THE ATTRIBUTION PROCESS AND ORGANIZATION RESEARCH: THE EFFECT OF INVOLVEMENT AND LOCUS OF CONTROL ON THE ATTRIBUTION EFFECT ASSOCIATED WITH SELF-REPORT DESCRIPTIONS OF INDIVIDUAL AND GROUP CHARACTERISTICS

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PREFACE

This study concerns the affect of performance data on individual descriptions of self, other, and group characteristics. The primary objectives were to determine whether performance feedback would bias these descriptions and whether this bias would hold regardless of situational and individual factors. A laboratory experiment using students as subjects was designed to test the specific research questions involved.

I would like to express my sincere appreciation to the members of my thesis committee. More than anyone else, Dr. H. Kirk Downey and Dr. R. Dennis Middlemist have been responsible for my personal and professional development. The successful completion of this study as well as previous work, is the direct result of opportunities made available to me by them. I thank them for their guidance, thoroughness, concern, conceptual wisdom, and accessibility. Any strides made by me in the professional community will be a direct result of my association with them. By being different in their orientation yet similar in their concern for methodological detail, Drs. Downey and Middlemist have served, and will continue to serve, as excellent role models for me.

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CHAPTER I

THE PROBLEM

Purpose of the Study

The objective of this study is to investigate the attribution processes of individuals involved in small group interactions and to ascertain the effects and implications of these processes on organization research. Specifically, this study is designed to determine the impact of individual locus of control and the degree of group and task involvement on the effect of knowledge of group performance on self-report descriptions of individual and group characteristics.

Some of the most basic research in organization behavior has involved correlations between group characteristics and performance. For example, Tannenbaum (1968) reported that high mutual influence (control) is positively related to high performance, while Likert (1961) reported results showing high group cohesiveness associated with high performance. In many studies of this nature, group or organizational characteristics are rarely observed directly. Rather, information is obtained concerning these characteristics via self-report measures aimed at tapping individual perceptions of these characteristics.

Although correlations do not state causality, inferences are sometimes made to this effect. This, in turn, can lead to some confusion when one attempts to integrate the findings in a particular area of research. A prime example of this is the satisfaction - performance

controversy (Schwab and Cummings, 1970; Green, 1972; Organ, 1977), where some argue or imply that satisfaction causes performance, while others take just the opposite view (Porter and Lawler, 1967), with still others maintaining that both satisfaction and performance vary as a result of some spurious relationship with one or more other variables (Brayfield and Crockett, 1955; Green, 1972).

A possible explanation for some of these controversial findings may lie not in the posited relationship among the variables involved, but rather in how they are measured. Perhaps individual, group, or organization data, based on self-report measures collected concurrently with performance data or even in a post-performance fashion, may be reflecting not individual perceptions of the situation but rather their causal explanations of that situation. Stated differently, perhaps organization members possess their own theories of performance. Performance data, if known, may act as a cue by which individuals then attribute characteristics to themselves, and to the groups and organizations of which they are members. This attribution theory orientation was used by Staw (1975) as an alternative interpretation of some of the popular correlational research results, including the aforementioned Tannenbaum and Likert findings.

Attribution Theory: An Alternative Interpretation

Attributions are, in effect, perceptions of causality; inferences made by an individual that something has caused something else. While most organization research seeks to deduce or to predict that if "x" action is taken, "y" will occur, attribution theory deals with instances whereupon perceiving "y" occurring, an individual will be moved to attempt

to explain why it occurred; i.e., what caused "y" to happen. Staw's work (1975) was predicated on the assumption that performance data is of such importance that individuals will use it as a primary, if not the only, cue for making causal ascriptions about themselves and the groups to which they are attached. By manipulating performance feedback, Staw reported results demonstrating that members of groups receiving positive performance feedback did indeed ascribe significantly more positive characteristics and traits to themselves, their fellow group members, and to the group itself than did individual members of groups receiving poor performance feedback. This phenomenon occurred even though they did not actually perform significantly better. He posits that research, based on self-report measures and employing cross-sectional methodologies, where survey data is collected at one point in time, may be tapping individual causal attributions of performance rather than their perceptions of their own, others' and their groups' particular characteristics. Correlational research findings may, therefore, be based on self-report measures which are, in effect, biased heavily by knowledge of performance. The consequences of this attribution effect for organization research should not be taken lightly and are at least as plausible and significant as other types of response artifacts; e.g., demand characteristics (Orne, 1962; Weber and Cook, 1972), and the consistency and priming effects noted by Salancik and Pfeffer (1977).

Need for the Study

Although Staw (1975) did reveal evidence to support the existence of this attribution effect, his work raises several questions. One

must initially question the generalizability of his findings to organization research because of the nature of his sample. Staw randomly assigned students into high and low feedback (performance) groups. Although some would question the use of students in general, the more important issue centers around the fact that the students participated in their groups for only the length of time necessary to complete the experimental task (30 minutes). Staw's basic assumption, that performance data acts as a primary cue for making causal ascriptions and for describing group characteristics, may therefore hold true only if individuals have knowledge of performance and no other informational cues to facilitate causal analysis. It is plausible that performance cues would become less salient as an aggregate of individuals evolved into a well-structured mature group in which members have had a chance to internalize the group's specific interaction processes.

Downey, Chacko, and McElroy (forthcoming) in an effort to address this question added the variable of group history in a constructive replication of the Staw study. Although it was postulated that group history would moderate the attribution effects associated with knowledge of performance, the results were not supportive. An analysis of variance framework showed a main effect for feedback on individual self-reporting of individual and group characteristics, strongly replicating Staw's results. The results showed main effects for history only with respect to self-report measures of individual motivation toward the experimental task. In addition, no interaction effects were revealed.

In summary, the use of groups having an historical base did not mitigate the attribution phenomenon illustrated by Staw (1975). History had no impact on the tendency of group members to describe their groups

based on their groups' performance on the experimental task. History did impact directly on certain individual motivational self-report descriptions but did not alter the basic nature of individual descriptions of their groups' characteristics. Therefore, this initial question raised by Staw's work has already been addressed, at least within the framework of his methodology.

A second question which emerges from Staw's work is simply: If group members are biased in their descriptions of group characteristics, then who should one ask in order to determine the basic nature of a group? Do all participants within a group exhibit this attribution tendency equally, or would someone in the group by the nature of his position or individual characteristics be better able to report more objective group descriptions?

Staw's study (1975) compared the average response on each of a series of questions for members of high and low performance feedback groups. This averaging of responses allows a between-group analysis but negates any possible observation of within-group differences.

It has been demonstrated that not all individuals participate on an equal basis in a group's interaction pattern (Hare and Bales, 1963), nor do those who do participate, do so in a similar fashion (Bales, 1950). It is logical to question, therefore, whether individuals within a group will exhibit equivalent attributional tendencies. It is conceivable that the nature and the extent of the attribution effect reported by Staw (1975) may in fact vary as a function of group and/or individual characteristics. This study will attempt to determine the impact of the degree of involvement inherent in a group's interaction pattern, and locus of control on this attribution effect reported by

Staw (1975). The basic question which this study seeks to address is: Should one desire to correlate group characteristics with group performance using a cross-sectional methodology, can self-report measures of group characteristics be used with any degree of confidence? If not, then other methodologies will be required. If so, who should researchers rely on for descriptions of the subject groups' characteristics? In terms of this experiment, the person(s) to ask would be those who do not exhibit the tendency to infer group characteristics from group performance.

This study will, therefore, initiate efforts aimed at identifying which personal and group characteristics affect the individual attribution tendencies reported by Staw (1975). The specific concepts to be addressed in this experimental design are: individual locus of control (Rotter, 1966) and the degree of involvement inherent in the groups to which individuals belong. This latter concept will be operationalized in terms of varying degrees of involvement along two dimensions: task involvement and group involvement.

A third issue raised by the Staw study (1975) centers around the instruments used in obtaining the self-report measures of individual and group characteristics. The meaningfulness of his results, as well as those of the Downey, Chacko, and McElroy replication, rest on the psychometric properties of his instruments. The dependent variables used in the original study were operationalized in a very open manner with some being tapped using a single question. This study, therefore, seeks to add meaning to these previous efforts through the use of more psychometrically sound instrumentation.

