESENTATION)

Cluster	Variable	-- Correlation With --		1-R ² Ratio
		Own Cluster	Next Closest	
1	Attention	0.4334	0.2642	0.7701
	Salesperson Evaluation	0.7086	0.0513	0.3072
	Presentation Evaluation	0.6599	0.1845	0.4171
	Vendor Evaluation	0.8156	0.0754	0.1994
	Salesperson Evaluation Extremity	0.8281	0.1362	0.1990
	Presentation Evaluation Extremity	0.3546	0.0854	0.7056
	Vendor Evaluation Extremity	0.7310	0.0684	0.2887
2	Arousal	0.6237	0.3501	0.5790
	Message Involvement	0.6719	0.0914	0.3611
	Task Involvement	0.4624	0.0001	0.5376

TABLE 6.2

ENGINEERING PRESENTATION
CLUSTER SUMMARIES

Cluster	Members	Cluster Variation	Variation Explained	Proportion Explained	Second Eigenvalue
1	7	7.000	4.531	0.647	0.893
2	3	3.000	1.758	0.586	0.735
Total	10	10.000	6.289	0.629	

TABLE 6.3

VARIABLE TO CLUSTER CORRELATIONS
(FINANCE PRESENTATION)

Cluster	Variable	-- Correlation With --		1-R ² Ratio
		Own Cluster	Next Closest	
1	Salesperson Evaluation	0.7414	0.0760	0.2799
	Presentation Evaluation	0.6634	0.2979	0.4795
	Vendor Evaluation	0.8640	0.1043	0.1519
	Salesperson Evaluation Extremity	0.7147	0.1826	0.3491
	Presentation Evaluation Extremity	0.5520	0.2799	0.6221
	Vendor Evaluation Extremity	0.5421	0.0538	0.4839
2	Attention	0.6886	0.3255	0.4617
	Arousal	0.7550	0.2659	0.3337
	Message Involvement	0.3630	0.0111	0.6441
	Task Involvement	0.4127	0.0068	0.5913

TABLE 6.4

FINANCE PRESENTATION
CLUSTER SUMMARIES

Cluster	Members	Cluster Variation	Variation Explained	Proportion Explained	Second Eigenvalue
1	6	6.000	4.077	0.680	0.767
2	4	4.000	2.219	0.555	0.797
Total	10	10.000	6.297	0.630	

TABLE 6.5

VARIABLE TO CLUSTER CORRELATIONS
(PURCHASING PRESENTATION)

Cluster	Variable	-- Correlation With --		1-R ² Ratio
		Own Cluster	Next Closest	
1	Salesperson Evaluation	0.6714	0.2311	0.4274
	Presentation Evaluation	0.6960	0.3581	0.4736
	Vendor Evaluation	0.8096	0.1961	0.2369
	Salesperson Evaluation Extremity	0.8582	0.3599	0.2216
	Presentation Evaluation Extremity	0.6292	0.2793	0.5145
	Vendor Evaluation Extremity	0.8511	0.2669	0.2031
2	Attention	0.7777	0.3756	0.3561
	Arousal	0.7415	0.2392	0.3397
	Message Involvement	0.3723	0.1540	0.7420
	Task Involvement	0.4093	0.0945	0.6524

TABLE 6.6

PURCHASING PRESENTATION
CLUSTER SUMMARIES

Cluster	Members	Cluster Variation	Variation Explained	Proportion Explained	Second Eigenvalue
1	6	6.000	4.515	0.753	0.605
2	4	4.000	2.301	0.575	0.857
Total	10	10.000	6.816	0.682	

expected a priori, and the analysis proceeded using the groupings shown in Figure 6.1.

Model Specification

The model which was used in the analysis of information content and observational goal main effects was identified after testing for simple covariate and heterogeneity of slope effects. The univariate form of this model can be represented as follows:

$$y = b_0 + b_1x_1 + b_2x_2f_1 + b_3x_2f_2 + b_4x_2f_3 \\ + b_5f_1 + b_6f_2 + b_7f_3 + b_8g_1 + b_9g_2$$

where: x_1 = schema complexity.

x_2 = mood.

f_m = functional responsibility groups.

g_n = observational goal groups.

A different model was used in follow-up analyses which involved tests of differences in dependent variables between groups defined by median splits. The generalized form of the univariate model used for tests of main effects and interactions in these follow-up analyses may be represented as follows.

$$y = b_0 + b_1M + b_2N + b_3MN$$

where: M = first basis for group definition.

N = second basis for group definition.

MN = interaction term.

Group I Variables:	- Attention - Arousal - Task Involvement - Message Involvement
Group II Variables:	- Salesperson Evaluation - Presentation Evaluation - Vendor Evaluation - Salesperson Evaluation Extremity - Presentation Evaluation Extremity - Vendor Evaluation Extremity
Group III Variables:	- Engineering Recall - Finance Recall - Purchasing Recall - Salesperson Inference Making - Vendor Inference Making

FIGURE 6.1: THREE GROUPS OF INTERRELATED DEPENDENT VARIABLES

Variations of this model was used in the analyses of group main effects and interactions for groups defined on median splits of message involvement, task involvement, arousal, and mood.

A third model was used to test for treatment group effects. This one-way analysis used a simple model of the general form. . .

$$y = b_0 + b_1T$$

where: T = Treatment group.

Interpretation of Results

Analysis of specific test results took place in three stages. In the first stage, three widely recognized multivariate criteria (Wilke's Lambda, Pillai's Trace, and the Hotelling-Lawley Trace) were calculated and multivariate F approximations based on these criteria were determined for each of the three groups of independent variables. These multivariate F's were used as criteria to indicate whether or not there were significant effects within each of the three correlated independent variable groups. Next, for each of the groups in which the multivariate significance criteria had been satisfied, univariate test results were examined to identify which of the individual independent variables were significant. Finally, for the individual independent variables that satisfied the univariate significance criteria, estimates of group means were examined

to determine the magnitude and direction of hypothesized effects.

Since there were different tests for significance at the multivariate and univariate levels, there existed a possibility of conflicting test results. Consequently, in order to present the most robust results, this chapter reports only those findings which satisfied the significance criteria at both levels.

EVIDENCE OF INFORMATION CONTENT EFFECTS

Recap of Hypothesized Effects

Hypothesis one focused on the effects of differences in the information content of the three sales presentations and predicted that dependent variables scores would differ depending upon whether or not the information content of the sales presentation "matched" buyers' functional responsibilities. Specifically, it was hypothesized that under the "match" condition:

- a. Group I variable scores would be higher.
- b. Group II variable scores would be higher.
- c. Group III scores would be higher.

Evidence from Three Presentations

Multivariate F tests were conducted in order to test the statistical significance of observed differences in responses by functional responsibility groups. Results

of these tests indicated that variation in presentation information content had a statistically significant impact on only those variables in Group I. Even more disappointing was the fact that the significant Group I variable differences were present only for the purchasing presentation. These results are presented in Table 6.7.

Results of subsequent univariate F tests on the individual variables in this group are presented in Table 6.8. These results indicate that the purchasing personnel, as expected, showed significantly greater involvement with the message content of the purchasing presentation than the engineering or finance personnel, and paid significantly greater attention than did the finance personnel.

These results were surprising for two reasons. First, because of their implications about the relationship between the match of information content to responsibility area and the Group I variables of message involvement, attention, and arousal. Secondly because of their implications about the relationship between the Group I variables and the variables in Groups II and III.

Recall that it was hypothesized that the Group II and Group III responses would be influenced by attention and arousal, which would themselves be influenced by differences in involvement with message content, which were

TABLE 6.7

MULTIVARIATE F TESTS FOR FUNCTIONAL RESPONSIBILITY MAIN EFFECTS
ON RESPONSES TO THE PURCHASING PRESENTATION

Dependent Variable Group	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Group I	Wilks' Criterion	0.705	2.54	0.0145
	Pillai's Trace	0.310	2.48	0.0165
	Hotelling Lawley Trace	0.398	2.59	0.0128

TABLE 6.8

UNIVARIATE TESTS FOR DIFFERENCES IN GROUP I VARIABLE SCORES
IN RESPONSE TO THE PURCHASING PRESENTATION
(BY FUNCTIONAL RESPONSIBILITY GROUP)

Dependent Variable	Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Contrast	Sig. Level
Attention	Engineering	25	17.03	0.996	Eng. vs. Fin.	0.0547
	Finance	20	16.14	1.076	Eng. vs. Pur.	0.1070
	Purchasing	22	19.46	1.078	Fin. vs. Pur.	0.0326
Arousal	Engineering	24	32.48	2.061	Eng. vs. Fin.	0.0645
	Finance	20	26.72	2.231	Eng. vs. Pur.	0.9403
	Purchasing	21	32.71	2.230	Fin. vs. Pur.	0.0611
Message Involvement	Engineering	25	20.16	1.395	Eng. vs. Fin.	0.6520
	Finance	20	21.09	1.506	Eng. vs. Pur.	0.0003
	Purchasing	22	28.10	1.509	Fin. vs. Pur.	0.0017

expected to follow job area lines. In light of this hypothesis it was surprising to find that the information content of the engineering and finance presentations did not lead to differences in message involvement in any way systematically related to functional responsibility. It was also surprising to find that for the purchasing presentation, the one instance in which the hypothesized relationship held, there was no significant impact on the Group II and Group III variables.

Further analyses were undertaken in an attempt to clarify these relationships. Since message involvement was hypothesized as an intervening variable between information content match and both attention and arousal, the first step in the follow-up analysis was to examine message involvement effects. This was accomplished by testing for message involvement group main effects on the attention and arousal variables in Group I, and all variables in Groups II and III. Subject groups for these tests were defined by median splits on scores representing message involvement for the three presentations.

Multivariate test results indicated that message involvement group effects (corrected for mood and schema complexity) were significantly related to Group I variables for both the finance and purchasing presentations. Results

of these multivariate tests and related univariate tests are presented in Table 6.9 and Table 6.10.

These data show that attention scores were significantly higher for subjects in the higher message involvement group than for subjects in the lower message involvement group following both presentations, and that arousal scores were significantly higher in the high message involvement group following the finance presentation.

It should be noted that with an alternative form of the model, one in which no correction was made for the effects of mood and schema complexity, tests of message involvement group effects proved significant for both attention and arousal for the engineering presentation in addition to the finance and purchasing presentations.

In no cases did tests of message involvement groups indicate significant effects on Group II and Group III variables. This is likely due to the fact that message involvement was not systematically related to the mood or schema complexity, variables which do appear to influence the Group II and Group III variables. These effects will be discussed in the sections which follow.

Given the results of both the initial and follow-up analyses, it appears that the hypotheses centering on information content effects are only partially supported.

TABLE 6.9

MULTIVARIATE F TESTS FOR MESSAGE INVOLVEMENT GROUP MAIN EFFECTS
ON GROUP I VARIABLES IN RESPONSE TO THREE PRESENTATIONS

Presentation	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Engineering	Wilks' Criterion	0.9160	2.70	0.0752
	Pillai's Trace	0.0840	2.70	0.0752
	Hotelling Lawley Trace	0.0917	2.70	0.0750
Finance	Wilks' Criterion	0.8975	3.48	0.0369
	Pillai's Trace	0.1025	3.48	0.0369
	Hotelling Lawley Trace	0.1142	3.48	0.0369
Purchasing	Wilks' Criterion	0.8866	3.77	0.0287
	Pillai's Trace	0.1134	3.77	0.0287
	Hotelling Lawley Trace	0.1279	3.77	0.0287

TABLE 6.10

ADJUSTED GROUP MEANS FOR ATTENTION AND AROUSAL IN RESPONSE
TO THE FINANCE AND PURCHASING PRESENTATIONS
(BY MESSAGE INVOLVEMENT GROUP)

Dependent Variable	Message Involvement Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Sig. Level
Finance Presentation					
Attention	High	34	19.63	0.791	0.0488
	Low	34	17.34	0.791	
Arousal	High	34	38.05	1.914	0.0103
	Low	34	30.79	1.914	
Purchasing Presentation					
Attention	High	34	19.43	0.919	0.0088
	Low	34	15.93	0.891	
Arousal	High	34	32.84	1.821	0.1417
	Low	34	29.03	1.764	

The test results make it appear that high message involvement leads to heightened attention and arousal, but they also indicate that the relationship between message involvement and the match of information content to functional responsibility area may be more complex than was hypothesized. In addition, the lack of significant effects for either match/non-match or message involvement on Group II and Group III variables suggests that the influence of attention and arousal on evaluation and inference making is indirect rather than direct. Further attention will be directed to these issues in the following sections.

EVIDENCE OF OBSERVATIONAL GOAL EFFECTS

Recap of Hypothesized Effects

Hypothesis two focused on the effects of the buyer's observational goals and predicted that scores for the dependent variables would differ depending upon whether or not buyers were listening to the presentation in order to "learn about" the supplying company and its products, or to "make an evaluation" of the company and its products. Specifically, it was hypothesized that buyers with the evaluation goal would have:

- a. higher Group I variable scores.
- b. higher Group II variable scores.
- c. higher Group III variable scores.

Evidence from Three Presentations

Multivariate F test results indicated that there were no significant effects of observational goals on adjusted mean scores for the Group I and Group II variables. There were, however, statistically significant differences in adjusted mean scores for the Group III variables. Results of the multivariate and univariate tests centering on these effects are shown in Tables 6.11 and 6.12.

These data indicate that the adjusted mean salesperson inference score was significantly higher for subjects in the learning group than for subjects in the evaluation group, indicating that people with the learning goal made more favorable inferences about the salesperson than did subjects with the evaluation goal. Adjusted vendor inferences scores were not large enough to be statistically significant but ran in the same direction as the salesperson inferences; i.e., the learning group made more favorable inferences about both the salesperson and the vendor than subjects in the evaluation group, and these inferences tended to be more extreme.

This was opposite the hypothesized direction, and suggests that, in the experimental setting, subjects may have found the "learning" task to be more ego involving than the "evaluation" task. This is consistent with the

TABLE 6.11

MULTIVARIATE F TESTS FOR OBSERVATIONAL GOAL MAIN EFFECTS
ON RESPONSES TO THREE SALES PRESENTATIONS

Dependent Variable Group	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Group III	Wilks' Criterion	0.785	2.96	0.0197
	Pillai's Trace	0.215	2.96	0.0197
	Hotelling Lawley Trace	0.274	2.96	0.0197

TABLE 6.12

ADJUSTED MEANS AND STANDARD ERRORS FOR GROUP III VARIABLES
IN RESPONSE TO THREE SALES PRESENTATIONS
(BY OBSERVATIONAL GOAL GROUP)

Dependent Variable	Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Sig. Level
Salesperson Inferences	Learning	34	16.300	0.486	0.0004
	Evaluation	33	13.674	0.487	
Vendor Inferences	Learning	34	18.135	0.734	0.1161
	Evaluation	33	16.452	0.736	
Salesperson Inferences Extremity	Learning	34	4.219	0.324	0.1780
	Evaluation	33	3.584	0.325	
Vendor Inferences Extremity	Learning	34	4.983	0.332	0.7786
	Evaluation	33	4.848	0.333	

observed direction of the Group I variables scores presented in Table 6.13. Though not statistically significant, the consistency in direction of the scores suggests the possibility that because subjects found the learning task to be more involving than the evaluation task, they experienced more arousal and paid more attention.