In addition to addressing the latter two questions raised by Staw's

(1975) work, research aimed at understanding individual causal attributions has important implications for a better understanding of individual behavior. Regardless of the correctness of the causal attributions made, individuals will subsequently act in accordance with their inferences (Jones, et al., 1972, p. X). Attributions are, therefore, significant in their own right. The types of attributions made by individuals in explaining their own or their group's performance may well affect future performance; i.e., performance → attributions → behavior → performance. Stated differently, attributions cognitively made by individuals in explaining performance data may in turn lead to subsequent performance congruent with these initial attributions. In this sense attributions made to explain past or current performance may lead, in a self-fulfilling prophetic manner, to future performance. If a person, for example, makes a cognitive error and attributes failure to others in his group, his subsequent behavior toward those others may be affected by this attribution, which may in turn, adversely affect the group's subsequent performance; thus bringing the group's performance level into line with the individual's original set of attributions.

A final purpose of this study will be to test this performance → attribution → behavior → performance cycle. If individuals do attribute characteristics to others, specifically other group members, then favorable attributions should lead to increased actual performance while unfavorable ascriptions should lead to decreases in actual performance on a subsequent trial of a given task.

Summary

In conclusion, this study will serve three purposes: (1) to deter-

mine whether within-group differences exist in individual attribution processes as reflected in self-report measures of individual and group characteristics, (2) using more psychometrically sound instrumentation, and (3) to carry the attribution research in this area one step further in terms of the impact of attributions on future performance. Staw (1975) has taken the initial step in relating attribution theory to organization research. This study extends his work to include how situational and dispositional factors can affect the relationship between knowledge of performance and individual self-reporting of group and individual characteristics.

This study is important for three reasons. (1) Researchers rely heavily upon others for much of the information gathered about the phenomena they are studying. Reliance on biased data will yield biased research results. (2) Correlational analysis and research of a cross-sectional nature is extremely popular. Staw's (1975) attributional interpretation of this type of research has very real implications. A methodology should not be condemned on the basis of a general criticism, however. This study seeks to examine this attributional interpretation of reported results in a more refined fashion. (3) Finally, by examining the proposed performance → attribution → behavior → performance cycle, new light may be shed on individual and group behavior.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction to Attribution Theory

Attribution theory is based on the assumption that man is motivated "to attain a cognitive mastery of the causal structure of his environment" (Kelley, 1967, p. 193). Stated differently, man has a genuine desire to know why an event has occurred and will, as a result, attempt to infer the causes of observed behavioral phenomena.

Attribution theory, in effect, requires a cognitive, rational view of man predicated on the following set of assumptions: (1) Although errors can be made, man has an inherent desire to truthfully comprehend his environment and will, if necessary, seek information that will enable him to do so; (2) man will assign "causes" to explain observed phenomena in a systematic manner; and (3) the particular cause that an individual attributes to an event will have important consequences for his subsequent feelings and behavior (Jones, Kanouse, Kelley, Nisbett, Valins, and Weiner, 1972, p. X).

According to Weiner (1972, p. 310), attribution theorists deal with the "why" questions; or the relationship between phenomena (i.e., effects, events, behavior) and the reasons (causes) for those phenomena. Heider (1958) interprets this relationship between phenomena and its causes in terms of individuals possessing a "naive psychology of action." That is, individuals carry with them their own theories concerning effects

and their causes. Possession of these theories, even though naive and subject to error, permits individuals to give meaning to the events and actions they observe. In addition, these naive theories influence individual behavior and are said to be used by individuals in predicting future actions and in influencing the actions of others (Heider, 1978, p. 123).

Attributions are, in effect, perceptions of causality inferred by a perceiver. Since these causes per se are not directly observable, one can only infer that something has caused an observed phenomenon. The meaning of an action, therefore, can be judged only in relation to its context (Jones and Nisbett, 1972).

Context of Attribution Theory Research

This idea of judging an action only in relation to its context can be interpreted along several different dimensions: the environment in which the act takes place, the temporal sequence of events, and the perspective of the perceiver.

Much of the research on attribution theory has concentrated on the perceptions of individuals in various settings. Considerable research has been conducted, for example, concerning the process by which individuals attribute characteristics and personality traits to others in social settings. This research runs the gamut from social class stereotyping (e.g., Secord, Beckman, and Slavitt, 1976), to studies concerning traits imputed to invaders of one's personal space (e.g., Fisher, and Byrne, 1975; Konecni et.al., 1975; Schiffenbauer and Schiavo, 1976). In addition, a large body of literature exists dealing with self-perceptions; i.e., the inferences one makes about his

or her own behavior within a social context (Bem, 1967; Kiesler, Nisbett and Zanna, 1969; Nisbett and Valins, 1972; Staw, 1976).

The present study is concerned with investigating attribution processes in achievement-related contexts. As stated earlier, this line of research focuses on the degree to which individuals utilize their knowledge of performance as a cue for developing perceptions of, and attitudes toward, others. Since this study focuses on the effects of performance feedback on self-report measures of individual and group characteristics, the review of the literature contained in this chapter will be restricted to that which is pertinent to this particular achievement-related context.

Temporally speaking, the context of a situation may vary. Kelley (1972) specifically points this out in his discussion of two cases of attributions in social interaction: covariation over time and the case where multiple plausible causes exist. Covariation over time refers to a situation in which the attributor has relevant information from successive points in time. The attribution process, then, merely involves ascribing causality to the possible cause of an event which covaries with that event. Many times, however, an individual may not possess effect and causal information for successive points in time. Rather, he observes a given effect for which there exists one or more possible causal explanations. Because of the nature of the specific manipulations involved in this study, attention will be paid to this latter formulation of the attribution problem in Chapter III.

The underlying meaning of the context of a situation as proposed by Jones and Nisbett (1972) centers on the perspective of the attributor. Is the causal explanation of an observed event being formulated by an

individual actively involved in the production of that event (actor) or is the causal explanation being formulated by an observer of that event? Since this literature is highly pertinent to the concept of an individual's degree of involvement in group activities, this chapter will include an analysis of the research on actor-observer differences in perceptions of the causes of behavior.

In summary, the research on attribution theory has tended to center around three broad concerns: (1) the factors motivating the individual to obtain causally relevant information, (2) the factors determining what cause or causes will be ascribed to a given event, and (3) the consequences of making one causal attribution to the exclusion of others (Jones, Kanouse, Kelley, Nisbett, Valins and Weiner, 1972, p. X). The present study is intended to deal with the latter two of these general areas. Because of the nature of the concepts of interest in this study, the scope of this literature review will be limited. What follows is a selected review of the research in achievement-related and actor-observer contexts. In addition, the performance → attribution → behavior → performance cycle analysis requires a background of knowledge on the impact of current attributions on subsequent performance.

The Perceived Causes of Success and Failure

Attribution theorists postulate that in achievement-related contexts, success and failure are cognitively attributed to such factors as ability, effort, task difficulty, and/or luck (Jones, Rock, Shaver, Goethals, and Ward, 1968; Frieze and Weiner, 1971; Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1972). These four types of ascriptions are commonly used in attribution research and have been shown by

Frieze (1976) to account for a large portion of the causal inferences made by subjects.

Heider (1958), in his original formulation of the attribution process, indicated that the result of an action is dependent upon two sets of factors: those within the individual and those within the environment. In terms of the above types of attributions, those internal to the individual would include ability and effort-oriented perceptions of causality, while the environmentally-oriented attributions would be represented by ascriptions to task difficulty and luck. While the theoretical foundation originated with Heider (1958), the early work of Feather (1969), Feather and Simon (1971), along with the work of the cognitive dissonance theorists, especially as interpreted by Bem (1967), and those interested in ego-enhancing, self-serving biases in attributions (e.g., Miller and Ross, 1975; Snyder, Stephan, and Rosenfield, 1976), have all added support to this internal-external interpretation of causal attributions.

Others (e.g., Frieze and Weiner, 1971; Weiner, Nierenberg and Goldstein, 1976) have used a variable-stable interpretation of these same four attributions. This approach draws a distinction between those possible causal explanations for success or failure which remain relatively fixed over time, at least in the short term, such as ability and task difficulty, and those that are variable over time; i.e., effort and luck.

Research Findings

Early studies (Feather, 1969; Feather and Simon, 1971), using anagram solving as the performance task, reported that individuals tended

to attribute expected success and failure to ability (high or low, respectively) and unexpected outcomes to luck (good or bad). One problem with these early efforts was the use of a bipolar attribution scale with ability at one end and luck at the other (Rotter, 1966; Feather, 1969). Since attributions were made only to ability (an internal, relatively stable factor) and luck (an external, variable factor), the results could be interpreted within either the internal-external framework of Heider (1958), as in the Feather (1969) study, or within the framework of a stable-variable model.

Most of the present work uses the stability formulation to interpret individual causal explanations of performance. According to this approach, the stable variables, e.g., ability and task difficulty, are likely to be perceived as the causes of expected or repetitive events while the variable or unstable factors, e.g., effort and luck, are perceived as the causes of inconsistent or unexpected outcomes (Frieze and Weiner, 1971; Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum, 1971). Moreover, the stable factor which contributes the most to an individual's initial expectations tends to be the one most often used as the causal explanation of the outcome when success or failure is consistent with that expectation (Simon and Feather, 1973).

Recent efforts have sought to identify variables which moderate the attribution process. Individual differences, such as locus of control (Rotter, 1966), achievement motivation (Weiner and Kukla, 1970), and the nature of individual differences in conceptual structure (Streufert and Streufert, 1969), have been researched. Rotter's work (1966) attempted to show that internals (those viewing themselves as being more or less in control of their own destiny) would tend to credit them-

selves for successes and failures, while externals (those who tend to view life as determined more or less by fate) would assign situational factors as causal explanations of performance. Weiner and Kukla (1970, Experiment 4) reported results showing that high achievers tended to attribute success to internal factors to a greater degree than did individuals low in achievement motivation. Finally, Streufert and Streufert (1969) found that individuals with relatively simple conceptual structures exhibited a greater attribution effect (internal credit for success and external projection for failure) than did individuals with more complex conceptual structures.

Task variables have also been found to either exert an independent effect on attributions and/or to alter the significance of inputs or outcomes. Wolosin, Sherman and Till (1973) manipulated the cooperative-competitive nature of tasks performed by dyads and reported that for cooperative tasks, unexpected performance was attributed by individual members to within-group variables (themselves for success, their partners for failure), while expected performance was attributed to situational factors external to the group, e.g., the task or luck. For competitive tasks the self was held responsible for success, while the situation, rather than the competitive partner, was held responsible for failure. While the cooperativeness-competitiveness of the task was directly manipulated in this case, Fontaine's (1974) finding, that subjects tend to be more competitive when they compare themselves with similar others, may imply similar attribution tendencies even when the specific nature of the task is not manipulated. That is, if individuals, or groups, are in a position to compare their performance with others, the existence of similar others may lead to a more compe-

titive atmosphere (and accompanying attributional tendencies) than if the comparison others were dissimilar in nature.

One problem with many of these studies is the nature of the experimental tasks used. They are typically one-shot tasks; that is, as with the anagram studies (Feather, 1969; Feather and Simon, 1971), subjects experience the task not expecting to repeat it. Wortman, Costanzo and Witt (1973) reported that in cases where subjects were led to anticipate future performance trials, they exhibited a tendency to attribute less ability to themselves upon success and viewed the task as more difficult than did the subjects not anticipating further efforts; a reduction in the attribution effect.

The internal-external formulation of attribution tendencies has continued to receive a lot of attention by those concerned with understanding the motives behind such attributions. The most popular is the ego-enhancing, ego-defensive motive where individuals make attributions (explain performance) in a fashion that will leave themselves in the most favorable light. Studies investigating ability and task difficulty (stable) attributions (Weiner, et.al., 1971; Frieze and Weiner, 1971) have reported ego-enhancing tendencies; i.e., crediting ability for success and task difficulty for failure. However, some studies have found little use of luck as a possible explanation of success or failure (Simon and Feather, 1973). Thus the literature is a bit inconsistent in this instance. Whereas Miller and Ross (1975), in a review of the self-serving bias literature, reported evidence in support of egotistic attributions under conditions of success, they found only minimal evidence of self-protecting attributions under conditions of failure. Mynatt and Sherman (1975), on the other hand, cite

specific evidence of the diffusion of responsibility, a self-protecting bias, in response to bad outcomes.

Snyder, Stephan and Rosenfield (1976) contend that conditions dictate the occurrence of egotistic attributions; that is, some ambiguity must exist about the relative importance of luck and skill required for task performance and the situation must produce some concern for the individual's self-esteem. With respect to this latter condition, more real life, achievement-oriented situations such as examinations (Simon and Feather, 1973) or interdependent tasks (Miller and Ross, 1975), appear more susceptible to egotism in explaining performance. In addition, egotism has been found to decrease as a function of the degree of friendship of the parties involved in interdependent tasks (Nisbett, Caputo, Legant and Marecek, 1973; Stephan, Kennedy and Aronson, 1977).

Actor-Observer Differences

Differences have been found in the causal attribution processes of actors and observers. Jones and Nisbett (1972) reported results showing that actors attribute their own behavior to the situation they are faced with (external attributions) while observers of actors attribute behavior to the actors' qualities or dispositions (internal attributions). While many supportive studies exist in the literature (Bar Tal and Frieze, 1976; Regan, Strauss and Fazio, 1974; Ruble, 1973; Storms, 1973), others have failed to substantiate this claim (Frieze and Weiner, 1971; Frieze, 1976; Taylor and Koivumaki, 1976). This tendency for observers to attribute action to the actor has been shown to be increased by the degree of liking of the actor by the observer (Re-

gan, Strauss, and Fazio, 1974), to the extent that the observer is also an actor, and to the extent that both the observing and observed actors are tied together in a mutually contingent interaction (Jones and Nisbett, 1972).

Two interpretations are offered in the literature concerning this effect (Jones and Nisbett, 1972; Nisbett, Caputo, Legant, and Marecek, 1973; Taylor and Fiske, 1975). One explanation concerns the perceiver's focus of attention. The actor's attention is said to be focused outward on the situation he is faced with. For the observer, however, the actor's behavior becomes the focus of attention. Thus, according to this view, the difference in causal explanations of performance between actors and observers lies in the differing perspectives that occupy their respective centers of attention.

The other interpretation deals with the salience of information cues perceived by the respective individuals; that is, certain information is given more weight. Jones and Nisbett (1972) hypothesized that since we don't see our own behavior, we give more weight to environmental factors in explaining our own behavior. Moreover, Kanouse and Hanson (1972) found that negative information is awarded more weight than positive information. This latter view has received both direct and indirect support. Direct support exists in terms of experiments showing that when two or more possible explanations of an event are available, the perceiver adopts the more salient alternative, regardless of whether or not it is correct (Kanouse, 1972), and that, while for actors aspects of the situation are more salient, the characteristics of the actor are more salient for observers (Regan and Totten, 1975). Indirect support exists in the form of studies such as that

of Ruble (1973) whose results support the difference in perceptions interpretation. However, the very methodology used to achieve those results, a questionnaire, may have served to make certain information more salient.

In summary, it appears that (a) there are differences in the causal attributions made by actors and observers, and (b) that the reasons for these differences lie in the perceptual attention focus of the perceiver and/or in the saliency of the information to the perceiver.

Consequences of Causal Attributions

The proposed link between causal ascriptions of performance and subsequent behavior is based on a general attribution model of action. The current reigning paradigm states that attributions made on an internal-external basis will influence affective reactions to events (Lanzetta and Hannah, 1969; Weiner, Heckhausen, Meyer, and Cook, 1972; Fontaine, 1974), while attributions made on a stable-variable basis will be associated with expectancies of success (Weiner, Heckhausen, Meyer and Cook, 1972; McMahan, 1973; Fontaine, 1974; Valle and Frieze, 1976; Weiner, Nierenberg and Goldstein, 1976). With respect to expectancy shifts, the attribution of an outcome to stable factors (e.g., ability and task difficulty) implies a high probability that another encounter with the task will result in the same outcome, while the attribution of an outcome to variable factors (e.g., effort and luck) does not imply this (Weiner, Heckhausen, Meyer and Cook, 1972).