The artificiality of the experimental setting and the observational goals manipulation may help to explain why the results were opposite the hypothesized direction. Intuitively at least, it seems likely that the responses of purchasing agents, accountants, and engineers to instructions to evaluate or learn about a salesperson, vendor, or class of products would be different in a real life, industrial purchase situation in which the instructions were issued by an organizational superior, than in an experimental context where those same instructions were issued by a visiting experimenter.

There remains the problem of explaining why the observational goals manipulation failed to significantly influence the Group II variables. Two possibilities merit consideration. The first concerns the relationship between observational goals and task involvement. The second is the possibility that the goals manipulation effects were masked by a confound. Each is discussed below.

TABLE 6.13

ADJUSTED MEAN VALUES OF GROUP I DEPENDENT VARIABLES
IN RESPONSE TO THREE PRESENTATIONS
(BY OBSERVATIONAL GOAL GROUP)

Presentation	Goal Group	n	Task Involvement	Attention	Arousal
Engineering	Learning	34	27.39	16.50	30.83
	Evaluation	33	26.83	17.39	32.75
Finance	Learning	34	27.71	19.04	35.00
	Evaluation	33	26.74	17.88	33.52
Purchasing	Learning	34	27.47	18.67	31.05
	Evaluation	33	26.90	16.41	17.21

The first explanation alternative is that the relationship between observational goals and task involvement is not as strong as hypothesized, and that as a consequence, there was little impact on the Group I and II variables. This possibility was analyzed by conducting multivariate and univariate tests for significance of differences between observational goal groups by task involvement level. This was operationalized as a 2 X 2 test where membership in the high and low task involvement groups was determined by median splits. Again, adjustments were made for effects of mood and schema complexity.

While results of these tests were far from definitive, they do provide limited support for the first possibility. Multivariate tests showed that the effects of interaction between goals and task involvement were significant for Group I variables in response to the purchasing presentation and for the Group II variables in response to the finance presentation.

Results of the multivariate tests for effects of goal by task involvement interaction on the Group I variables are presented in Table 6.14. It can be seen that these effects were statistically significant only for the purchasing presentation. Group I responses to this presentation were examined more closely by comparison of the adjusted means shown in Table 6.15. While data indicate

TABLE 6.14

MULTIVARIATE F TESTS FOR OBSERVATIONAL GOAL BY TASK INVOLVEMENT
 GROUP INTERACTION EFFECTS ON GROUP I RESPONSES
 TO THREE PRESENTATIONS

Presentation	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Engineering	Wilks' Criterion	0.8149	2.05	0.0650
	Pillai's Trace	0.1867	1.99	0.0726
	Hotelling Lawley Trace	0.2252	2.10	0.0585
Finance	Wilks' Criterion	0.8555	1.60	0.1542
	Pillai's Trace	0.1475	1.59	0.1551
	Hotelling Lawley Trace	0.1654	1.60	0.1536
Purchasing	Wilks' Criterion	0.7223	3.35	0.0044
	Pillai's Trace	0.2904	3.28	0.0051
	Hotelling Lawley Trace	0.3666	3.42	0.0039

TABLE 6.15

ADJUSTED MEAN GROUP I RESPONSES TO THE PURCHASING PRESENTATION
(BY OBSERVATIONAL GOAL AND TASK INVOLVEMENT SCORE GROUPS)

Dependent Variable	Task Inv. Score Group	Goal Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Attention	High	Learn	17	19.79	1.405
	High	Eval.	17	16.71	1.373
	Low	Learn	17	17.12	1.314
	Low	Eval.	17	16.63	1.343
Arousal	High	Learn	17	34.76	2.543
	High	Eval.	17	35.11	2.484
	Low	Learn	17	27.60	2.377
	Low	Eval.	17	26.47	2.430

that subjects with the learning goal paid more attention than subjects with the evaluation goal and that the difference between goal groups was higher for subjects in the high task involvement group, regrettably, these differences were not large enough to be statistically significant. Differences in arousal scores among the groups did prove to be significant. Significance levels for pairwise t-tests on arousal scores shown in Table 6.16 indicate that subjects in the high task involvement group had higher arousal scores than subjects in the low task involvement group regardless of goal treatment.

Results of multivariate tests of observational goal effects on Group II response variables are shown in Table 6.17. These data indicate that the observational goal groups had differences in Group II variables which were large enough to be statistically significant for the finance presentation only. Comparison of adjusted mean scores in Table 6.18 indicates that subjects with the learning goal made more favorable evaluations of the salesperson, the presentation, and the vendor, than subjects with the evaluation goal regardless of task involvement level, but that the differences were larger within the high task involvement groups. These differences were large enough to be statistically significant for the salesperson and vendor evaluations, but not for evaluations

TABLE 6.16

PAIRWISE T TESTS FOR SIGNIFICANCE OF DIFFERENCES IN ADJUSTED
GROUP MEANS FOR GROUP I PURCHASING PRESENTATION RESPONSES
(BY OBSERVATIONAL GOAL AND TASK INVOLVEMENT SCORE GROUPS)

Dependent Variable: Arousal

Task Invol.	Obs. Goal	Group Name	A	B	C	D
High	Learn	A				
High	Eval.	B	0.9240			
Low	Learn	C	0.0458	0.0367		
Low	Eval.	D	0.0234	0.0168	0.7384	

TABLE 6.17

MULTIVARIATE F TESTS FOR OBSERVATIONAL GOAL BY TASK INVOLVEMENT
 GROUP INTERACTION EFFECTS ON GROUP II RESPONSES
 TO THREE PRESENTATIONS

Presentation	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Engineering	Wilks' Criterion	0.7679	0.86	0.6227
	Pillai's Trace	0.2475	0.87	0.6165
	Hotelling Lawley Trace	0.2823	0.86	0.6304
Finance	Wilks' Criterion	0.5446	2.04	0.0106
	Pillai's Trace	0.5094	1.91	0.0181
	Hotelling Lawley Trace	0.7396	2.16	0.0060
Purchasing	Wilks' Criterion	0.8750	0.42	0.9822
	Pillai's Trace	0.1290	0.43	0.9807
	Hotelling Lawley Trace	0.1384	0.41	0.9838

TABLE 6.18

ADJUSTED MEANS FOR GROUP II RESPONSES TO THE FINANCE PRESENTATION
(BY OBSERVATIONAL GOAL AND TASK INVOLVEMENT SCORE GROUPS)

Dependent Variable	Task Inv. Score Group	Goal Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Salesperson Evaluation	High	Learn	17	37.37	1.684
	High	Eval.	17	31.11	1.634
	Low	Learn	17	35.75	1.528
	Low	Eval.	17	34.27	1.515
Presentation Evaluation	High	Learn	17	32.03	1.519
	High	Eval.	17	29.03	1.473
	Low	Learn	17	31.75	1.378
	Low	Eval.	17	29.33	1.366
Vendor Evaluation	High	Learn	17	35.25	1.534
	High	Eval.	17	30.24	1.488
	Low	Learn	17	35.03	1.392
	Low	Eval.	17	33.60	1.379

of the presentation. Significance levels for pairwise t-tests among groups presented in Table 6.19 indicate that for the high task involvement groups, these differences were large enough to be statistically significant, but not for the low task involvement level.

Were it not for the confound between observational goals and schema complexity, these results would be interpretable as supporting, albeit tenuously, the hypothesized effects. However, since there was a confound between observational goals and schema complexity, and in light of the relationships between complexity and arousal and between arousal and evaluative judgements, they should be viewed with extreme caution.

Confounding Effects of Schema Complexity

A second and more plausible explanation for relatively low impact of observational goals may lie in the effects of schema complexity: analysis revealed the presence of a confound for schema complexity and observational goals.

Results of F-tests for significance of observational goal effects, adjusted mean schema complexity scores, and tests for significance of differences in adjusted means are presented in Table 6.20. These data indicate that schema complexity scores for the subjects in the evaluation group were higher than for subjects in the learning group. This

TABLE 6.19

PAIRWISE T TESTS FOR SIGNIFICANCE OF DIFFERENCES IN ADJUSTED MEANS
FOR GROUP II RESPONSES TO THE FINANCE PRESENTATION
(BY OBSERVATIONAL GOAL AND TASK INVOLVEMENT GROUPS)

Dependent Variable: Salesperson Evaluation

Task Invol.	Obs. Goal	Group Name	A	B	C	D
High	Learn	A				
High	Eval.	B	0.0097			
Low	Learn	C	0.4821	0.0508		
Low	Eval.	D	0.1775	0.1650	0.4904	

Dependent Variable: Vendor Evaluation

Task Invol.	Obs. Goal	Group Name	A	B	C	D
High	Learn	A				
High	Eval.	B	0.0220			
Low	Learn	C	0.9137	0.0274		
Low	Eval.	D	0.4273	0.1052	0.4655	

TABLE 6.20

ADJUSTED MEANS AND STANDARD ERRORS FOR SCHEMA COMPLEXITY
BY OBSERVATIONAL GOAL TREATMENT GROUPS

Schema Domain	Treatment Group	n	Adjusted Mean	Std. Error of Adjusted Mean	Sig. Level
Engineering	Learning	34	4.4412	0.3421	0.0207
	Evaluation	34	5.5882	0.3421	
Finance	Learning	34	3.6765	0.3687	0.0358
	Evaluation	34	4.7941	0.3687	
Purchasing	Learning	34	4.6175	0.3327	0.0496
	Evaluation	34	5.5588	0.3327	

Note: Reported significance levels are for the test that schema complexity score means are equal for the two observational goal groups.

was true of all three schema domains; engineering, finance, and purchasing.

It was the direction of these differences that made this confound so problematic. It was hypothesized that subjects assigned the evaluation task would exhibit higher levels of arousal than subjects assigned the learning task. One would expect, however, that subjects with high schematic complexity would exhibit lower levels of arousal than those low in schematic complexity. Thus, the concentration of high complexity subjects in the evaluation group and the low complexity subjects in the learning group made it possible for the effects of complexity to cancel out effects of the observational goal treatment.

EVIDENCE OF SCHEMA COMPLEXITY EFFECTS

Recap of Hypothesized Effects

Hypothesis three focused on the effects of the buyer's schema complexity with respect to the subject of the sales presentation, and predicted that scores for the dependent variables would vary as a result of differences in schema complexity. Specifically, it was hypothesized that schema complexity scores would:

- a. be higher when content matched responsibility.
- b. vary inversely with Group II variable scores.
- c. covary with Group III variable scores.

Evidence from Three Presentations

One way analysis of variance procedures were used to test for significance of differences in schema complexity scores by functional responsibility areas. Results of these tests for functional responsibility group effects on schema complexity scores were not statistically significant. This indicates that although there were subjects with high and low schema complexity in each of the three domains, complexity did not systematically vary across functional responsibility categories. There were, for example, some subjects in the purchasing group who had high complexity for finance, and some subjects in the engineering group with high complexity for purchasing. There were also some subjects who had low complexity scores for their own functional responsibility areas.

It is possible that the variation in schema complexity within functional responsibility groups is due to variation in subjects' education and experience, but this remains to be demonstrated. This is one area in which further research would be useful and one in which results are likely to be productive.

The hypothesized relationships between complexity and the variables in Groups II and III were tested by means of a correlation analysis in which responses of subjects from the three functional responsibility areas were pooled. This

approach was also used to examine the relationship between complexity and the Group I variables, even though no relationship between complexity and the Group I variables had been formally hypothesized.

With few exceptions, these correlations were too weak to be statistically significant. There was, however, a consistency in the direction, if not the magnitude, of the correlations between complexity and the variables in Groups I, II, and III which are presented in Tables 6.21, 6.22, and 6.23.

Negative correlation coefficients in Table 6.21 indicate that subjects low in schema complexity for engineering found the engineering presentation to be more arousing than subjects high in engineering schema complexity and paid it more attention. This relationship held for the other two presentation topics as well, though not strongly enough to be significant.

Negative coefficients in Table 6.22 indicate that subjects low in schema complexity for a topic area tended to make more extreme evaluations of the presentation, the vendor, and the salesperson, after hearing a presentation than subjects high in schema complexity for the presentation topic. Direction of the correlations between complexity and the Group III reported in Table 6.23 also suggest that low complexity subjects made more extreme

TABLE 6.21

CORRELATIONS BETWEEN SCHEMA COMPLEXITY SCORES
AND ATTENTION AND AROUSAL SCORES

Variable	Type of Schema Comp.	Correlation with Schema Comp.	$P > R $	n
Attention	Engineering	-0.42568	0.0003	68
	Finance	-0.21732	0.0751	68
	Purchasing	-0.14976	0.2264	67
Arousal	Engineering	-0.28836	0.0198	65
	Finance	-0.21523	0.0803	67
	Purchasing	-0.17418	0.1652	65

TABLE 6.22

CORRELATIONS BETWEEN SCHEMA COMPLEXITY SCORES
AND GROUP II VARIABLE SCORES

Variable	Type of Schema Comp.	Correlation with Schema Comp.	$P > R $	n
Presentation	Engineering	0.02251	0.8554	68
Evaluation	Finance	-0.10484	0.3985	67
Extremity	Purchasing	-0.03451	0.7816	67
Vendor	Engineering	-0.20785	0.0890	68
Evaluation	Finance	-0.31466	0.0095	67
Extremity	Purchasing	-0.10653	0.3909	67
Salesperson	Engineering	-0.23142	0.0572	68
Evaluation	Finance	-0.24597	0.0432	67
Extremity	Purchasing	-0.14921	0.2282	67

TABLE 6.23

CORRELATIONS BETWEEN SCHEMA COMPLEXITY SCORES
AND GROUP III VARIABLE SCORES

Variable	Type of Schema Comp.	Correlation with Schema Comp.	$P> R $	n
Vendor Inference Extremity	Purchasing	-0.01040	0.9334	67
Salesperson Inference Extremity	Purchasing	-0.13398	0.2797	67
Recall	Engineering	0.09935	0.4202	68
	Finance	0.16203	0.1868	68
	Purchasing	0.13302	0.2795	68

inferences about the salesperson and the vendor than high complexity subjects, but that high complexity subjects were better able to recall material from the presentations than their counterparts low in complexity.