From this model, then, one could conclude that individuals attributing performance on an internal-external causal dimension should tend to reflect this on satisfaction measures, while those attributing

performance along a stable-variable causal dimension should tend to reflect this in terms of expected future performance.

Weaknesses in the Literature

The major weakness of this body of literature concerns its social psychological orientation. While it is important to understand and describe the attribution process, only recently has attribution theory been applied in other areas. The social psychological approach seems content with pigeon-holing attributions into the four-fold classification scheme (ability, task difficulty, effort, and luck) built around two basic dimensions; internal-external and stable-variable attribution factors.

Since attributions are perceptions of causality, attribution theory becomes salient to any efforts aimed at tapping individual perceptions. Organization research, which relies to a great extent on individuals' abilities to report their perceptions of organizational or personal phenomena, constitutes an area that would benefit greatly from attribution studies.

Some work, relating findings from the attribution literature to organizational behavior research, is already taking place. Early efforts involved actors rating their partners in dyadic interactions in achievement situations. For example, Wolosin, Sherman and Till (1973) reported that self and partner ratings were highly associated with outcomes. That is, where performance was high, ratings of self and partner (on intelligence, motivation, etc.) were also high, while the opposite was true for low performance outcomes.

More recently, attribution theory and the results it has produced

in the field of social psychology have been used as alternative interpretations for some of the basic findings in organization research. The Staw study (1975) and its replication (Downey, Chacko and McElroy, forthcoming), discussed in Chapter I, have shown that much of the literature relating individual and group characteristics to performance in a correlational fashion is suspect. It is plausible that, because of the methodology used, individual attributions, or their naive theories of performance, may be what is being tapped rather than their actual perceptions of their own behavior, others' characteristics and the characteristics of their groups.

Finally, research has begun that is designed to determine how individual attribution processes may impact on other organizational types of behavior. For example, Lowin and Craig (1968), and Farris and Lim (1969) have determined that supervisory behavior may be altered as a function of the type of feedback they receive concerning their work groups' performance. In addition, Mitchell, Larson and Green (1977) have used attribution theory to reinterpret results achieved in many of the basic leadership studies.

In conclusion, since much of the research conducted in organizations fits what Staw (1975) calls a cross-sectional methodology (where all data; performance as well as person and group characteristics; is collected at one point in time), more research is needed on the effects of attributions on this method of data collection.

CHAPTER III

CONCEPTUALIZATION OF THE MODEL

Theoretical Framework

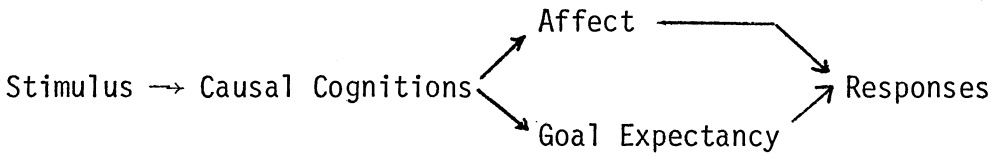
The most often cited attribution theory model is the Kelley Cube (Kelley, 1967). This paradigm is closely aligned with the covariation attribution problem mentioned in Chapter II. Covariation refers to the case where an individual has relevant causal information over successive points in time. According to the Kelley Cube, the criteria used in inferring causality are: distinctiveness - whether the response occurs in the presence of other entities; consensus - whether the entity produces the same response in all persons who interact with it; and consistency - whether the response occurs whenever and however (time and modality) the entity is presented. Kelley (1967) concludes that:

> the attribution to the external thing rather than to the self requires that I respond differentially to the thing, that I respond consistently over time and over modality, and that I respond in agreement with a consensus of other persons' responses to it (p. 194).

The Kelley Cube is also closely related to the four-fold, two dimensional attribution model discussed in Chapter II. Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1972) have proposed that one's performance may be attributed to various combinations of ability, effort, luck, and task difficulty. Perception of one's ability is a function of past experience at that particular or similar tasks; a notion simi-

lar to Kelley's distinctiveness and consistency factors. Moreover, task difficulty information is often obtained from social norms and from the performance of others at the task; similar to Kelley's consensus factor. Despite the theoretical conciseness of the model, little empirical work has been undertaken to test it (Stevens and Jones, 1976). Many studies prefer to employ a novel task situation to avoid confounding the variables under study with personal past experience (Fontaine, 1974).

This is the strategy that the present study will follow. In addition, rather than being interested in classifying specific attributions made by individuals, this study will focus more on the responses that emerge as a result of the attribution process. A general model, proposed by Weiner (1972) illustrates this perspective (Figure 1).



Source: Weiner, 1972, p. 350

Figure 1. General Attribution Model

indicates that a stimulus will arouse cognitions pertaining to the cause(s) of the perceived stimulus. These cognitions will, in turn, determine affective and expectancy responses. Although Weiner contends that the affective responses need not covary with success expectancies, he does postulate that both will determine subsequent behavior.

The Model

Attribution models, such as Weiner's, are grounded on individual perceptions. That is, certain stimuli have to be picked up and perceived by individuals prior to the cognitive processes taking place, including the making of attributions. Therefore, it is conceivable that those factors which affect the perceptual process will, in turn, affect the attribution process.

The key to understanding the perceptual process is selectivity. There are two types of selectivity - stimulus and personal (Lawless, 1972;33). A major difference between stimulus selectivity and personal selectivity lies in the location of their selectivity source. Stimulus selectivity refers to factors in the stimuli themselves (e.g., intensity of the stimuli) or in the situation that make certain stimuli more salient to the individual. Personal selectivity, on the other hand, refers to factors within the individual (e.g., individual differences, personal preferences) which cause one to select certain stimuli over others, as well as to give greater emphasis to some stimuli over others. The proposed model is, then, an extension and modification of the general model (Weiner, 1972). It represents an extension in that it allows for the effects of situational and individual factors on the perceptual process upon which attributions are based. It represents a modification of the Weiner model in that it is particularistic, the model assumes knowledge of performance as the major stimulus, with variations in self-report descriptions of individual and group characteristics as the consequential response. Diagrammatically, the model is seen in Figure 2.

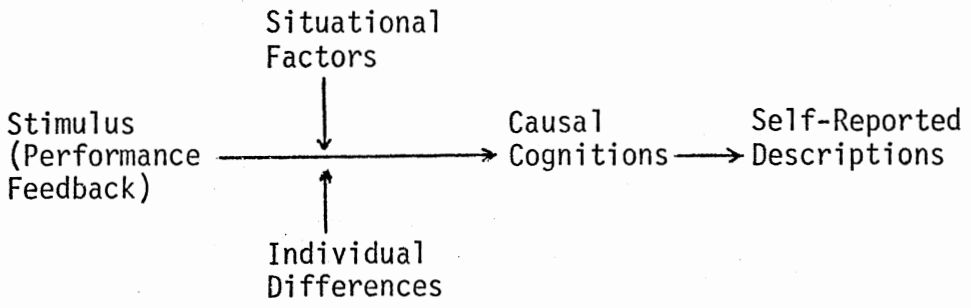


Figure 2. Extension of the General Model

This model posits that self-report descriptions of individual and group characteristics, commonly used in organization research, may in effect be caused by the subjects' knowledge of performance of that group to which they belong. Therefore, rather than obtaining a group member's specific perceptions of his or her group, knowledge of that group's performance may serve to elicit that individual's naive theory of group performance. Stated differently, researchers seeking to obtain individual perceptions of specific groups, in hopes of generalizing to groups as a whole, may actually receive as responses to self-report measures, individualized general (naive) theories of group performance. If true, this would carry significant implications for previously reported organization research conducted in a cross-sectional manner. The above model additionally postulates, however, that since perceptions are antecedents of causal cognitions, factors (situational and individual) impacting on this perceptual process may affect cognitions and therefore self-report data.