Had there not been a confound between schema complexity and observational goals, the results of the correlation analysis, although weak, would be interpretable as providing at least some support for the hypotheses. In the presence of the confound, however, considerable caution should be exercised in attempting to interpret these results and draw conclusions. As was previously demonstrated, this confound appears to have influenced the tests for effects of the observational goal manipulation, tests in which the results were more consistent with a complexity explanation than the observational goal explanation.

In light of the observational goal test outcomes, and the fact that the direction of the observed complexity effects was consistent with the hypotheses, it seems quite possible that the magnitude of the complexity effect is stronger than the magnitude of the observational goal effect and would have been large enough to be statistically significant had the confound not occurred.

EVIDENCE OF MOOD EFFECTS

Recap of Hypothesized Effects

Hypothesis four focused on the effects of the buyer's mood at the time of the sales presentation, and predicted that dependent variable scores would systematically differ as a function of mood. Specifically, it was hypothesized that buyers's mood scores would:

- a. covary with Group I dependent variable scores.
- b. covary with Group II dependent variable scores.

Analysis of Mood Effects

Mood scores were correlated with variables in Groups I, II, and III in order to empirically test the hypothesized mood effects. Correlation coefficients indicating the direction and strength of relationships between arousal scores and scores for both mood and mood extremity are presented in Table 6.24. These results do not support the hypothesized relationships and suggest that neither the direction nor intensity of mood states influenced the amount of arousal experienced by subjects as they listened to the three presentations.

Correlations between mood scores and scores indicating evaluations of the salesperson, the presentation, and the vendor are presented in Table 6.25. As can be seen each of the correlations is positive indicating that subjects with higher mood scores tended to evaluate the presentation, the

TABLE 6.24

CORRELATIONS BETWEEN AROUSAL, MOOD, AND MOOD EXTREMITY

Variable	Presentation	Corr. With Arousal	$P > R $	n
Mood	Engineering	0.24929	0.0470	64
	Finance	0.07071	0.5726	66
	Purchasing	0.17621	0.1637	64
Mood Extremity	Engineering	0.14556	0.2508	64
	Finance	0.06479	0.6053	66
	Purchasing	0.13125	0.3012	64

TABLE 6.25

CORRELATIONS BETWEEN MOOD SCORES AND GROUP II VARIABLE SCORES

Variable	Presentation	Correlation with Mood	$P > R $	n
Presentation Evaluation	Engineering	0.31431	0.0096	67
	Finance	0.24654	0.0460	67
	Purchasing	0.32423	0.0079	66
Vendor Evaluation	Engineering	0.20327	0.0990	67
	Finance	0.16443	0.1871	66
	Purchasing	0.59525	0.0001	66
Salesperson Evaluation	Engineering	0.27376	0.0250	67
	Finance	0.19019	0.1232	67
	Purchasing	0.39860	0.0009	66

vendor, and the salesperson more favorably than subjects with lower mood scores. This was as expected, and the results are interpreted as supporting the hypotheses.

It will be recalled that the hypotheses made no distinctions regarding the effects of mood on the different types of evaluations. It was simply hypothesized that subjects in positive mood states would make more favorable evaluations than subjects in less positive mood states, irrespective of the evaluative object. The pattern of correlation outcomes suggests that some distinctions may be appropriate. Note that the correlations are statistically significant in two of the three evaluations of the salesperson, and in all three evaluations of the presentations, but in only one evaluation of the vendor. Note also the one instance in which the correlations between mood and vendor evaluation was significant was for the evaluation made following the purchasing presentation.

This suggests two interesting possibilities. First, that mood effects may be more pronounced for some types of evaluative objects than for others, and secondly that the extent of the mood effects may be related to the perceived relevance of the presentation topic to the object being evaluated. Both these possibilities merit future research attention.

In addition to influencing evaluations, it was hypothesized that mood would influence inference making and recall. These hypothesized relationships were also examined via correlation analysis. Results are presented in Table 6.26. In no case was the correlation coefficient significantly different from zero. Consequently, there is no evidence to support the hypothesis that mood influences either inference making or recall.

The Influence of Arousal on Mood Effects

In an effort to make the analysis as thorough as possible, the data were further examined to determine whether mood effects were influenced by subject arousal levels. Past studies have indicated that mood effects may depend upon arousal level, and that there may be minimum levels of arousal below which mood has no influence upon cognitive processes such as evaluation or inference making, and that arousal may be an important determinant of the extremity of evaluative judgements (Cacioppo and Sandman, 1981; Clark, 1982).

The examination of arousal effects was operationalized as a set of multivariate and univariate tests for significance of arousal group main effects and mood group by arousal group interaction effects with subject groups defined by median splits on mood and arousal scores.

TABLE 6.26

CORRELATIONS BETWEEN MOOD, INFERENCE, AND RECALL

Variable	Object	Corr. With Mood	$P > R $	n
Inference	Salesperson	0.18203	0.1435	66
	Vendor	0.02127	0.8654	66
Recall	Engineering	-0.00032	0.9980	67
	Finance	-0.17529	0.1560	67
	Purchasing	0.10270	0.4082	67

Results of these tests provide very strong evidence that arousal influences evaluative judgements.

Results of multivariate F tests for significance of arousal group main effects on the extremity of evaluative judgements are presented in Table 6.27. These results indicate that the extremity of evaluations made by subjects in the high arousal group was different from the extremity of evaluations made by subjects in the lower arousal score group and that these differences in extremity were large enough to be statistically significant for all three presentations.

Univariate test results are presented in Tables 6.28, 6.29, and 6.30. These results indicate that subjects in the high arousal group made more extreme evaluations of the salesperson in response to all three presentations than low arousal subjects and that the differences in extremity were sufficiently large to be statistically significant. High arousal subjects also made more extreme evaluations of the presentation of the presentation and the vendor than did their low arousal counterparts. Differences in extremity of evaluations of presentations were large enough to be statistically significant for both the finance and purchasing presentations. Differences in extremity of vendor evaluations were large enough to be significant for both the engineering and purchasing presentations.

TABLE 6.27

MULTIVARIATE F TESTS FOR AROUSAL GROUP MAIN EFFECTS ON GROUP II
VARIABLES IN RESPONSE TO THREE PRESENTATIONS

Presentation	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Engineering	Wilks' Criterion	0.8070	2.31	0.0454
	Pillai's Trace	0.1930	2.31	0.0454
	Hotelling Lawley Trace	0.2391	2.31	0.0454
Finance	Wilks' Criterion	0.7549	3.03	0.0123
	Pillai's Trace	0.2551	3.03	0.0123
	Hotelling Lawley Trace	0.3246	3.03	0.0123
Purchasing	Wilks' Criterion	0.6226	5.76	0.0001
	Pillai's Trace	0.3774	5.76	0.0001
	Hotelling Lawley Trace	0.6061	5.76	0.0001

TABLE 6.28

ADJUSTED GROUP MEANS FOR GROUP II RESPONSES
TO THE ENGINEERING PRESENTATION
(BY AROUSAL SCORE GROUP)

Dependent Variable	Arousal Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Sig. Level
Extremity of Salesperson Evaluation	High	34	19.15	0.985	0.0012
	Low	34	14.47	0.939	
Extremity of Presentation Evaluation	High	34	11.94	0.673	0.0659
	Low	34	10.17	0.642	
Extremity of Vendor Evaluation	High	34	10.75	0.822	0.0076
	Low	34	7.57	0.784	

TABLE 6.29

ADJUSTED GROUP MEANS FOR GROUP II RESPONSES
TO THE FINANCE PRESENTATION
(BY AROUSAL SCORE GROUP)

Dependent Variable	Arousal Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Sig. Level
Extremity of Salesperson Evaluation	High	34	19.27	1.132	0.0016
	Low	34	14.18	1.038	
Extremity of Presentation Evaluation	High	34	10.92	0.525	0.0022
	Low	34	8.64	0.481	
Extremity of Vendor Evaluation	High	34	12.44	0.430	0.2392
	Low	34	11.74	0.394	

TABLE 6.30

ADJUSTED GROUP MEANS FOR GROUP II RESPONSES
TO THE PURCHASING PRESENTATION
(BY AROUSAL SCORE GROUP)

Dependent Variable	Arousal Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean	Sig. Level
Extremity of Salesperson Evaluation	High	34	20.99	1.055	0.0001
	Low	34	13.45	1.001	
Extremity of Presentation Evaluation	High	34	10.88	0.611	0.0047
	Low	34	8.49	0.579	
Extremity of Vendor Evaluation	High	34	14.85	0.676	0.0010
	Low	34	11.61	0.641	

Results of multivariate F tests for significance of arousal group by mood group interaction effects on the evaluation scores are presented in Table 6.31. These results indicate that the the differences in evaluation score means for subjects in different groups were large enough to be statistically significant for the finance and engineering presentations. Mean evaluation scores, adjusted for the effects of complexity, are shown in Tables 6.32 and 6.33 for the engineering and finance presentations respectively. Entries displayed in Tables 6.34 and 6.35 are significance levels for pairwise t-tests for group means. By comparing the results of pairwise t-tests for differences between groups A and B versus similar tests for groups C and D it can be seen that the magnitude and significance mood effects depended upon arousal level. For high arousal subjects, evaluations made by the high mood score group were more favorable than those made by the low mood group and the difference in favorability was large enough to be statistically significant for all three types of evaluations in both the engineering and finance instances. But for low arousal subjects none of differences were large enough to be significant for any of the three types of evaluations in either the engineering or finance instances.

TABLE 6.31

MULTIVARIATE F TESTS FOR MOOD BY AROUSAL GROUP INTERACTION EFFECTS
ON GROUP II VARIABLES IN RESPONSE TO THREE PRESENTATIONS

Presentation	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Engineering	Wilks' Criterion	0.8021	2.38	0.0397
	Pillai's Trace	0.1979	2.38	0.0397
	Hotelling Lawley Trace	0.2467	2.38	0.0397
Finance	Wilks' Criterion	0.7252	3.54	0.0049
	Pillai's Trace	0.2748	3.54	0.0049
	Hotelling Lawley Trace	0.3789	3.54	0.0049
Purchasing	Wilks' Criterion	0.8560	1.60	0.1644
	Pillai's Trace	0.1440	1.60	0.1644
	Hotelling Lawley Trace	0.1683	1.60	0.1644

TABLE 6.32

ADJUSTED GROUP MEANS FOR GROUP II RESPONSES
TO THE ENGINEERING PRESENTATION
(BY AROUSAL SCORE GROUP)

Dependent Variable	Arousal Score Group	Mood Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Salesperson Evaluation	High	High	17	41.68	1.253
	High	Low	17	36.47	1.157
	Low	High	17	33.55	1.227
	Low	Low	17	36.13	1.026
Presentation Evaluation	High	High	17	33.67	1.276
	High	Low	17	30.08	1.178
	Low	High	17	29.73	1.249
	Low	Low	17	28.92	1.044
Vendor Evaluation	High	High	17	38.15	1.400
	High	Low	17	33.15	1.293
	Low	High	17	31.25	1.371
	Low	Low	17	32.78	1.146

TABLE 6.33

PAIRWISE T TESTS FOR SIGNIFICANCE OF DIFFERENCES IN ADJUSTED MEANS
FOR GROUP II RESPONSES TO THE ENGINEERING PRESENTATION
(BY MOOD AND AROUSAL GROUPS)

Dependent Variable: Salesperson Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0036			
Low	High	C	0.0001	0.0965		
Low	Low	D	0.0010	0.8262	0.1097	

Dependent Variable: Presentation Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0443			
Low	High	C	0.0298	0.8432		
Low	Low	D	0.0052	0.4705	0.6183	

Dependent Variable: Vendor Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0117			
Low	High	C	0.0008	0.3296		
Low	Low	D	0.0042	0.8343	0.3908	

TABLE 6.34

ADJUSTED MEANS FOR GROUP II RESPONSES TO THE FINANCE PRESENTATION
(BY AROUSAL AND MOOD SCORE GROUPS)

Dependent Variable	Arousal Score Group	Mood Score Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Salesperson Evaluation	High	High	17	39.72	1.807
	High	Low	17	33.89	1.439
	Low	High	17	32.67	1.525
	Low	Low	17	34.22	1.475
Presentation Evaluation	High	High	17	35.84	1.522
	High	Low	17	30.75	1.212
	Low	High	17	28.80	1.284
	Low	Low	17	28.61	1.244
Vendor Evaluation	High	High	17	38.55	1.598
	High	Low	17	33.51	1.272
	Low	High	17	30.98	1.348
	Low	Low	17	33.22	1.304

TABLE 6.35

PAIRWISE T TESTS FOR SIGNIFICANCE OF DIFFERENCES IN ADJUSTED MEANS
FOR GROUP II RESPONSES TO THE FINANCE PRESENTATION
(BY MOOD AND AROUSAL GROUPS)

Dependent Variable: Salesperson Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0141			
Low	High	C	0.0042	0.5650		
Low	Low	D	0.0215	0.8743	0.4695	

Dependent Variable: Presentation Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0111			
Low	High	C	0.0008	0.2754		
Low	Low	D	0.0005	0.2214	0.9138	

Dependent Variable: Vendor Evaluation

Arousal Score	Mood Score	Group Name	A	B	C	D
High	High	A				
High	Low	B	0.0164			
Low	High	C	0.0006	0.1784		
Low	Low	D	0.0121	0.8717	0.2378	

EVIDENCE OF TREATMENT GROUP EFFECTS

Recap of Hypothesized Effects

Hypotheses five, six, and seven centered on treatment group effects. These hypotheses predicted that dependent measures would vary for groups of subjects receiving different information content and observational goal treatments. Using the group definitions presented in Table 4.1 on page 54 in Chapter 4, it was hypothesized that attention and arousal scores would:

- 5.a. covary.
- 5.b. be lowest for subjects in treatment group 1.
- 5.c. be intermediate in treatment groups 2 and 3.
- 5.d. be highest for subjects in treatment group 4.

It was further hypothesized that recall and inference scores would:

- 6.a. covary.
- 6.b. be lowest for subjects in treatment group 1.
- 6.c. be intermediate for treatment groups 2 and 3.
- 6.d. be highest for subjects in treatment group 4.

Finally, it was hypothesized that presentation evaluation, vendor evaluation, and salesperson evaluation scores would:

- 7.a. covary.
- 7.b. be lowest for subjects in treatment group 1.
- 7.c. be intermediate in treatment groups 2 and 3.

7.d. be highest for subjects in treatment group 4.

Empirical Tests

Tests of these hypotheses were operationalized as one way tests of treatment group effects, using a simple one factor model with mood and schema complexity as covariates.

Results of Multivariate F tests presented in Tables 6.36 and 6.37 indicate that the treatment groups had significantly different mean values for Group I responses to the purchasing presentation, and significantly different mean values of Group III responses to all three presentations.