While many situational and individual factors may affect the perceptual process and, as a result, self-report descriptions, the scope of this study necessitates a restricted view of these variables. In

an effort to test under manageable conditions whether these factors will affect the impact of knowledge of performance on self-report descriptions, only two situational and one personal factor will be considered: the degree of involvement in group activities, task involvement, and the individual's locus of control, respectively. The former are considered situational factors in that they depend upon physical membership in a group as well as structural considerations within that group (e.g., centrality). Interest in these concepts evolved from the between-group analysis used by Staw (1975) showing the effect of knowledge of performance on self-report measures of individual and group characteristics. If, on the average, group members' perceptions are biased by performance feedback, perhaps within-group differences can be viewed in hopes of uncovering persons in positions within groups less prone to this attribution effect. Moreover, the literature on actor-observer differences, primarily a distinction based on a situational perspective, indicates these to be useful situational concepts. Conceivably, a person's inclusion or exclusion from a group's activities and/or a person's position (task) within a group may serve to make certain informational cues more or less salient. Locus of control is considered to be a personal factor capable of affecting the perceptual and attribution processes in that it measures a dispositional characteristic. This concept was selected because it has had a high degree of exposure in the literature in general (MacDonald, 1973, p. 169), and in the attribution literature, in particular (see Chapter II).

The model, as presented in this chapter, is essentially a static one as it does not deal with individuals having relevant causal information over time. This model, however, can easily be extended to

include the performance → attribution → behavior → performance cycle described in Chapter II. One possible response to the causal cognitions resulting from knowledge of performance (in addition to the self-report descriptions) may be behavioral in nature. That is, individuals upon learning that their group has performed very well or very poorly may attribute part of the success or failure of the group to their fellow group members. They may, in turn, act in accordance with their initial attributions and behave toward their fellow members in a differential manner on subsequent performance trials. By extension then, the model may be used in a predictive sense (Figure 3).

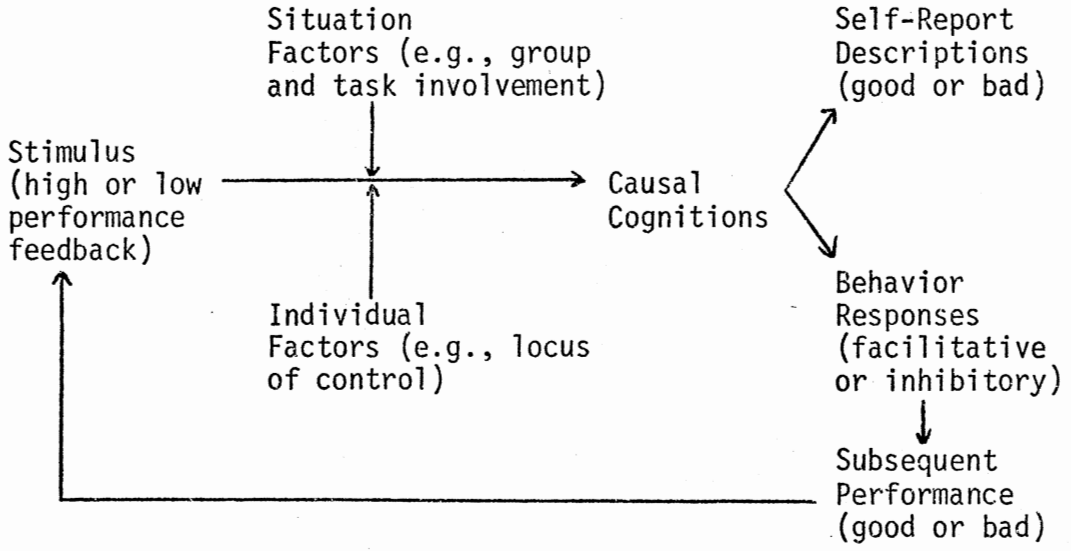


Figure 3. Dynamic Attribution Model

Propositions

Several propositions flow naturally from the models presented.

I. In general, members of experimental groups receiving high performance feedback describe their groups and group members in more favorable terms than members of groups receiving poor performance feedback (the attribution effect).

II. The attribution effect (Proposition 1) is affected by situational characteristics (group involvement and task involvement) and by individual characteristics (Locus of control).

III. Attributions of self, other group members, and the group, which are at least partially affected by performance feedback, are expected to influence future behavior and future performance.

CHAPTER IV

OPERATIONALIZATION OF THE MODEL

Introduction

One hundred and sixty four students selected from students enrolled in the management curriculum at Oklahoma State University served as subjects in a laboratory experiment designed to test the aforementioned propositions. The purpose of this chapter is to describe the operationalization of the concepts being studied, the instrumentation to be used, the experimental procedure, and the hypotheses to be tested.

Operationalization and Instrumentation

Locus of Control

The concept, locus of control, refers to an individual's perception of the contingency relationships between his or her own behavior and events which follow that behavior (Rotter, 1966). While there has been some concern evidenced in the literature about the multi-dimensional nature of the I-E construct, Rotter's (1966) formulation (see Appendix A) was selected for use in this study for the following reasons: (1) It is the instrument most often used in locus of control research. (2) It has been most frequently used with college students and is therefore consistent with this study's sample population. (3) It is easily administered. (4) Studies have shown it to have adequate psychometric

properties. For example, test-retest reliability over a two month period reportedly ranges from .49 to .83, with internal consistency measures reported at .70 (Rotter, 1966). Moreover, reviews (e.g., Joe, 1971) report good discriminant validity for the Rotter scale via low correlations with such variables as intelligence, social desirability and political affiliation along with evidence of convergent validity via results indicating that this scale does pick up individual differences in perceptions about one's control over one's destiny. (5) Even those studies reporting factor analyses showing the Rotter scale to be multi-dimensional (e.g., Gurin, et al., 1969; Mirels, 1970), reveal one general factor accounting for most of the variance. The multi-dimensional issue remains unsolved, and while Rotter's scale is not as pure as it was initially believed to be, it is still recommended as a measure of generalized I-E expectancy (MacDonald, 1973).

Degree of Involvement

Degree of involvement was conceptualized as a two-dimensional construct: Individual involvement in the task, and individual involvement in the group, respectively. This two-dimensional operationalization lends a finer breakdown to the actor-observer differences discussed in the literature (see Chapter II) and, in addition, is representative of differing perceptual orientations. Bouchard (1976), in a discussion of field research methods, has pointed out the differing participant-observation perspectives. The operationalization of involvement to be used in this study, while perhaps not totally analogous to Bouchard's complete participant, participant as observer, observer as participant, and complete observer, should lend further insight into the impact of

one's vantage point with respect to an activity on his or her perceptions of those activities.

The two-dimensional manipulation of involvement required varying, across two levels (high/low), the degree of task involvement and the involvement of individuals in group activities. High and low task involvement was accomplished by assigning subjects (at random) to either tasks that provided them with a sense of accomplishment and a high degree of activity or tasks that were relatively mundane and involved little activity. In this study, the production worker role fit the former category very well. The production worker was active almost continually and the nature of the task (folding a complicated paper airplane), although potentially boring in the long term, was novel enough to provide a sense of accomplishment and high task involvement over the duration of this exercise. The staff role, on the other hand, fit the latter category very well. The staff person was basically an observer with nothing to do but watch others perform a potentially enjoyable task (folding a complicated paper airplane), resulting in low task involvement.

Two levels of group involvement (high/low) were achieved by the inclusion or exclusion of individuals in the planning stages of the group's activities, the method of compensation (group productivity versus time, respectively), and group leader behavior (discussion leader versus order giver, respectively). High group involvement implies a sense of togetherness, a "we" attitude instead of an "I" or "me" attitude. Manipulation of the initial group activities and the consequences of these activities worked to insure the creation of a successful treatment condition. Exercise instructions dictating total (line and staff)

group participation in determining the bases on which activities were to be carried out, and a reward system based on group productivity complemented each other. The group leader, a confederate, also worked to create this "we" attitude in the planning session by eliciting alternative production means and opinions on production quantities from both the line and staff personnel and by acting as a discussion leader rather than as an order-giver. Low group involvement, however, implies a "you're on your own" atmosphere. Manipulation of the initial group activities and the consequences of the group's activities also worked to insure the creation of a successful treatment condition in this case. Exercise instructions excluding staff personnel from participation in the initial planning session, the use of a reward system totally divorced from group performance, and the use of a leader (confederate) who determined that the best production process was an individually-based process without benefit of counsel, worked in a very complementary fashion toward creating a "You're on your own" atmosphere.