Adjusted mean values for Group I responses to the purchasing presentation are presented in Table 6.38. Subsequent univariate tests indicate that subjects receiving the match/learning treatment (treatment group 3) paid significantly more attention to the purchasing presentation than did subjects receiving the non-match/evaluation treatment (treatment group 2). See Table 6.39. These results were not as hypothesized and suggest that the direction of observational goal effects may depend upon upon a match of information content and functional responsibility.

Adjusted mean values of Group III responses are presented in Table 6.40. Univariate tests shown in Table 6.41 indicate that subjects receiving the non-match/learning treatment (group 1) made significantly more

TABLE 6.36

MULTIVARIATE F TESTS FOR TREATMENT GROUP EFFECTS ON GROUP I
RESPONSES TO THE PURCHASING PRESENTATION

Dependent Variable Group	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Group I	Wilks' Criterion	0.661	2.05	0.0235
	Pillai's Trace	0.362	1.96	0.0311
	Hotelling Lawley Trace	0.477	2.13	0.0176

TABLE 6.37

MULTIVARIATE F TESTS FOR TREATMENT GROUP EFFECTS
ON GROUP III RESPONSES

Dependent Variable Group	Multivariate Statistic	Value	Approximate F - Value	Significance Level
Group III	Wilks' Criterion	0.690	1.89	0.0394
	Pillai's Trace	0.335	1.86	0.0428
	Hotelling Lawley Trace	0.412	1.91	0.0362

TABLE 6.38

ADJUSTED GROUP MEANS FOR GROUP I RESPONSES TO THE PURCHASING
PRESENTATION (BY TREATMENT GROUP)

Dependent Variable	Treatment Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Attention	1	21	17.76	1.122
	2	21	15.69	1.114
	3	13	20.27	1.645
	4	13	18.93	1.684
Arousal	1	21	30.78	2.212
	2	21	29.08	2.196
	3	13	31.48	3.244
	4	13	34.43	3.303
Message Involvement	1	21	20.87	1.443
	2	21	20.27	1.433
	3	13	28.53	2.117
	4	13	27.76	2.156
Task Involvement	1	21	27.08	1.119
	2	21	25.84	1.110
	3	13	28.11	1.648
	4	13	30.27	1.671

TABLE 6.39

UNIVARIATE TEST FOR DIFFERENCES IN ADJUSTED MEAN SCORES
FOR ATTENTION TO THE PURCHASING PRESENTATION

Info. Group	Goal Group	Group Name	1	2	3	4
Non- Match	Learn	1				
Non- Match	Eval.	2	0.1988			
Match	Learn	3	0.2106	0.0250		
Match	Eval.	4	0.5672	0.1118	0.5723	

Note: Table entries represent probabilities of obtaining higher absolute values of T under the null hypothesis that adjusted treatment group means are equal.

TABLE 6.40

ADJUSTED GROUP MEANS FOR GROUP III RESPONSES
TO THREE PRESENTATIONS (BY TREATMENT GROUP)

Dependent Variable	Treatment Group	n	Adjusted Group Mean	Std. Error of Adjusted Group Mean
Salesperson Inference	1	21	16.20	0.584
	2	21	13.37	0.590
	3	13	16.44	0.871
	4	13	14.09	0.843
Salesperson Inference Extremity	1	21	4.06	0.394
	2	21	3.87	0.398
	3	13	4.40	0.588
	4	13	3.03	0.569
Vendor Inference	1	21	18.29	0.873
	2	21	16.30	0.882
	3	13	17.93	1.302
	4	13	16.76	1.260
Vendor Inference Extremity	1	21	5.23	0.425
	2	21	5.16	0.429
	3	13	4.12	0.633
	4	13	4.31	0.613

TABLE 6.41

UNIVARIATE TEST FOR DIFFERENCES IN ADJUSTED MEAN
SALESPERSON INFERENCE SCORES

Info. Group	Goal Group	Group Name	1	2	3	4
Non- Match	Learn	1				
Non- Match	Eval.	2	0.0013			
Match	Learn	3	0.8150	0.0049		
Match	Eval.	4	0.0474	0.4806	0.0579	

Note: Table entries represent probabilities of obtaining higher absolute values of T under the null hypothesis that adjusted treatment group means are equal.

favorable inferences about salespersons than did the subjects who received the non-match/evaluation treatment (group 2).

No other Group III variables were significantly influenced by the combination of treatments. This was not surprising in light of the fact that the observational goal manipulation was compromised by the confound effect which was previously discussed.

CHAPTER 7

DISCUSSION

This chapter begins with a summary of conclusions which are supported by evidence produced in the study, moves on to discuss the study's limitations, and ends by considering implications which study results might hold for academicians and practitioners.

CONCLUSIONS

Information Effects

Evidence resulting from the experiment provides only limited support for the conclusion that the alignment or non-alignment of sales presentation message content with functional responsibilities affects the buyer's cognitive responses. It does appear that this alignment has an influence on the buyer's involvement with and attention to the message, and subsequent levels of arousal, but the study produced no evidence to indicate that information content match affects the buyers evaluations or inferences except as a result of differences in arousal.

Schema Complexity and Goal Effects

The study did produce sufficient evidence to establish that observational goals and schema complexity influence task involvement and arousal, as well as evaluative and

inferential judgements, but the presence of a confound makes it impossible to unequivocally separate the two effects. With proper attention to procedure, it may be possible to demonstrate effects for both goals and complexity effects in future research.

Mood Effects

The conclusions most firmly supported in this study are those concerning the effects of mood on evaluative and inferential judgements. There is substantial evidence to indicate that mood states influence buyers' evaluations of the presentation, the salesperson, and the vendor. More importantly, the study produced evidence of a phenomenon never before considered in the sales literature, namely that mood effects are dependent upon the buyer's level of arousal.

LIMITATIONS

Positive outcomes notwithstanding, certain methodological limitations of the experiment should be considered in assessing the internal and external validity of the study's results. Two aspects of the experimental methodology are potentially problematic. First, the procedures used to manipulate the two factors may be more artificial than desirable and may have allowed some variation in other relevant variables. Secondly, restriction of the study to

one product class may limit the extent to which results can be generalized.

Manipulations

In developing scripts for the three presentations, considerable effort was put forth to assure the external validity of the scripts' content. Script development proceeded only after conducting a series of interviews with engineers, accountants, and purchasing agents for the purpose of determining what sales messages they would consider to be relevant in a lighting system purchase context. The sales force of a regional lighting system vendor was consulted to assure that the scripts would be externally valid from the sellers perspective as well. The result was a set of three scripts, each of which focused on the interests of a particular buyer group. Development of the scripts in conformity with industry practices is one of the strengths of the study, but also the source of one of the study's limitations.

Prior research has demonstrated that the amount of arousal which is produced in response to the information content of a message is a function of the novelty and complexity of that information. While an effort was made to control for structural features of the message by using devices such as standardized openings and closings, handout materials in the same formats, and messages of the same

length, there was no formal control for variation in information complexity or novelty. Study results are, therefore, limited to the extent that the information in the scripts varied in novelty and complexity, and it remains possible that the results which have been attributed to differences in information content match or non-match may in fact be due to differences in these more fundamental information characteristics.

The procedures that were used to manipulate observational goals should also be noted as a limitation of the study. Recall that different observational goals were expected to result in different levels of arousal and attention as a result of differences in task involvement. However, in retrospect, it appears equally plausible that differences in observational goals could result in differences in ego-involvement. To the extent that ego-involvement and task-involvement differ, the effects of the observational goals manipulation become muddled. This suggests that distinguishing between ego consequences and other consequences of observational goals may help to improve the procedures for manipulating goals in future research.

Efforts to upgrade the quality of goal manipulations might also benefit from explicit consideration of differences in involvement with goals representing different

buying process stages. Do buyers, for example, demonstrate higher levels of involvement with later buying stage tasks (selection of a vendor) than with earlier buying stage tasks (adding a firm to the set of approved vendors)?

Context Limitations

The generalizability of study results is limited to the extent that this study considered only one product class, industrial lighting systems. While purchases in this product category do entail group participation and long-term commitments, considerations which would enhance generalizability, it is very likely that there are also considerations unique to this category which would inhibit applicability in other situations. For example, schema complexity effects might easily vary as a function of the technical complexity of the product. Likewise, it seems reasonable that subject involvement could easily vary across product classes, and that one would encounter higher levels of involvement for purchases of fleet automobiles, or decor packages for a plant cafeteria than for purchases of ostensibly low involvement products such as lighting systems.

A further reason for using choosing lighting systems for this experiment was to avoid the contaminating effects of prior subject experience with the product class. While this was certainly desirable from an experimental control

perspective, one possible consequence is that the study's results may not be as applicable to modified rebuy or straight rebuy situations (situations in which buyers would be expected to have some familiarity with the product class and the vendor) as to new task buying situations (in which they would not be expected to have that familiarity).

IMPLICATIONS

The results of this study are potentially significant to both academicians and practitioners.

For Academicians

By demonstrating that differences in information content are associated with differing levels of arousal, and that arousal is a significant mediator of mood effects, the study establishes that message content effects merit further attention. This comes at a time when marketing researchers are increasingly redirecting their focus away from message content issues toward a focus on non-verbal aspects of buyer-seller interaction, and suggests that in the shift of emphasis to the non-verbal dimensions, important informational effects may have been overlooked.

This is not to say that research on non-verbal process effects should be decreased, but it does indicate that a full understanding of non-verbal effects may require consideration of heretofore ignored message content effects

in concert with non-verbal aspects of sales interactions.

For Practitioners

In addition to the implications for marketing researchers the study's results are also potentially important to practitioners who are parties to industrial buyer-seller exchanges.

Perhaps most importantly from the sellers perspective, the results of this study help to clarify the ways in which mood states influence buyers' judgements. By demonstrating that mood effects are dependent upon arousal level, the study provides some indication of the circumstances under which buyers' mood states are likely to influence evaluative judgements and the circumstances under which they are not.

The results of this study are quite conclusive in demonstrating that mood states influenced buyers' evaluative judgements only if buyers were in a state of elevated arousal. While the evaluative judgements of buyers in the high mood score high arousal group were statistically different from the judgements of low mood buyers regardless of the low mood score buyers' arousal states, evaluations made by high mood score buyers in the low arousal state were not significantly different from those made by low mood score buyers.

This suggests that bad moods may not be as detrimental

as many sales practitioners have previously supposed. More importantly, when these results are coupled with results from research on the determinants of arousal states, they suggest guidelines for modifying sales presentation content in response to the good or bad moods displayed by buyers.

Specifically, these results indicate that the salesperson in contact with the "good mood" buyer should take action to assure that the buyer is in an elevated state of arousal. Because arousal can be heightened in either of two ways; i.e., by increasing the buyer's involvement with the sales message or by increasing the novelty or complexity of the message itself, the salesperson can opt for the approach which best suits the situation.

In situations in which the presentation is being made to a single buyer it is feasible to elevate arousal via the involvement route, and in these situations the salesperson should tailor the presentation to the interests of the individual by presenting information which is specific to the buyer's area of responsibility and by stressing the relevance of the information to the buyer as an individual.

However, salespersons must often make presentations to buying groups composed of individuals from different functional responsibility areas. In this situation the salesperson is constrained in the extent to which the messages can be tailored to buyers' specific interests, but

can still have some influence on buyers' arousal states by choosing to present information that is likely to be new to the buyers and sufficiently complex to require buyer effort at processing.

By demonstrating that buyers in heightened states of arousal made more extreme evaluative judgements, the study suggests that arousal might also be an important consideration in situations involving comparative sales presentations, since one of the salesperson's objectives in this situation is to differentiate a product or vendor from competing alternatives in the minds of buyers and differentiation is facilitated by the making of extreme evaluative judgements.

The study is also a potential source of insights for industrial buyers. By establishing that buyers' evaluations of sales personnel, sales presentations, and vendors are subject to arousal and mood influences this study has demonstrated the need for procedures to control for the effects of these influences. Failure to do so means that differences in buyers' evaluations of important criteria such as the reliability, service orientation, product quality, and price competitiveness of alternative vendors may be as much due to differences in mood at the times evaluations were made as due to substantive differences in vendor capability. The fact that the set of hypothetical

purchasing decision participants in this study included a number of professional purchasing agents indicates that not even professional training is sufficient to assure immunity from mood influences and further underscores the need for some form of external control.

It is beyond the scope of this study to prescribe methods for controlling mood in the environments in which industrial purchase decisions are made. It is widely recognized, however, that mood states are sensitive to situational and contextual influences and it may be possible to bring about some control over the variability in buyers' moods and arousal levels through control of the environment in which sales presentations and evaluative judgements are made. It seems reasonable, for example, that purchasing managers who are soliciting inputs from a diverse buying group about the capabilities of competing vendors would want to assure that the presentations made by the competing vendors and the evaluations made about them were made at the same time of day, in the same conference room, under the same temperature and lighting conditions.

NEEDS FOR FURTHER RESEARCH

There is a clear need for further research to clarify relationships among the variables which were considered in the study along with other variables which have not yet

been explored. Additionally there is a need for research to clarify the extent to which the findings of this study are applicable.

Research to Clarify Relationships

The fact that the mood and arousal effects so pronounced indicates further attention should be directed at the conditions which give rise to variations in mood and arousal as well as to their consequences. This approach might consider the effects of message content complexity and novelty, and the effects of schema complexity in concert with various non-verbal cues. In addition, it might be useful to consider whether some people are more arousable and more subject to mood influences than others.

Perhaps more importantly, there is a need to identify the extent to which schema complexity, mood, and arousal influence behavioral outcomes. One would expect that since they impact evaluative judgements, they would also influence behavioral intentions and overt behaviors, but this remains to be demonstrated.

Research to Establish Generalizability

Research should also be undertaken to clarify the applicability of the study's results. Most evident is the need to establish whether the observed processes occur in other selling contexts (i.e., in different product classes, across different purchase process stages, and among buyers

with different levels of prior experience), but there are implications in non-selling contexts as well.

First of all, since buyer-seller interaction is dyadic, it might be quite beneficial to examine these processes from the seller's perspective, and consider the extent to which complexity, mood, and arousal influence salespeople's judgements about buying group members, buying firms, and the behaviors which they take with respect to buyers.

The findings of this study might also have implications in non-selling contexts. The question arises as to whether sales force managers are subject to these same influences while considering prospects for purposes of recruitment and while considering subordinates for purposes of performance appraisal, compensation, training, and promotion. Research should be undertaken to establish the extent to which these influences occur and to identify means whereby their effects might be mitigated.

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APPENDIX

INDUSTRIAL BUYER QUESTIONNAIRE

Introduction

This is a study designed to find out how people react to sales presentations. It is different from other studies in that we are interested in the reactions of individuals from a variety of jobs within the firm.

There are three parts to the study. In the first part we will ask you what you think about various things having to do with purchases of capital equipment. In the second part, we will show you some actual sales presentations and ask what you think about them. And, in the final part, we will ask some questions for classification purposes.

There are no "right" or "wrong" answers in this study. Just relax and give the answer that best describes the way you feel. Your answers will remain strictly confidential.

GO ON TO THE NEXT PAGE!

SECTION 1: Associated Thoughts

First, we would like to get a better understanding of how you react to situations within which sales presentations take place. To do that, we are interested in finding out what thoughts come to your mind about various aspects of buying situations.

At the top of each of the following pages in this section you will find phrases or descriptions identifying different aspects of buying situations. You will also find blank lines for listing thoughts that come to mind about these different situation aspects.

If something comes to mind please write it down ... even if you consider it unimportant or silly. Please be as brief as possible, and try to state each thought in a short phrase or word or two instead of long descriptions. Write down each word or phrase on a separate line. Do not hold back your thoughts. There are no "right" or "wrong" answers. I am interested in what you think.

Since this session is timed, please wait to turn the page so that we can all start together.

PLEASE WAIT TO TURN THE PAGE!

PRACTICE

Capital equipment buyers have the opportunity to learn about and evaluate different SALESPEOPLE. When you direct your thoughts toward learning about and evaluating capital equipment salespeople, what comes to mind?

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____

PLEASE STOP!

Before you go on to the other questions in this section, please ask any questions that you may have.

1.1 There are often different SUPPLIERS from which a firm can purchase capital equipment, and buyers often find it necessary to learn about and evaluate these different suppliers. What comes to mind when you direct your thoughts toward learning about and evaluating different suppliers?

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____

PLEASE WAIT TO TURN THE PAGE!

1.2 There are often different types of CAPITAL EQUIPMENT for getting a job done, and buyers often find it necessary to learn about and evaluate these different types of equipment. What comes to mind when you direct your thoughts toward learning about and evaluating different types of capital equipment?

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____

PLEASE WAIT TO TURN THE PAGE!

1.3 There are often different INVESTMENT ALTERNATIVES available to the firm, and buyers often find it necessary to learn about and evaluate these different investment alternatives. What comes to mind when you direct your thoughts toward learning about and evaluating investment alternatives?

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____

PLEASE WAIT TO TURN THE PAGE!

SECTION 2: Reactions to Sales Presentations

Next we would like to get your reactions to some actual sales presentations. As you listen to these presentations, assume that you are employed by a company similar to your company which is considering the purchase described below.

Suppose that engineers from the firm's production department have recognized the need to upgrade the production area lighting system, in order to provide better illumination.

No final decision has been made to purchase such a system, but top management considers the proposal to have some merit. As a consequence, a group representing different functional areas within the company has been set up to consider the matter further, and you are a member of this group.

Top management has decided that the group's first order of business is to carefully and thoroughly evaluate the proposal. Top management believes that it is especially important to: 1) evaluate any benefits that might result from replacing the firm's present lighting system, 2) evaluate the financial attractiveness of such a purchase and, 3) make an evaluation of the company making the sales presentation.

Mr. Johnson, a salesman with Eastern Electric, a regional vendor of industrial lighting system equipment, has been invited to the plant to meet with a group of the firm's engineers, a group of financial analysts, and a group of purchasing agents for the purpose of providing information.

Your task is to listen to the sales presentations Mr. Johnson makes to these groups with the objective of making these evaluations. Afterwards you will be asked to make some judgements about the purchase and the company that Mr. Johnson represents, Eastern Electric.

GO ON TO THE NEXT PAGE!

2.1 The following questions are designed to gauge how people react to purchasing task assignments. Please read each of the following statements and indicate how much you agree or disagree with it by circling the appropriate number.

	STRONGLY AGREE				STRONGLY DISAGREE		
a. Attending a sales presentation in order to evaluate a company and its products is a challenging task.	1	2	3	4	5	6	7
b. Attending a sales presentation to evaluate a company and its products is a task that just about anyone can do.	1	2	3	4	5	6	7
c. I can evaluate a company and its products by attending a sales presentation better than most people can.	1	2	3	4	5	6	7
d. If I were assigned the task of attending a sales presentation to evaluate a company and its products, I'm afraid I would find it rather boring.	1	2	3	4	5	6	7
e. Attending a sales presentation in order to evaluate a company and its products is the kind of task I find enjoyable.	1	2	3	4	5	6	7
f. My ability to evaluate a company and its products by attending a sales presentation is the kind of ability that influences my career success.	1	2	3	4	5	6	7
g. Evaluating a company and its products by attending a sales presentation gives me a sense of satisfaction.	1	2	3	4	5	6	7

2.2 As a final step before viewing the sales presentations, please answer the following questions dealing with your general "mood" right now. Please indicate your level of agreement with the following statements by circling the appropriate number.

	STRONGLY AGREE				STRONGLY DISAGREE		
a. Currently, I am in a good mood.	1	2	3	4	5	6	7
b. As I answer these questions, I feel cheerful.	1	2	3	4	5	6	7
c. For some reason, I am not very comfortable right now.	1	2	3	4	5	6	7
d. At this moment, I feel edgy.	1	2	3	4	5	6	7

PLEASE STOP!

- 2.3 Please tell how well each of these words describes your feelings after listening to the recorded sales presentation. Do you feel...? (Circle the appropriate number.) *accused*

	Not at All						Very Much
Pleasant	1	2	3	4	5	6	7
Amazed	1	2	3	4	5	6	7
Joyful	1	2	3	4	5	6	7
Astonished	1	2	3	4	5	6	7
Aroused	1	2	3	4	5	6	7
Spirited	1	2	3	4	5	6	7
Startled	1	2	3	4	5	6	7
Lively	1	2	3	4	5	6	7
Delightful	1	2	3	4	5	6	7
Surprised	1	2	3	4	5	6	7
Alert	1	2	3	4	5	6	7
Stimulated	1	2	3	4	5	6	7

- 2.4 Please tell how well each word describes the message that was presented in the sales presentation you have just heard by circling the appropriate number. *a few*

	Not at All						Very Much
Attention-getting	1	2	3	4	5	6	7
Interesting	1	2	3	4	5	6	7
Amusing	1	2	3	4	5	6	7
Entertaining	1	2	3	4	5	6	7
Engaging	1	2	3	4	5	6	7

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- 2.5 The next series of questions asks for some of your reactions to the message content of the sales presentation you have just heard. Please indicate the degree to which you agree or disagree with each of the following statements by circling the appropriate number.

	STRONGLY AGREE							STRONGLY DISAGREE						
a.	The message in the sales presentation I have just heard is worth thinking about.													
	1	2	3	4	5	6	7							
b.	The message in the sales presentation I have just heard is something that I can personally relate to.													
	1	2	3	4	5	6	7							
c.	The message in the sales presentation I have just heard is about something that would be important in the kind of work that I do.													
	1	2	3	4	5	6	7							
d.	The message in the sales presentation I have just heard is personally important to me.													
	1	2	3	4	5	6	7							
e.	The message in the sales presentation I have just heard is about something that involves me.													
	1	2	3	4	5	6	7							

GO ON TO THE NEXT PAGE!

- 2.6 Please indicate your level of agreement with the following statements about the sales presentation you have just heard by checking the appropriate place on each scale.

To what degree was this SALES PRESENTATION ...

- a. Interesting __:__:__:__:__ Boring
- b. Believable __:__:__:__:__ Unbelievable
- c. Informative __:__:__:__:__ Uninformative
- d. Persuasive __:__:__:__:__ Unpersuasive
- e. Unemotional __:__:__:__:__ Emotional
- f. Formal __:__:__:__:__ Informal
- g. Competitive __:__:__:__:__ Uncompetitive

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- 2.7 Next we'd like to get your assessment of Mr. Johnson, the salesperson who delivered the sales presentation you have just heard. Please answer each of the following questions by checking the space which you feel best describes Mr. Johnson. Please note the end points of each scale before responding.

To what degree is Mr. Johnson

- | | | | |
|----|--|-------------------------------|-------------------------------|
| a) | Trustworthy | : _ : _ : _ : _ : _ : _ : _ : | Untrustworthy |
| | Low in Product Knowledge | | High in Product Knowledge |
| b) | Knowledge | : _ : _ : _ : _ : _ : _ : _ : | Knowledge |
| | High in Applications Knowledge | | Low in Applications Knowledge |
| c) | Knowledge | : _ : _ : _ : _ : _ : _ : _ : | Knowledge |
| | Very Dependable | : _ : _ : _ : _ : _ : _ : _ : | Not very Dependable |
| d) | Dependable | : _ : _ : _ : _ : _ : _ : _ : | Dependable |
| | Very Capable | : _ : _ : _ : _ : _ : _ : _ : | Not very Capable |
| e) | Capable | : _ : _ : _ : _ : _ : _ : _ : | Capable |
| | Professional | : _ : _ : _ : _ : _ : _ : _ : | Unprofessional |
| f) | Professional | : _ : _ : _ : _ : _ : _ : _ : | Professional |
| | Very Empathetic | : _ : _ : _ : _ : _ : _ : _ : | Not very Empathetic |
| g) | Empathetic | : _ : _ : _ : _ : _ : _ : _ : | Empathetic |
| | Very Unfriendly | : _ : _ : _ : _ : _ : _ : _ : | Very Friendly |
| h) | Unfriendly | : _ : _ : _ : _ : _ : _ : _ : | Friendly |
| | Agressive | : _ : _ : _ : _ : _ : _ : _ : | Unagressive |
| i) | Aggressive | : _ : _ : _ : _ : _ : _ : _ : | Aggressive |
| | Tactful | : _ : _ : _ : _ : _ : _ : _ : | Blunt |
| j) | Tactful | : _ : _ : _ : _ : _ : _ : _ : | Tactful |
| | Not Very Likeable | : _ : _ : _ : _ : _ : _ : _ : | Very Likeable |
| k) | Likeable | : _ : _ : _ : _ : _ : _ : _ : | Likeable |
| | l) What is your overall evaluation of Mr. Johnson? | | |
| | Very Favorable | : _ : _ : _ : _ : _ : _ : _ : | Very Unfavorable |
| | Favorable | : _ : _ : _ : _ : _ : _ : _ : | Unfavorable |

GO ON TO THE NEXT PAGE!

- What is your overall evaluation of the company?
- a. Very Favorable :___:___:___:___:___:___:___: Very Unfavorable

a. **Very Favorable** : : : : : **Very Unfavorable**

b.	Service Oriented	:__ : __ : __ : __ : __ : __ : __ :	Not Service- Oriented
c.	Reputable	:__ : __ : __ : __ : __ : __ : __ :	Unreputable
d.	Reliable	:__ : __ : __ : __ : __ : __ : __ :	Unreliable
e.	Low Priced	:__ : __ : __ : __ : __ : __ : __ :	High Priced
f.	Agressive	:__ : __ : __ : __ : __ : __ : __ :	Unagressive
g.	Progressive	:__ : __ : __ : __ : __ : __ : __ :	Not Progressive

h. High Quality : : : : : Low Quality

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- 2.9 We are interested in your assessment of the sales presentation you have just heard. Would you say that it was directed mainly toward people with job responsibilities in ...
(Please circle only one.)

Finance	1
Sales or Marketing	2
Production or Operations	3
Administration	4
Purchasing	5
Engineering Design	6
Other (Please specify)	7

- 2.10 Would you say that the sales presentation was directed mainly at people with job responsibilities in
(Please circle only one.)

Top Management (responsible for two or more functional areas)	1
Upper Middle Management (top responsibility in one functional area)	2
Middle Management	3
First Line Management	4
Senior Staff Member	5
Junior Staff Member	6

PLEASE STOP!

- 2.11 Please tell how well each of these words describes your feelings after listening to the recorded sales presentation. Do you feel..? (Circle the appropriate number.)

	Not at All						Very Much
Pleasant	1	2	3	4	5	6	7
Amazed	1	2	3	4	5	6	7
Joyful	1	2	3	4	5	6	7
Astonished	1	2	3	4	5	6	7
Aroused	1	2	3	4	5	6	7
Spirited	1	2	3	4	5	6	7
Startled	1	2	3	4	5	6	7
Lively	1	2	3	4	5	6	7
Delightful	1	2	3	4	5	6	7
Surprised	1	2	3	4	5	6	7
Alert	1	2	3	4	5	6	7
Stimulated	1	2	3	4	5	6	7

- 2.12 Please tell how well each word describes the message that was presented in the sales presentation you have just heard by circling the appropriate number.

	Not at All						Very Much
Attention-getting	1	2	3	4	5	6	7
Interesting	1	2	3	4	5	6	7
Amusing	1	2	3	4	5	6	7
Entertaining	1	2	3	4	5	6	7
Engaging	1	2	3	4	5	6	7

GO ON TO THE NEXT PAGE!

- 2.13 The next series of questions asks for some of your reactions to the message content of the sales presentation you have just heard. Please indicate the degree to which you agree or disagree with each of the following statements by circling the appropriate number.

	STRONGLY AGREE							STRONGLY DISAGREE						
a. The message in the sales presentation I have just heard is worth thinking about.	1	2	3	4	5	6	7							
b. The message in the sales presentation I have just heard is something that I can personally relate to.	1	2	3	4	5	6	7							
c. The message in the sales presentation I have just heard is about something that would be important in the kind of work that I do.	1	2	3	4	5	6	7							
d. The message in the sales presentation I have just heard is personally important to me.	1	2	3	4	5	6	7							
e. The message in the sales presentation I have just heard is about something that involves me.	1	2	3	4	5	6	7							

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2.14 Please indicate your level of agreement with the following statements about the sales presentation you have just heard by checking the appropriate place on each scale.

To what degree was this SALES PRESENTATION ...

- a. Interesting __:__:__:__:__ Boring
- b. Believable __:__:__:__:__ Unbelievable
- c. Informative __:__:__:__:__ Uninformative
- d. Persuasive __:__:__:__:__ Unpersuasive
- e. Unemotional __:__:__:__:__ Emotional
- f. Formal __:__:__:__:__ Informal
- g. Competitive __:__:__:__:__ Uncompetitive

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2.15 Next we'd like to get your assessment of Mr. Johnson, the salesperson who delivered the sales presentation you have just heard. Please answer each of the following questions by checking the space which you feel best describes Mr. Johnson. Please note the end points of each scale before responding.