A detailed explanation of these manipulations follows. Conceptually, the result of the above manipulations was the treatment of involvement as a two-dimensional construct. This 2X2 model of involvement is illustrated in Figure 4. The use of this manipulation scheme is crucial to determining within-group differences in terms of individual susceptibility to the attribution effect; i.e., knowledge of performance affecting individual descriptions of individual and group characteristics. In addition, this method allows for consideration of the more basic question, "Who do you ask?", when conducting organizational research using methodologies (e.g., cross-sectional) potentially susceptible to this attribution effect. Perhaps, as Bouchard (1976)

GROUP INVOLVEMENT		TASK INVOLVEMENT: HIGH — Production Task	TASK INVOLVEMENT: LOW — Observation Task
HIGH	Group planning, Group pay	Production Worker (folder) Planning via group discussion Pay: Group Profitability Leader Behavior: Discussion Leader	Staff Personnel (observer) Planning via group discussion Pay: Group Profitability Leader Behavior: Discussion Leader
LOW	Individual planning, Individual pay	Production Worker (folder) Individualized planning Pay: per hour per person Leader Behavior: Order-Giver	Staff Personnel (observer) Individualized planning Pay: per hour per person Leader Behavior: Order-Giver

Figure 4. Two Dimensional Model of Involvement

contends, one needs to approach individuals outside the actual groups of interest - the complete observer - in order to obtain descriptions of those groups unaffected by knowledge of performance.

Knowledge of Performance

Performance feedback is assumed to be the primary cue for making attributions. This, coupled with experimental design considerations, required the feedback to be meaningful, believable, yet randomly assigned. The use of a novel and somewhat ambiguous task met these constraints.

The task involved was a role-playing exercise that centered around the production (folding) of an elaborate paper airplane. Under the guise of a study in line-staff relations, groups of five students; two of whom actually produced the planes (a line activity), one of whom was the leader (a confederate), and two of whom were assigned to an observational activity (a staff activity); were assigned the task of maximizing profits through the efficient production of high quality planes.

This task had several advantages. It was ambiguous enough to allow for believable randomized performance feedback. Regardless of a group's actual performance, feedback was given in terms of comparing each group to a fictitious set of other groups on which data had already, supposedly, been collected. The task was unique and novel enough to generate student involvement among those actively participating in it. Finally, it facilitated the use of the line-staff cover story and its accompanying producer-observer roles.

The Completely Operationalized Model

The completely operationalized model, showing the independent variables is illustrated in Figure 5. Three of the four independent variables; task involvement, group involvement, and performance feedback, constituted direct manipulations. In order to determine whether the manipulations were perceived as intended, a series of manipulation check questions were developed. To check the task and group involvement manipulations a series of questions were selected from the literature or adapted from existing instrumentation. In this questionnaire, (Appendix B), the even-numbered questions were used as task involvement checks and the odd-numbered questions were used as group involvement checks. A performance feedback manipulation check was also needed to determine whether the (random) performance feedback received was believable. Staw's (1975) method of including a question on the perceptions of group ability as part of the dependent measures instrument was employed in this experiment.

Dependent Measures

The dependent variables of interest included self-report descriptions of member and group characteristics, a measure of expected future performance (expectations), and actual group performance in Production Period II. This permitted testing of the basic propositions associated with the model outlined in the previous chapter.

Self-Report Descriptions. Subject descriptions (self-report measures) of their fellow group members and of their group in general were needed to evaluate the impact of knowledge of performance on one's abi-

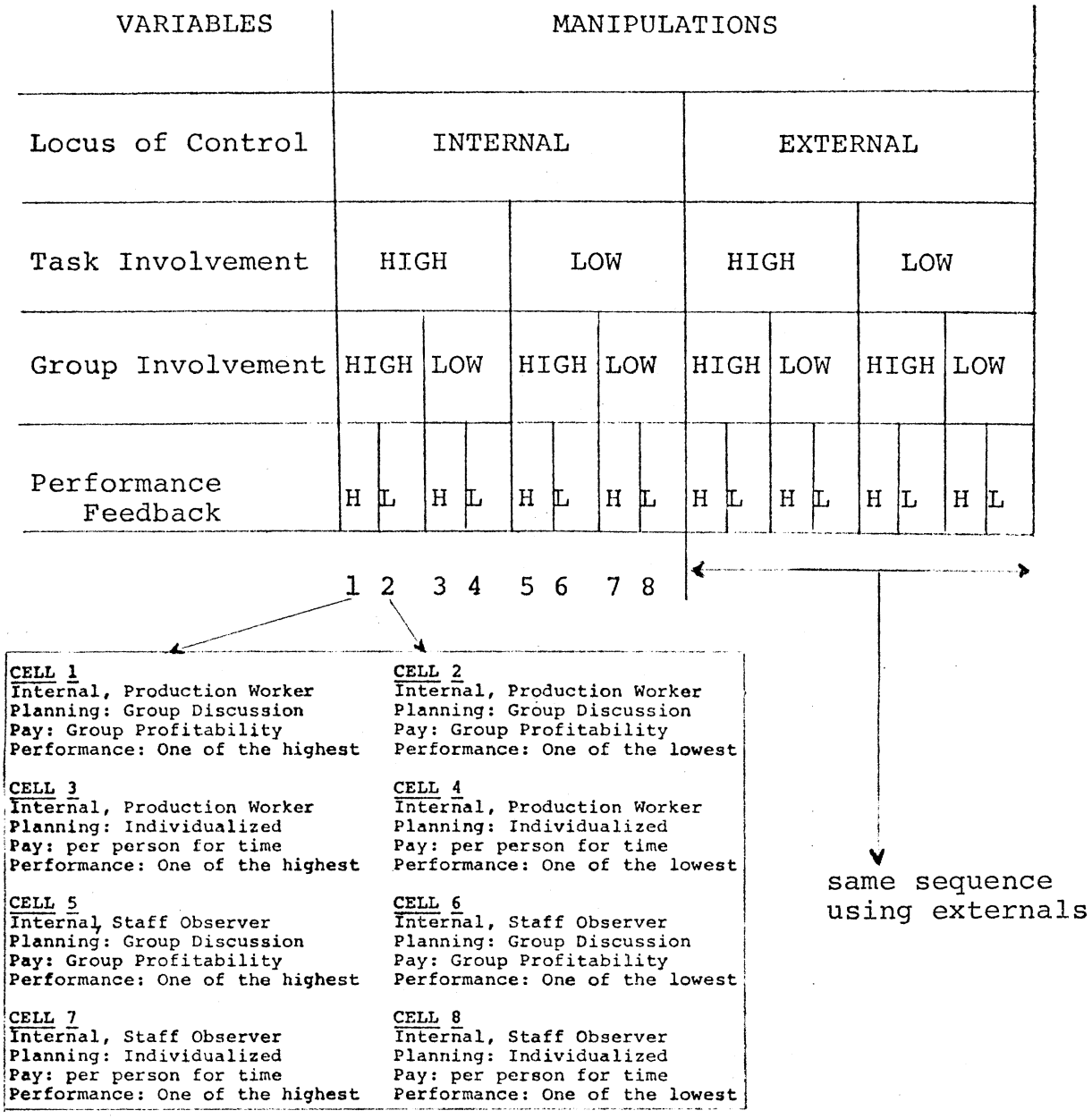


Figure 5. The Completely Operationalized Model

lity to give a descriptive account of group phenomena. Attribution theory research posits that knowledge of performance results in the elicitation of a normative account of a phenomenon based upon one's "naive theory of action" (Heider, 1958). In order to determine whether, in fact, knowledge of performance does affect self-report descriptions and the degree to which this attribution effect is affected by individual and situational variables, a more reliable set of descriptive measures than that used in previous research (e.g., Staw, 1975; Downey, Chacko, and McElroy, under review) was required.

Self-report measures used in organizational and small group research focus on individual ratings of group and group member characteristics. Groups, per se, are often studied in terms of their structural characteristics and processes (e.g., Golembiewski, 1962; Melcher, 1976). Since the involvement manipulations used in this study were, in effect, structural, use of this dimension as a basis of self-reported group characteristics had little utility. Therefore, individual ratings of their groups as dependent variables in this experiment was restricted to perceptual measures of group processes.

Perceptual measures of group processes, and group members as well, can be viewed in terms of affective and/or task-oriented measures. This approach is consistent with past approaches to group research (e.g., Bales, 1950; Julian and Perry, 1967) and research in the area of group phenomena such as leadership (e.g., Fiedler, 1967; House, 1971; Kerr, Schriesheim, Murphy, and Stogdill, 1974).

Selection of the actual group process and member dimensions to use as dependent variables in this study involved a trade-off. Past methods using popular instruments such as the Group Description Form (Borgatta

and Glass, 1963) or the Group Dimensions Description Questionnaire (Hemphill, 1956) are lengthy; involving up to 150 questions tapping fourteen dimensions, as in the latter scale above. On the other hand, studies more directly addressing the issues of concern in this study (e.g. Staw, 1975), have failed to develop or use instruments with adequate psychometric properties or, at best, have failed to report those properties. The trade-off involved was one of keeping the instrumentation within the experimental time constraints, yet tapping enough of the important perceived group dimensions in a reliable way so as to be able to draw meaningful conclusions. A cursory review of the literature on small group instrumentation yielded several dimensions commonly used in describing group processes and members. These are illustrated in Figure 6. Of these, the group process dimension of participation and the group member dimension, task commitment, were part of the involvement manipulations and were, therefore, excluded from consideration as dependent measures. Measures of the other dimensions presented in Figure 6 constituted the dependent self-report descriptions of group and group member characteristics used in this study. While the dimensions listed in Figure 6 are very selective and by no means all-inclusive, the use of psychometrically sound instruments that tap these basic dimensions allowed for adequate testing of the basic propositions posited in this study.

The group dimensions of cohesiveness, communications, and task conflict were operationalized using Staw's (1975) instrumentation. The basis for using these scales included their high degree of (face) validity and ease of administration. In addition, data previously collected (Downey, Chacko, and McElroy, under review) showed the three item cohe-

Selective Dimensions	Staw (1975); Downey Chacko, McElroy (under review)	Hackman and Vidmar (1970)	Jenks (1970)	Julian and Perry (1967)	Borgatta and Glass (1963)	Hoffman and Smith (1960)	Borgatta, Cottrell, Meyer (1956)	Hemphill (1956)	Haythorn (1953)
	Selective Studies								
I. GROUP DIMENSIONS:									
Cohesiveness	X	X	X	X	X	X		X	X
Communications	X	X		X			X	X	X
Leadership		X	X		X	X	X		
Task Conflict	X	X							
Participation					X	X	X	X	
II. GROUP MEMBERS:									
Task Satisfaction	X			X					
Social Satisfaction		X		X	X				X
Motivation	X	X	X		X				X
Ability	X	X	X	X		X			X
Task Commitment	X		X	X			X		X

Figure 6. Selective Review of Group and Member Rating Instrumentation

siveness scale (coefficient alpha = .85), the two item communication scale (coefficient alpha = .86), and the two item task conflict scale (coefficent alpha = .66) to have internal reliability properties adequate for this type of research (Nunnally, 1978). Each of these scales is presented in Appendix C.

The leadership dimension of these groups was measured using Form XII of the Leadership Behavior Description Questionnaire, LBDQ, (Stogdill, 1963). This is a twenty item questionnaire (See Appendix C), ten of which are designed to measure leader consideration and ten of which are designed to measure leader initiating structure. This form of the LBDQ has been recommended over other leadership instruments since it is not nearly as lengthy, its factor structure is less complex (Schriesheim and Stogdill, 1975) and it has been subjected to experimental validation (Stogdill, 1969). Recently, in a comparison of the Leadership Opinion Questionnaire (Fleishman, 1957a), the Supervisory Behavior Questionnaire (Fleishman, 1957b), the early LBDQ (Halpin, 1957), and the LBDQ, Form XII (Stogdill, 1963), Schriesheim and Kerr (1974) credited the LBDQ, Form XII, with marginally acceptable content validity due to its exclusion of extraneous questions and its method of construction (via factor analytic techniques). The authors went on to give the instrument fairly good marks with respect to concurrent validity and reliability. Test-retest reliability for the consideration items over one, two, and three month intervals reportedly ranged from .71 to .79; .57 to .72 for the initiating structure items (Green, 1974). Internal reliability for the instrument has been proven adequate. Coefficient alpha values for the consideration variable of .88 and .78 have been reported by Sheridan and Vredenburgh (1979) and Valenzi and Dessler (1978), respectively. Internal reliability coefficients for the structure items were reported

at .82 and .76 by the same authors, respectively.

Individual descriptions of group members used as dependent variables in this study included perceived member satisfaction, perceived member motivation and perceived member ability. Perceived member satisfaction, task and social, was operationalized in terms of the JDI, Job Description Index (Smith, Kendall and Hulin, 1969). The JDI consists of 72 items scored on a three point scale measuring five dimensions of job satisfaction: satisfaction with work, satisfaction with supervision, satisfaction with coworkers, satisfaction with pay, and satisfaction with promotions. Only the first three of the above satisfaction scales were employed in this study. Reports indicate relatively high reliability coefficients (e.g., Johns, 1978, reports a range from .78 to .84 for the five subscales while Downey, Hellriegel and Slocum, 1975, report a range from .80 to .88), and validity studies are continuing to report the adequacy of the JDI in the literature (e.g., Evans, 1969; Dunham, Smith and Blackburn, 1977).

Perceived group member motivation and perceived group member ability were measured using Staw's (1975) instrumentation. Although he reported no reliability figures on these two scales, the two item group motivation scale (coefficient alpha = .87) and the two item group ability scale (coefficient alpha = .68) have adequate internal consistency properties (based on data collected by Downey, Chacko and McElroy, under review). As with the group description measures based on Staw's (1975) work, these two scales are easily administered and highly (face) valid.

The dependent self-description measures included in this study (See Appendix C) satisfy the trade-off between instrument length, and the ade-

quacy of instrument scope and psychometrics. A sufficient number of group dimensions were measured, each in a reliable fashion, although some of the scales had a better psychometric pedigree than others.

Expected and Actual Future Performance. Self-reported descriptions of individual and group characteristics allowed for testing the basic attribution effect as well as the affects of involvement and locus of control. What remain to be considered are the potential outcome effects of these causal attributions. Will the causal attributions made following Trial I be reflected in differential performance in Trial II? The collection of data on the actual performance of groups in a second trial of the experimental task allowed for the consideration of this question, if only in an exploratory fashion.

Some work has already been done concerning the effects of attributions associated with negative events on behavior in small groups (e.g., Shaw and Breed, 1970; Shaw and Tremble, 1971). The general focus of this research has been on the negative effect of blaming a group member for failure of the group to succeed on the group's subsequent ability to perform. Little, to this author's knowledge, has been done to systematically explore the general effects of previous attributions on subsequent performance.

This aspect of the present study was, of necessity, very exploratory, since other plausible, rival explanations can not be controlled for. The use of the dependent variables from the first part of this study as, essentially, the independent variables in this analysis negated the control usually associated with a laboratory experiment. Also, learning effects and the effect of regression toward the mean

also constitute threats to the internal validity of this part of the present study. Nevertheless, it was hoped that the collection of data on each group's actual performance in a second trial of the experimental task would provide additional insight into the attribution process as well as directions for future research.

Because of the existence of the above rival explanations of future performance, it is possible that no statistically significant differences in actual subsequent performance would occur between groups receiving high and low initial performance feedback. Therefore, a measure of intent, expectations with respect to future performance, was included along with the dependent measures described earlier (See Appendix C).