To what degree is Mr. Johnson

- | | | | |
|----|---|------------------------|---------------------|
| a) | Trustworthy | :__:__:__:__:__:__:__: | Untrustworthy |
| | Low in Product | | High in Product |
| b) | Knowledge | :__:__:__:__:__:__:__: | Knowledge |
| | High in Applications | | Low in Applications |
| c) | Knowledge | :__:__:__:__:__:__:__: | Knowledge |
| d) | Very Dependable | :__:__:__:__:__:__:__: | Not very Dependable |
| e) | Very Capable | :__:__:__:__:__:__:__: | Not very Capable |
| f) | Professional | :__:__:__:__:__:__:__: | Unprofessional |
| g) | Very Empathetic | :__:__:__:__:__:__:__: | Not very Empathetic |
| h) | Very Unfriendly | :__:__:__:__:__:__:__: | Very Friendly |
| i) | Agressive | :__:__:__:__:__:__:__: | Unagressive |
| j) | Tactful | :__:__:__:__:__:__:__: | Blunt |
| k) | Not Very Likeable | :__:__:__:__:__:__:__: | Very Likeable |
| l) | What is your overall evaluation of Mr. Johnson? | | |
| | Very Favorable | :__:__:__:__:__:__:__: | Very Unfavorable |

GO ON TO THE NEXT PAGE!

2.18 On the basis of the sales presentation you just saw, please answer the following questions pertaining to this lighting equipment company. Please check the space which you feel best describes the company. Please note the end points of each scale before responding.

What is your overall evaluation of the company?

a. Very Favorable :__:__:__:__:__:__:__:__:__: Very Unfavorable

For each of the following, please check the space which you feel best describes the company:

b. Service Oriented :__:__:__:__:__:__:__:__:__: Not Service-Oriented

c. Reputable :__:__:__:__:__:__:__:__:__: Unreputable

d. Reliable :__:__:__:__:__:__:__:__:__: Unreliable

e. Low Priced :__:__:__:__:__:__:__:__:__: High Priced

f. Agressive :__:__:__:__:__:__:__:__:__: Unagressive

g. Progressive :__:__:__:__:__:__:__:__:__: Not Progressive

The products represented by this company can best be described as:

h. High Quality :__:__:__:__:__:__:__:__:__: Low Quality

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2.17 We are interested in your assessment of the sales presentation you have just heard. Would you say that it was directed mainly toward people with job responsibilities in ...
(Please circle only one.)

Finance	1
Sales or Marketing	2
Production or Operations	3
Administration	4
Purchasing	5
Engineering Design	6
Other (Please specify)	7

2.18 Would you say that the sales presentation was directed mainly at people with job responsibilities in
(Please circle only one.)

Top Management (responsible for two or more functional areas)	1
Upper Middle Management (top responsibility in one functional area)	2
Middle Management	3
First Line Management	4
Senior Staff Member	5
Junior Staff Member	6

PLEASE STOP!

- 2.19 Please tell how well each of these words describes your feelings after listening to the recorded sales presentation. Do you feel..? (Circle the appropriate number.)

	Not at All						Very Much
Pleasant	1	2	3	4	5	6	7
Amazed	1	2	3	4	5	6	7
Joyful	1	2	3	4	5	6	7
Astonished	1	2	3	4	5	6	7
Aroused	1	2	3	4	5	6	7
Spirited	1	2	3	4	5	6	7
Startled	1	2	3	4	5	6	7
Lively	1	2	3	4	5	6	7
Delightful	1	2	3	4	5	6	7
Surprised	1	2	3	4	5	6	7
Alert	1	2	3	4	5	6	7
Stimulated	1	2	3	4	5	6	7

- 2.20 Please tell how well each word describes the message that was presented in the sales presentation you have just heard by circling the appropriate number.

	Not at All						Very Much
Attention-getting	1	2	3	4	5	6	7
Interesting	1	2	3	4	5	6	7
Amusing	1	2	3	4	5	6	7
Entertaining	1	2	3	4	5	6	7
Engaging	1	2	3	4	5	6	7

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- 2.21 The next series of questions asks for some of your reactions to the message content of the sales presentation you have just heard. Please indicate the degree to which you agree or disagree with each of the following statements by circling the appropriate number.

	STRONGLY AGREE							STRONGLY DISAGREE						
a. The message in the sales presentation I have just heard is worth thinking about.	1	2	3	4	5	6	7							
b. The message in the sales presentation I have just heard is something that I can personally relate to.	1	2	3	4	5	6	7							
c. The message in the sales presentation I have just heard is about something that would be important in the kind of work that I do.	1	2	3	4	5	6	7							
d. The message in the sales presentation I have just heard is personally important to me.	1	2	3	4	5	6	7							
e. The message in the sales presentation I have just heard is about something that involves me.	1	2	3	4	5	6	7							

GO ON TO THE NEXT PAGE!

2.22 Please indicate your level of agreement with the following statements about the sales presentation you have just heard by checking the appropriate place on each scale.

To what degree was this SALES PRESENTATION ...

- a. Interesting __:__:__:__:__:__ Boring
- b. Believable __:__:__:__:__:__ Unbelievable
- c. Informative __:__:__:__:__:__ Uninformative
- d. Persuasive __:__:__:__:__:__ Unpersuasive
- e. Unemotional __:__:__:__:__:__ Emotional
- f. Formal __:__:__:__:__:__ Informal
- g. Competitive __:__:__:__:__:__ Uncompetitive

GO ON TO THE NEXT PAGE!

2.23 Next we'd like to get your assessment of Mr. Johnson, the salesperson who delivered the sales presentation you have just heard. Please answer each of the following questions by checking the space which you feel best describes Mr. Johnson. Please note the end points of each scale before responding.

To what degree is Mr. Johnson

- | | | | |
|----|---|-------------------------------|-------------------------------|
| a) | Trustworthy | : _ : _ : _ : _ : _ : _ : _ : | Untrustworthy |
| | Low in Product Knowledge | | High in Product Knowledge |
| b) | Knowledge | : _ : _ : _ : _ : _ : _ : _ : | Knowledge |
| | High in Applications Knowledge | | Low in Applications Knowledge |
| c) | Knowledge | : _ : _ : _ : _ : _ : _ : _ : | Knowledge |
| d) | Very Dependable | : _ : _ : _ : _ : _ : _ : _ : | Not very Dependable |
| e) | Very Capable | : _ : _ : _ : _ : _ : _ : _ : | Not very Capable |
| f) | Professional | : _ : _ : _ : _ : _ : _ : _ : | Unprofessional |
| g) | Very Empathetic | : _ : _ : _ : _ : _ : _ : _ : | Not very Empathetic |
| h) | Very Unfriendly | : _ : _ : _ : _ : _ : _ : _ : | Very Friendly |
| i) | Agressive | : _ : _ : _ : _ : _ : _ : _ : | Unagressive |
| j) | Tactful | : _ : _ : _ : _ : _ : _ : _ : | Blunt |
| k) | Not Very Likeable | : _ : _ : _ : _ : _ : _ : _ : | Very Likeable |
| l) | What is your overall evaluation of Mr. Johnson? | | |
| | Very Favorable | : _ : _ : _ : _ : _ : _ : _ : | Very Unfavorable |

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- 2.24 On the basis of the sales presentation you just saw, please answer the following questions pertaining to this lighting equipment company. Please check the space which you feel best describes the company. Please note the end points of each scale before responding.

What is your overall evaluation of the company?

- a. Very Favorable :__: __: __: __: __: __: __: Very Unfavorable

For each of the following, please check the space which you feel best describes the company:

- b. Service Oriented :__: __: __: __: __: __: __: Not Service-Oriented
- c. Reputable :__: __: __: __: __: __: __: Unreputable
- d. Reliable :__: __: __: __: __: __: __: Unreliable
- e. Low Priced :__: __: __: __: __: __: __: High Priced
- f. Aggressive :__: __: __: __: __: __: __: Unaggressive
- g. Progressive :__: __: __: __: __: __: __: Not Progressive

The products represented by this company can best be described as:

- h. High Quality :__: __: __: __: __: __: __: Low Quality

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- 2.25 We are interested in your assessment of the sales presentation you have just heard. Would you say that it was directed mainly toward people with job responsibilities in ...
(Please circle only one.)

Finance	1
Sales or Marketing	2
Production or Operations	3
Administration	4
Purchasing	5
Engineering Design	6
Other (Please specify)	7

- 2.26 Would you say that the sales presentation was directed mainly at people with job responsibilities in
(Please circle only one.)

Top Management (responsible for two or more functional areas)	1
Upper Middle Management (top responsibility in one functional area)	2
Middle Management	3
First Line Management	4
Senior Staff Member	5
Junior Staff Member	6

GO ON TO THE NEXT PAGE!

The next series of questions is intended to gauge how people make inferences about capital equipment salespeople and capital equipment vendors. Please answer each of the following questions by circling the appropriate number.

2.27 How likely is it that Mr. Johnson

	VERY UNLIKELY					VERY LIKELY	
a. Answers phone calls promptly?	1	2	3	4	5	6	7
b. Would advise a buyer of potential trouble?	1	2	3	4	5	6	7
c. Would go to bat for the buyer within Eastern Electric?	1	2	3	4	5	6	7
d. Worked in engineering before going into sales?	1	2	3	4	5	6	7
e. Worked in finance before going into sales?	1	2	3	4	5	6	7
f. Worked in purchasing before going into sales?	1	2	3	4	5	6	7

2.28 How likely is it that Eastern Electric

	VERY UNLIKELY					VERY LIKELY	
a. Offers volume discounts?	1	2	3	4	5	6	7
b. Offers higher cash discounts than competitors?	1	2	3	4	5	6	7
c. Guarantees price protection?	1	2	3	4	5	6	7
d. Can deliver more quickly than competitors?	1	2	3	4	5	6	7

PLEASE STOP!

2.29 This last set of questions deals with the ways in sales presentation material is remembered. Think back to the sales presentations you have listened to and answer as many of the following questions as you can.

- a. What is the target illumination level for the plant's production area? _____
- b. What percentage rate was used as an escalator for labor costs? _____
- c. How long has Eastern had its automated order processing system working? _____
- d. What is the initial light output intensity of a fluorescent lamp? _____
- e. What is the total initial outlay for the metal halide system? _____
- f. What three brands of HID lamps does Eastern carry? _____

- g. What is the total annual lighting electricity requirement in kilowatts for the metal halide system? _____
- h. What is the lifetime operating cost savings with the high intensity discharge system? _____
- i. What other system did Eastern automate at the time that it also automated its order entry system? _____

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SECTION III: Classification Information

The last section is to gather information about your background for statistical purposes only, so that your answers can be grouped with the answers of people with similar job in other firms.

- 3.1 What is the total number of years you have been employed full-time?

_____ (years)

- 3.2 In which of the following functional areas would you place your current position? (Please circle only one.)

Finance	1
Sales or Marketing	2
Production or Operations	3
Administration	4
Purchasing	5
Engineering Design	6
Other (Please specify)	7

- 3.3 During your professional career, how many years have you worked in this functional area?

_____ (years)

- 3.4 Which organization level best describes the level of your current position? (Please circle only one.)

Top Management (responsible for two or more functional areas)	1
Upper Middle Management (top responsibility in one functional area)	2
Middle Management	3
First Line Management	4
Senior Staff Member	5
Junior Staff Member	6

GO ON TO THE NEXT PAGE!

3.5 How many years have you worked in your present position in this company?

_____ (years)

3.6 Approximately how many major lighting system purchases have you participated in during your career?

_____ (decisions)

3.7 What is the highest level of education that you have reached? (Please circle one of the following.)

Up to high school graduation	1
Some college	2
Completed a 4 year college	3
Some graduate work	4
Graduate degree	5

3.8 Which of the following best describes your age? (Circle one)

Under 25		1
25 to 34		2
35 to 44		3
45 to 54		4
55 or more		5

THANK YOU!

ENGINEERING SCRIPT

Hello, my name is Fred Johnson, and on behalf of Eastern Electric, I'd like to thank you for inviting me here today to discuss with you some of the ways in which Eastern can help you with the task of relighting your plant.

When I spoke with your engineering people on the phone, I was told that you would like some information on how you might go about improving your system in order to reach an illumination level of 100 footcandles.

First of all, I'd like to concur with your target level of 100 footcandles. I checked, and 100 footcandles agrees with Illumination Engineering Society recommendations for a wide range of seeing tasks. You've seen those I.E.S. standards I'm sure.

They lay out illumination recommendations for different seeing tasks like the various classes of bench and machine work, inspection, and assembly. A hundred footcandles should give you plenty of light for the type of work you do. It's a level you'll be very happy with.

We have a computer at Eastern which we use for lighting system design work, so I took the information you gave me and came up with a computer run that describes what would be involved under three alternative ways of upgrading your system. I'd like to show you what we've come up with.

But, as you know, there are more ways than one of relighting a plant, and you have to make some choices. What I'd like to do is use these computer printouts to show you what your better alternatives are, and some of the things you should think about

in making a choice, so let me give each one of you a copy of the printout.

If you look at your print out you'll see that the three alternatives call for fluorescent, metal halide, and high pressure sodium lamps. These are the three alternatives that most people in your situation would want to consider. Your present system uses fluorescent strips, and the natural reaction of many people in a case like this is to simply buy additional strips and hang more fluorescent lamps.

But that's not necessarily the best choice. In fact it's probably the worst, since there are other types of lamps that give you better performance in a lot of ways. So you'll also want to consider metal halide and high-pressure sodium lamps. Both metal halide and H/P Sodium are types of high-intensity discharge lamps. In addition to producing a more intense light, the HID lamps typically out-perform fluorescent lamps in terms of service life, and what's more important, in terms of efficiency.

Both the metal halide and H/P Sodium lamps produce a much brighter light than the light produced by fluorescent lamps. If you'll look at your printout, at the top of page 2, where it says "initial lamp lumens" you can see that the light output of a new fluorescent lamp is 15000 lumens. This is only about half of the light output of a new ^{H.P.S.} ~~metal halide~~ lamp, with an output of 29000 lumens, and less than half the output of an ^{M.H.} ~~H/P Sodium lamp~~ with an output of 40,000 lumens.

Because, the HID lamps produce a more intense light, they can be mounted at a greater height than fluorescent strips, and fewer are required for producing a given amount of light in an

area. We can do the calculations and see that in order to produce a hundred footcandles, that is to say, a hundred lumens per square foot, in a 10,000 square foot area requires a total output of 1,000,000 lumens.

Line 27 of the printout shows you the mean level of lumen output for each of the different lamp types. These differences in lumen output and mounting height mean that the different lamp types provide a hundred footcandles to different areas. Dividing the 10,000 square foot building area by the area lighted by each lamp gives the lamping requirements shown on line 35. That's 428 fluorescent lamps, 58 metal halide lamps, or 71 HPS lamps.

There is one other type of high intensity lamp, the mercury vapor lamp, which people sometimes use to light a plant. The main attraction it has is its extremely long life, so you'll occasionally see it used in situations where long-service life is very important. But it's less efficient than the other two HID types, in fact, it's less efficient than the fluorescent type, so I don't think you want to consider it here.

The metal halide lamps are similar in design and operation to the mercury vapor lamps, but they produce a better color rendition, and are about fifty percent more efficient, so you'd want to use metal halide lamps where there is a need for color control as well as a need for efficiency. The HP Sodium lamps produce a golden white color, have a good lamp life, and an excellent lumen depreciation factor. But their main advantage is that they have a higher efficiency than the other types. So, the

HPS lamps are used where the overriding consideration is efficiency.

Maybe I'd better define efficiency. By that, I just mean the amount of light that you get out of a lamp for every unit of energy that you put into it. It's usually expressed in terms of lumens per watt, since the basic measure of light output is the lumen. It's the same unit that's used in calculating illumination intensity in footcandles, since a "footcandle" is just a ratio the quantity of light falling onto a surface divided by the surface area, or the number of lumens per square foot.

Actually, efficiency is determined not just by lamp type, but also by things like the lamp's cleanliness and its wattage. In fact, even in a relatively clean environment like you'd find in a plastic extruding or electronics assembly plant, dirt buildup on a lamp will reduce its light output by around 10 percent in a year's time. Wattage also affects efficiency; the higher the wattage, the higher the efficiency. The charts show that a 1000 watt metal halide lamp, for example, is about 50 percent more efficient than an a 175 watt metal halide lamp.

But don't be misled by looking only at lamp efficiencies. All these lamps require some form of ballast. You also have to look at power loss due to ballastry.

If you'll look on the first page of your printout, on line 23 you'll see that the power loss due to ballastry is 50 watts per fixture with the HPS system, 80 watts per fixture for the MH system, and 87 watts per fixture with the fluorescent system. So, when we look at ballast efficiency, the HID systems beat the old fluorescent systems once again.

If we take this input wattage and multiply by the number of fixtures required to meet the illumination requirements, we can calculate the total load on the system under each system. The printout shows this on lines 34 through 38. As you can see there's quite a difference. The total lighting load is 108.5 kilowatts for the fluorescent system, 27.8 kilowatts for the metal halide system, and 21.3 kilowatts under the HPS system.

If we assume that the plant runs two shifts and is lighted seventeen hours a day, running 200 days a year we have 3400 hours of operation per year. That makes the electricity requirement for the fluorescent system 369,000 kilowatt hours as opposed to 95,000 for the metal halide system, and 72,000 for the HPS. This makes the MH system four times as efficient as the fluorescent system, and the HPS system five times as efficient.

At a rate of five cents per kilowatt hour, the annual energy costs for the three systems are 18,400 dollars for the fluorescent system, forty-seven hundred for the MH system, and thirty-six hundred for the HPS. With total initial system costs at twelve thousand seven hundred and sixty dollars for the MH system, and fifteen thousand six hundred and twenty for the HPS system, payback for each system is less than a year.

Ok, I think that pretty well describes what the alternatives are and the plusses and minuses of each alternative. I think that you'll agree that the MH and HPS systems are clearly far more efficient than the fluorescent alternative.

I thank you for giving me the chance to come out, and I look forward to working more closely with you on this. Right now I'd be happy to answer any questions that you might have.

ENGINEERING ANALYSIS

THE CURRENT INFORMATION IN STORAGE FOLLOWS:

01 THIS ANALYSIS BY: FRED JOHNSON
 02 SALES REGION CODE: 2
 03 SALES DISTRICT: 7
 04 SALESMAN NUMBER: 6
 05 NUMBER OF SYSTEMS: 3

SYSTEM 1 DESCRIPTION:

06 FLUORESCENT
 07 F96T12CWVH0
 08 STRIP

SYSTEM 2 DESCRIPTION:

09 METAL-HALIDE
 10 MS400/BU
 11 INDUSTRIAL

SYSTEM 3 DESCRIPTION:

12 HP SODIUM
 13 LU250
 14 INDUSTRIAL

COMMON DATA:

VARIABLE	UNITS	VALUE
15 ENERGY COST PER KILOWATT-HOUR	\$	0.050
16 MONTHLY DEMAND CHARGE PER KW	\$	0.000
17 BURNING TIME PER YEAR	(HOURS)	3400.000
18 LENGTH OF AREA TO BE LIGHTED	(FEET)	50.000
19 WIDTH OF AREA TO BE LIGHTED	(FEET)	200.000

FIXTURE DATA:

	FLUORESCENT	METAL HALIDE	HP SODIUM
20 NUMBER OF FIXTURES	214.0	0.0	0.0
21 LAMPS PER FIXTURE	2.0	1.0	1.0
22 WATTS PER FIXTURE (INCLUDING BALLAST LOSS)	507.0	480.0	300.0
23 BALLASTRY LOSS	87.0	80.0	50.0
24 FIXTURE POWER FACTOR	0.9	0.9	0.9
25 MOUNTING HEIGHT (FEET)	12.0	18.0	18.0

LAMP DATA:		FLUORESCENT	METAL HALIDE	HP SODIUM
26	INITIAL LAMP LUMENS	15000.0	40000.0	29000.0
27	MEAN LAMP LUMENS	12000.0	32000.0	26100.0
28	LAMP LUMEN DEPRECIATION	80.0	80.0	90.0
29	RATED LAMP LIFE (HOURS)	10000.0	20000.0	24000.0
30	AREA PER LAMP (SQ.FT.)	23.4	172.4	140.8

OTHER DATA:				
31	AVE. MAINTAINED ILLUMINATION	100.0	100.0	100.0
32	PCT FAILURE BEFORE RELAMPING	0.0	0.0	0.0
33	CLEANING PERIOD (HOURS)	3400.0	3400.0	3400.0

SYSTEM DATA:				
34	NO. OF FIXTURES REQUIRED	214.0	58.0	71.0
35	NO. OF LAMPS REQUIRED	428.0	58.0	71.0
36	MAINTAINED AVE. FOOTCANDLES	100.0	100.0	100.0
37	LIGHTED AREA (SQ.FT.)	10000.0	10000.0	10000.0
38	TOTAL LIGHTING LOAD (KW)	108.5	27.8	21.3
39	AREA LOAD (WATTS/SQ.FT.)	10.8	2.8	2.1

PURCHASING SCRIPT

Hello, my name is Fred Johnson, and on behalf of Eastern Electric, I'd like to thank you for inviting me here today to discuss with you some of the ways in which Eastern can help you with the task of relighting your plant.

When I spoke with your purchasing people on the phone, I was told that you are considering a plant relighting job, and that you would be especially interested in finding out more about Eastern Electric and some of the reasons you should buy from us instead of from somebody else.

First of all, I'd like to concur with your concern about the reputation of your suppliers. It really does pay to know who you're dealing with, and that's why we at Eastern work so hard at keeping our customers satisfied. We've been in business for thirty-five years now, we know that we wouldn't have been able to do that without our reputation for competitiveness, service, and dependability.

But as you know, it's one thing to talk about being dependable and competitive, and quite another thing to back it up. So what I'd like to do right now is describe some of Eastern's capabilities for you as a way of showing you some of the ways in which Eastern's reputation is earned. First of all, let me start by telling you right up front that when I say that Eastern is price competitive, I do not mean that we undercut everyone else's prices, I'm not saying that. But we are price competitive in the sense that our prices are in line with the prices offered by other suppliers and I don't think that for many

items you're going to find anybody who's lower than we are.

Our philosophy is to offer the customer more in the way of service and dependability than he can get for the same money anywhere else, so what I'd like to do is describe some of the technical assistance we make available to our customers, then tell you something about the things that you can expect when you do business with Eastern.

One of the reasons that we enjoy the reputation for dependability that we have is our technical expertise and our technical support capability. We've always been able to offer our customers some technical support, but with our new computer system we can now provide our customers with a level of technical design and financial analysis assistance not available from any other supplier in the area.

One of the things that we're really proud of in this technical assistance area is what we call our Eastern Information Analysis or EIA for short. EIA consists of computer programs that can help you get the most out of your lighting system. All are available without charge to our customers. EIA audits can help you analyze existing systems or systems you are planning, and recommend ways you can improve lighting efficiency and reduce energy costs.

Four major analyses are available. The first is an economic analysis which compares up to three lighting systems at the same time. Labor, fixtures, wiring distribution, lamps and energy costs are all taken into consideration in determining the most economical system for the application.

The second is a "relamping analysis" which compares the costs and effects of spot relamping against group relamping to determine the most effective lighting maintenance plan.

The third is a relighting energy analysis. It demonstrates in dollars and cents the advantages of replacing ordinary standard lamps with energy-saving lamps. It also shows the impact that light sources have on your heating and air-conditioning costs.

The last analysis in the Eastern package is a life cycle cost analysis. This analysis considers labor, power, and lamp costs in terms of the amount of light produced. The Life Cycle Cost program analyzes lamp life and lumen output, and provides the number of lumen-hours received from each system analyzed.

Having the computer has also allowed us to switch to an automated order entry system. In fact, we've automated not only our order entry system, but our entire MRP system. We've had it up for about 21 months now (long enough to get the bugs out) and with it, we can track our inventories, with supplier orders coming in and customer shipments going out more quickly and more closely than ever before.

Here, let me hand you some of the standard printouts produced by the system. If you'll look at these, you'll quickly come to appreciate a second reason for our dependability reputation, the breadth of our inventory. Eastern carries a complete line of industrial lamping and ballast equipment. With our large inventory, you have fewer delays in getting an order filled than you would with a smaller firm that would have to back

order. In fact, sometimes these smaller firms in the area don't even back order, they come to us.

Our inventory includes industrial lamps of all varieties of fluorescent and high intensity discharge types. Our inventory of fluorescent lamps includes standard and high efficiency lamps in both the pre-heat and rapid-start lines. In the rapid-start line, in addition to carrying low wattage range lamps, we carry the standard and super-saver lamps in both the high output and very high output wattage ranges. We carry lamps in all the standard shapes and base types.

We carry GTE Sylvania and Westinghouse fluorescent lamps, and in the HID line, in addition to those, we also carry Manville lamps. We carry the Hubble Super Bay line of ballasts, so you can see that that's another plus; we carry top line equipment.

We also carry a complete line of mercury vapor, metal halide, and high-pressure sodium type high intensity discharge lamps. The HID lamps are also available in all the standard shapes and base types. So, regardless of the type of system that you eventually choose, there's a very high likelihood that we'd have everything that you need in inventory.

In fact, the computer has really helped in that regard, in tracking inventory and automatically initiating an order when our stock of an item gets down to a critical level.

With the on-line order entry system, any of our sales people can tell you on the phone, whether or not an item is in inventory, enter your order, give you an expected shipment date,

and enter a commitment code to insure that inventory isn't used to fill some other order.

If an item happens to be out of stock, the system allows the salesperson to look at the back order information and tell you when it was back ordered and when it'll be in and available for shipment. As a matter of company policy, we would not accept an order for an out of stock item without informing you that it was back ordered. If you still wanted to go ahead and enter an order, we would still enter a commitment code to insure that upon arrival the back ordered material would be used to fill your order and not someone else's.

If it happens that there's some problem after you've received the order let us know and we'll make it right. I don't think it's very likely that you'd have damaged lamps, but it sometimes happens. If there is breakage or other damage, or some other problem that makes the product unuseable when it's delivered, let us know and we'll replace it or give you an adjustment.

O.K., I think that pretty well describes Eastern Electric and the way we would handle an order like this one. I think you can see why our reputation for service and dependability is a strong one.

I thank you for giving me the chance to come out, and I look forward to working more closely with you on this. Right now I'd be happy to answer any questions that you might have.

SYLVANIA HIGH INTENSITY DISCHARGE LAMPS

(HIGH PRESSURE SODIUM SERIES)

<u>WATTS</u>	<u>BULB</u>	<u>MFG.</u> <u>ITEM</u> <u>NO.</u>	<u>ORDER</u> <u>ABBREV.</u>	<u>STD.</u> <u>CASE</u> <u>QTY.</u>	<u>DESCRIPTION</u>
50	ED23.5	67420	LU50	12	CLEAR
		67421	LU50/D	12	COATED
70	ED23.5	67422	LU70	12	CLEAR
		67423	LU70/D	12	COATED
100	ED23.5	67424	LU100	12	CLEAR
		67425	LU100/D	12	COATED
150	ED23.5	67426	LU150	12	150 WATT 55 VOLT CLEAR
		67427	LU150/D	12	150 WATT 55 VOLT COATED
150	BT-28	67201	LU150/100	6	150 WATT 100 VOLT CLEAR
200	E-18	67103	LU200	6	CLEAR
250	E-18	67152	LU250	6	CLEAR
250	BT_28	67316	LU250/D	6	COATED
310	E-18	67312	LU310	6	CLEAR
400	E-18	67102	LU400	6	CLEAR
400	E-18	67306	LU400/D	6	COATED
1000	E-25	67307	LU1000	6	CLEAR

SYLVANIA HIGH INTENSITY DISCHARGE LAMPS

(METAL HALIDE SERIES)

----- 175 WATTS -----

<u>BULB</u>	<u>BASE</u>	<u>MFG. ITEM NO.</u>	<u>ABBREVIATION</u>	<u>STD. CASE QTY.</u>	<u>DESCRIPTION</u>
BT-28	POSITION ORIENTED MOGUL BASE	64439	MS175/HOR	6	CLEAR, HORIZONTAL ONLY
		64440	MS175/C/HOR	6	PHOSPHOR COATED, HORIZONTAL ONLY
		64494	MS175/3K/HOR	6	PHOSPHOR COATED, HORIZONTAL ONLY

----- 250 WATTS -----

BT-28	POSITION ORIENTED MOGUL BASE	64448	MS250/HOR	6	CLEAR, HORIZONTAL ONLY
		64449	MS250/C/HOR	6	PHOSPHOR COATED, HORIZONTAL ONLY
		64496	MS250/3K/HOR	6	PHOSPHOR COATED, HORIZONTAL ONLY

FINANCE SCRIPT

Hello, my name is Fred Johnson, and on behalf of Eastern Electric, I'd like to thank you for inviting me here today to discuss with you some of the ways in which Eastern can help you with the task of relighting your plant.

When I spoke with your finance people on the phone, I was told that you're considering a plant relighting job, and that you would be especially interested in any savings that might be possible if you change to a different type of lighting, and an overall assessment of whether or not relighting the plant makes sense from a financial standpoint.

First of all, I'd like to concur with your concern about lighting costs. Many people don't realize just how much money it takes to light a plant, if they did they would realize that investments in lighting systems can produce real returns, and deserve to be analyzed with the same close attention as investments in other kinds of capital equipment.

We have a computer at Eastern which we use for lighting system investment analysis, so I took the information you gave me and came up with a computer run that describes what would be involved under three alternative ways of upgrading your system. I'd like to show you what we've come up with.

What I'd like to do is use these computer printouts to show you some of the financial implications of staying with your present system as opposed to switching to some alternative, so let me give each one of you a copy of the printout.

If you look at your printout you'll see that the three

alternatives call for fluorescent, metal halide, and high pressure sodium lamps. These are the three alternatives that most people in your situation would want to consider.

What we have to do is to identify for each of the alternatives the initial investment or outlay that's required and the returns that it generates. In a case like this, the returns are in the form of operating cost savings so the analysis consists of comparing these savings to the initial outlay. With a computer we can also look at these costs over the entire life of the system, so we'll do that too.

First, let's look at the initial outlay requirements. If you look at the bottom of page one and the top of page 2 you'll see that the initial outlay really consists of the purchase price of lamps and fixtures, plus installation labor costs.

My calculations show that in order to get the illumination that you want you'll have to have a total of 214 fluorescent fixtures, 58 MH fixtures, or 71 HPS fixtures. The fluorescent and HPS fixtures sell for fifty dollars each and the MH fixtures sell for a hundred and fifty. The fluorescent lamps, sell at nine dollars each, and both the MH and HPS lamps sell for twenty dollars each. We multiply these and come up with the initial outlay for lamps and fixtures on lines 33 through 36.

One of the things you probably notice is that I haven't shown any of these costs for the fluorescent system. There are a couple of reasons for that. First, you already have some fluorescent fixtures in the building and therefore wouldn't need to buy all two hundred and fourteen. But you would probably want to replace some of them, so it gets kind of confusing as to just

how many fixtures would be involved. The second reason is that the operating cost savings from the other types of systems are so great that they override the initial cost outlays anyway. So by leaving them out, we can make our point and avoid confusion.

Both the MH and HPS lamps take a fifty dollar installation cost. This is based on a two man team working two and a half hours to install each fixture and lamp, at a labor rate of ten dollars per hour. So we have a total initial commitment of 12,750 dollars for the MH system and 15,620 dollars for the high pressure sodium.

Balanced against this initial outlay we have operating cost reductions in the form of energy cost savings and savings on lamp cleaning and replacement.

If you'll look on page 2 of your printout, and compare line 38 with lines 39 through 42, you'll see that the energy costs make up the largest component of these operating costs, so let's start with them.

We get these energy cost figures by taking the total annual electricity requirements for the lighting system and multiplying by a five cent per kilowatt hour rate. There are no demand charges figured into this analysis and if you want to get really fancy with it, I can re-run this for you with demand charges. But I find that people generally have a hard time saying exactly what their demand charges are, but that most would agree that a five cent per kilowatt rate would cover any demand charges they might face. So I just use a nickel a kilowatt.

At this rate, the annual energy costs for the three systems

are 18,400 dollars for the fluorescent system, forty-seven hundred for the MH system, and thirty-six hundred for the HPS. So you can already see that neither of these two systems takes long to pay for itself.

But let's go ahead and refine this a little bit and take a look at the cleaning and relamping costs. The cleaning cost is really straight forward, you'd want one cleaning a year regardless of which system you choose, so we just take the number of fixtures times the labor cost per fixture and that's the annual cleaning cost.

The reason the labor cost for cleaning a fluorescent fixture is higher than the cost for cleaning the MH and HPS fixtures is that we have two lamps per fixture instead of one, and the fluorescent lamps have to be handled more gently. Actually, the difference in cleaning costs would be even more if the mounting heights were the same, but to clean a fluorescent lamp, you don't have to climb up a ladder quite as far.

To get the relamping cost we take lamps to be replaced under each system each year and multiply by the relamping labor rate. This is the same as the cleaning labor rate.

When we do the calculations we get annual cleaning and relamping costs on lines 41 and 42. The cleaning costs are sixteen oh five for the fluorescent system, two-ninety for the MH, and three fifty-five for the HPS. Relamping costs for the three systems are a thousand ninety-one dollars for the fluorescent, forty-nine for the metal halide, and fifty for the HPS.

Combining these figures for electricity, cleaning, and relamping gives us operating cost totals of twenty-two thousand

four fifty, five thousand two sixty-nine, and four thousand two twenty-seven. We subtract the operating costs under the MH and HPS systems from the costs for the fluorescent system and get the operating cost savings. These are shown on line 44. They run around seventeen thousand two hundred dollars for the metal halide, and around eighteen thousand two hundred for the HPS. Matching these savings to the initial cost outlays shows that payback is less than one year for both systems.

You can see that there's quite a difference in costs under these three systems, but the results really get dramatic if you look out over the entire life of the system. What you have to figure is that a system like this is going to last fifteen years, and that these differences multiply as time goes on. Look at lines 46 through 49.

Using escalators of eight percent a year for energy and labor, and a seven percent escalator for lamp costs, we get lifetime operating cost savings of four hundred and sixty-four thousand dollars for the MH system and four hundred and ninety three thousand for the HPS.

O.K., I think that pretty well describes what the alternatives are and the cost picture you get with each one. I think that you can see that relighting a plant with modern high efficiency light sources like the metal halide or high pressure sodium lamps is an investment that makes sound financial sense.

I thank you for giving me the chance to come out, and I look forward to working more closely with you on this. Right now I'd be happy to answer any questions that you might have.

FINANCIAL ANALYSIS

THE CURRENT INFORMATION IN STORAGE FOLLOWS:

01 THIS ANALYSIS BY: FRED JOHNSON
 02 SALES REGION CODE: 2
 03 SALES DISTRICT: 7
 04 SALESMAN NUMBER: 6
 05 NUMBER OF SYSTEMS: 3

SYSTEM 1 DESCRIPTION:

06 FLUORESCENT
 07 F96T12CWVH0
 08 STRIP

SYSTEM 2 DESCRIPTION:

09 METAL-HALIDE
 10 MS400/BU
 11 INDUSTRIAL

SYSTEM 3 DESCRIPTION:

12 HP SODIUM
 13 LU250
 14 INDUSTRIAL

COMMON DATA:

VARIABLE	UNITS	VALUE
15 WIRING AND DIST. PER KVA	\$	0.000
16 ENERGY COST PER KILOWATT-HOUR	\$	0.050
17 MONTHLY DEMAND CHARGE PER KW	\$	0.000
18 ENERGY COST ESCALATOR	%	8.000
19 LABOR COST ESCALATOR	%	8.000
20 LAMP COST ESCALATOR	%	7.000
21 LIFE CYCLE	YEARS	15.000

FIXTURE AND LAMP DATA:

	FLUORESCENT	METAL HALIDE	HP SODIUM
22 FIXTURES REQUIRED	214.00	58.00	71.00
23 NET COST PER FIXTURE (\$)	00.00	150.00	150.00
24 INSTALLATION COST PER FIXTURE	00.00	50.00	50.00
25 NET COST PER LAMP	9.00	20.00	20.00

OTHER DATA:		FLUORESCENT	METAL HALIDE	HP SODIUM
26	RELAMPING COST PER FIXTURE	7.50	5.00	5.00
27	CLEANING COST PER FIXTURE	7.50	5.00	5.00
28	CLEANING PERIOD (HOURS)	3400.00	3400.00	3400.00

SYSTEM DATA:				
29	NO. OF FIXTURES REQUIRED	214.0	58.0	71.0
30	NO. OF LAMPS REQUIRED	428.0	58.0	71.0
31	BURNING HOURS PER YEAR	3400.0	3400.0	3400.0
32	LAMPS REPLACED PER YEAR	145.20	9.86	10.06

INITIAL COST DATA:				
33	NET FIXTURE COST	(\$)	0.00	8700.00
34	WIRING AND DISTRIBUTION	(\$)	0.00	0.00
35	INSTALLATION LABOR COST	(\$)	0.00	2900.00
36	NET LAMP COST	(\$)	<u>0.00</u>	<u>1160.00</u>
37	TOTAL INITIAL COST	(\$)	0.00	12760.00

OPERATING COST DATA:				
38	ENERGY COST PER YEAR	(\$)	18444.66	4732.79
39	DEMAND CHARGE PER YEAR	(\$)	0.00	0.00
40	LAMP COST PER YEAR	(\$)	1309.68	197.20
41	RELAMPING LABOR PER YEAR	(\$)	1091.40	49.30
42	CLEANING LABOR PER YEAR	(\$)	<u>1605.00</u>	<u>290.00</u>
43	TOTAL OPERATING COST	(\$)	22450.73	5269.29

RETURN AND PAYBACK DATA:				
44	SAVINGS PER YEAR	(\$)	17181.45	18223.28
45	PAYBACK PERIOD	(MONTHS)	8.9	10.3

LIFE CYCLE COST DATA:				
46	LIFE CYCLE ENERGY COST	(\$)	500809.44	128504.81
47	LIFE CYCLE LAMP COST	(\$)	32910.73	4955.41
48	LIFE CYCLE RELAMP LBR	(\$)	29633.70	1338.59
49	LIFE CYCLE CLEAN LBR	(\$)	<u>43578.97</u>	<u>7874.08</u>
50	LIFE CYCLE COSTS		606932.75	142672.81
51	LIFE CYCLE SAVINGS			464259.94

TABLE A.1

PAIRWISE CORRELATION MATRIX FOR GROUP I DEPENDENT VARIABLES
IN RESPONSE TO THE ENGINEERING PRESENTATION

Variable	Symbol	ATTN	AROUS	MSINV	TSKINV
Attention	ATTN	1.00			
Arousal	AROUS	0.68 ¹	1.00		
Message Involvement	MSINV	0.36 ¹	0.48 ¹	1.00	
Task Involvement	TSKINV	0.07	0.31 ³	0.28 ³	1.00

- ¹ Significant at the 0.001 level.
² Significant at the 0.01 level.
³ Significant at the 0.05 level.

TABLE A.2

PAIRWISE CORRELATION MATRIX FOR GROUP I DEPENDENT VARIABLES
IN RESPONSE TO THE FINANCE PRESENTATION

Variable	Symbol	ATTN	AROUS	MSINV	TSKINV
Attention	ATTN	1.00			
Arousal	AROUS	0.72 ¹	1.00		
Message Involvement	MSINV	0.30 ²	0.34 ¹	1.00	
Task Involvement	TSKINV	0.31 ²	0.41 ¹	0.29 ²	1.00

- ¹ Significant at the 0.001 level.
² Significant at the 0.01 level.
³ Significant at the 0.05 level.

TABLE A.3

PAIRWISE CORRELATION MATRIX FOR GROUP I DEPENDENT VARIABLES
IN RESPONSE TO THE PURCHASING PRESENTATION

Variable	Symbol	ATTN	AROUS	MSINV	TSKINV
Attention	ATTN	1.00			
Arousal	AROUS	0.74 ¹	1.00		
Message Involvement	MSINV	0.51 ¹	0.33 ¹	1.00	
Task Involvement	TSKINV	0.32 ²	0.45 ¹	0.17	1.00

- ¹ Significant at the 0.001 level.
² Significant at the 0.01 level.
³ Significant at the 0.05 level.

TABLE A.4
PAIRWISE CORRELATION MATRIX FOR GROUP II DEPENDENT VARIABLES
IN RESPONSE TO THE ENGINEERING PRESENTATION

Variable	Symbol	SPEVAL	PREVAL	VNEVAL	SPEVALX	PREVALX	VNEVALX
Salesperson Evaluation	SPEVAL	1.00					
Presentation Evaluation	PREVAL	0.59 ¹	1.00				
Vendor Evaluation	VNEVAL	0.75 ¹	0.72 ¹	1.00			
Salesperson Evaluation Extremity	SPEVALX	0.80 ¹	0.59 ¹	0.78 ¹	1.00		
Presentation Evaluation Extremity	PREVALX	0.31 ²	0.43 ¹	0.35 ¹	0.54 ¹	1.00	
Vendor Evaluation Extremity	VNEVALX	0.62 ¹	0.58 ¹	0.80 ¹	0.74 ¹	0.56 ¹	1.00

- 1 Significant at the 0.001 level.
2 Significant at the 0.01 level.
3 Significant at the 0.05 level.

TABLE A.5
PAIRWISE CORRELATION MATRIX FOR GROUP II DEPENDENT VARIABLES
IN RESPONSE TO THE FINANCE PRESENTATION

Variable	Symbol	SPEVAL	PREVAL	VNEVAL	SPEVALX	PREVALX	VNEVALX
Salesperson Evaluation	SPEVAL	1.00					
Presentation Evaluation	PREVAL	0.73 ¹	1.00				
Vendor Evaluation	VNEVAL	0.83 ¹	0.75 ¹	1.00			
Salesperson Evaluation Extremity	SPEVALX	0.64 ¹	0.51 ¹	0.74 ¹	1.00		
Presentation Evaluation Extremity	PREVALX	0.46 ¹	0.67 ¹	0.52 ¹	0.60 ¹	1.00	
Vendor Evaluation Extremity	VNEVALX	0.52 ¹	0.33 ²	0.69 ¹	0.66 ¹	0.46 ¹	1.00

- ¹ Significant at the 0.001 level.
² Significant at the 0.01 level.
³ Significant at the 0.05 level.

TABLE A.6

PAIRWISE CORRELATION MATRIX FOR GROUP II DEPENDENT VARIABLES
IN RESPONSE TO THE PURCHASING PRESENTATION

Variable	Symbol	SPEVAL	PREVAL	VNEVAL	SPEVALX	PREVALX	VNEVALX
Salesperson Evaluation	SPEVAL	1.00					
Presentation Evaluation	PREVAL	0.64 ¹	1.00				
Vendor Evaluation	VNEVAL	0.70 ¹	0.66 ¹	1.00			
Salesperson Evaluation Extremity	SPEVALX	0.77 ¹	0.69 ¹	0.77 ¹	1.00		
Presentation Evaluation Extremity	PREVALX	0.47 ¹	0.62 ¹	0.57 ¹	0.73 ¹	1.00	
Vendor Evaluation Extremity	VNEVALX	0.70 ¹	0.66 ²	0.94 ¹	0.84 ¹	0.63 ¹	1.00

¹ Significant at the 0.001 level.

² Significant at the 0.01 level.

³ Significant at the 0.05 level.

VITA

William R. Forrester, Jr. was born in Sweetwater, TN on June 11, 1947. He attendend elementary school in Niota, TN an graduated from McMinn County High School in 1965. In 1970, he graduated from the University of Tennessee with the degree of Bachelor of Science in forestry.

In 1974, following four years of active duty in the U. S. Navy, he joined Bowater Southern Paper Corporation as a programmer analyst. Mr. Forrester began his graduate studies in business while employed with Bowater, and returned to the University of Tennessee in 1978 in order to devote full attention to his studies. After receiving his Master of Business Administration degree in 1979, Mr. Forrester joined the Tennessee Valley Authority and worked as a market analyst in that agency's regional economic development programs.

In 1982, Mr. Forrester returned to the University of Tennessee to resume full-time doctoral level study in marketing, and received the Doctor of Philosophy degree in December, 1986.

Mr. Forrester is married to the former Angela Marie Gill of Nashville, TN and is the father of two daughters. The Forresters make their home in Clemson, South Carolina where he is a faculty member in the Department of Marketing at Clemson University.