Procedure

Administration of Rotter's I-E Scale

Rotter's (1966) I-E scale was administered to two hundred fifty-six management students enrolled at O.S.U. The results of this measure were scored and the median determined. From this population, 87 students with an internal orientation (scoring below the median) and 77 with an external orientation (scoring above the median) volunteered to serve as experimental subjects. Subjects scoring on the median were either (a) urged to participate in the study as confederates or (b) randomly assigned to the internal or external orientation. These subjects were, in turn, randomly assigned to the other treatment conditions forming a 2X2X2X2 factorial design; internal-external locus of control, high-low performance feedback, high-low task involvement, and high-low group involvement.

Dividing the subject population based on the median I-E score was the result of a trade-off of forces. On the one hand, one might argue for the use of only those subjects scoring in the upper and lower quartiles on the scale. By using extreme-score subjects, locus of control effects should be accentuated. On the other hand, doing this could, in effect, produce unusual results in other areas (e.g., attribution effects) because of the extreme nature of the sample on this one dimension. In addition, if locus of control is a significant issue in the effects of knowledge of performance on self-report measures as predicted, it should be expected to manifest itself under more ordinary circumstances (i.e., between people divided at the median).

Arrival of Subjects and Confederate

Students were urged to sign up for particular times in order to participate at their convenience. Arrangements were made for volunteers to arrive at the experimental site in groups of four. Prior to their arrival, they were randomly assigned to receive the experimental treatments. A fifth student, acting as a confederate, timed his arrival to coincide with the arrival of the others. After all five participants had been assembled for an experimental trial, the experimenter informed them that:

> The purpose of this exercise is to examine line-staff interactions. Therefore, two of you will be assigned production roles (a line activity), one of you will be assigned a leadership role (a line activity), while the remaining two will be assigned the role of observational change agents (a staff role).

Task Role Assignment

At this point the assignment of students to roles took place. The experimenter informed the subjects that:

> Prior to your arrival, a drawing was made in order to assign you to these tasks in a random fashion.
>
> Production Worker. "A" and "B" (subject names selected in advance), you are to perform the role of the production worker. Your task is to produce (fold) as many spacecraft (paper airplanes) as possible during each of three 5-minute production periods. You will also be responsible for ordering the proper quantity of materials and for maintaining the quality of production. You are not responsible for checking the quality of the craft produced and it would be advisable for you not to waste valuable production time and effort on this. Quality will be tested for by a third party to insure objectivity and consistency.
>
> Leader. "C" (always the confederate), you are to assume the role of the leader. You will be in charge of all decisions made by this organization and will perform the coordinating and recording functions as well.
>
> Staff Personnel. "D" and "E" (subject names), you will be assigned to the staff roles. Your task, essentially, will be to observe the processes used in the production function in order to detect any weaknesses. Later in this exercise, you will be asked to make recommendations concerning how the production processes can be improved, based upon what you have observed. To maximize the potential number of change recommendations, the two staff members should make their observations independently of each other, not discussing their observations with each other.
>
> Because this experiment is concerned with line-staff interactions, you will each be requested to fill out a pre-change questionnaire. This is simply a measure of how each of you feel about things prior to any changes recommended by the staff change agents. Later in the exercise, a post-change questionnaire will be administered. This is designed to determine how each of you feels about things after the staff people have had a chance to make their recommended changes and after the recommendations have been tried out.

Specific Exercise Instructions

All subject groups received the above introductory explanation in written form. In addition, all groups received the following speci-

fic written exercise instructions.

Your participation in this study centers around a role playing exercise. Assume your organization (the five of you) has just been awarded a government contract to produce as many Enterprise Spacecraft as your production facilities will allow during the next three months (represented in this exercise by three 5-minute production periods). The government has supplied you with a set of blue-prints for the spacecraft. Each spacecraft must meet a set of quality control specifications (listed in the handout given to subjects; see Appendix D and E). Only those spacecraft meeting these specifications will be purchased by the government (the game coordinator).

You must buy the raw materials needed for each spacecraft from me (experimenter). The cost of these materials is variable with the quantity ordered as shown in the schedule on your instruction sheet (Appendix D and E). This schedule allows for quantity discounts. No carryover of raw materials is permissible from month to month. In addition, no raw materials may be returned. Whatever remains at the end of each production period is simply deducted from your organization's profits for that period.

The objective of each organization is to maximize profits over <u>each</u> of the three production periods by producing as many high quality spacecraft as efficiently as possible. This means not only the production of quality craft but also the proper estimation of production capacity and the ordering of the appropriate quantity of raw materials.

Included in your materials is an activity schedule (Appendix D and E), showing the sequence of events that is to occur during this exercise. There are three planning sessions and three 5-minute production periods. Planning Session I is 20 minutes long to allow for enough time to decide upon the amount of materials to order as well as to study the blue-prints (Appendix D and E), and to practice the production process. Planning Session II is short, 10 minutes, since no more practice time is needed. Planning Session III is 30 minutes in duration to allow the staff people, who have been observing the production process in action for the first two production periods, time to recommend changes needed to improve the organization's processes.

Each production period is 5 minutes in length. All spacecraft and leftover materials will be collected at the end of each production period. At this time the spacecraft will be subjected to quality control inspection.

As mentioned earlier, after Production Period I, a questionnaire measuring your initial feelings will be administered. Following Production Period III a modified version of this questionnaire will also be administered in

order to measure your feelings following the changes made by the staff change agents in the production process.

Group Involvement

Subjects were assigned to one of the above two types of tasks. In addition, subjects were randomly assigned to one of two types of groups. In one set of groups individual members, performing either type of task, experienced a situation conducive to a high sense of group involvement, while in the other groups, individual members were subjected to an atmosphere lacking the prerequisites for the development of a high sense of group involvement. As stated earlier, the manipulation of this group involvement treatment centered around the schedule of activities, leader behavior and the method of subject compensation.

Activity Schedule

High Involvement Groups. Individuals assigned to groups subjected to this manipulation were given the following set of written instructions:

> Planning Session I is the initial meeting of your organization (all 5 members) in which the production process to use and the quantity of materials to order must be decided upon. Time should also be set aside for reviewing the blue-prints, using the attached practice materials (Appendix D). All five of you will participate in this initial planning session.
>
> Following this, Production Period I takes place. The production workers begin folding the spacecraft while the staff people begin their separate observation roles. Observation will continue from this point on, through the second planning and production periods. This should give each of the staff observers time enough to get a feel for how well the production processes work as well as to how it might be improved.

Low Involvement Groups. Individuals assigned to groups subjected to this manipulation were given the following set of written instructions:

> Planning Session I is the initial meeting of the production group of your organization. The production workers are to meet with the leader to determine the appropriate production process to use and the initial quantity of materials to order. Time should also be set aside to allow the production workers to review the enclosed blue-prints using the practice material provided (Appendix E). The staff people do not participate in this session. Instead, they begin their separate observations of the production group's activities.
>
> Following this session, Production Period I takes place. The production workers begin folding the spacecraft while the staff people continue to observe (separately). Observation will continue through the second planning and production periods. This should give each of the staff observers time enough to get a feed for how well the production process works as well as to how it might be improved.

This initial difference in the activity schedule instructions given to the two types of groups was followed by a set of common written instructions describing the latter part of the activity schedule.

> After each production period all spacecraft and leftover materials will be collected. To facilitate the timetable of activities and to insure objectivity and consistency in judgement, quality of the spacecraft will be checked by a third party. As this will take some time to do, since each spacecraft must pass several tests (as explained in your materials, Appendix D and E), your organization will be urged to proceed to the next planning session. Profitability will be reported to you as soon as it is calculated.
>
> At the end of Production Period I each of you will be asked to complete a pre-change questionnaire, described earlier. Planning Session III is the time when staff change recommendations will be considered. The effectiveness of these changes will then be determined in the final production period of this exercise. At the end of the exercise, the post-change questionnaire will be administered. Following the completion of this final questionnaire, you will be compensated and released.

Leader Behavior

The confederate, acting as the leader of the group in the initial planning session, played an instrumental role in the group involvement manipulation. The instructions, given to the leader, varied accordingly.

High Involvement Groups. In the initial planning session you should try to get all five members to do things together. That is, lead a discussion on the alternative production processes that could be used (individual production, 2-man assembly line production and so on), the merits and disadvantages of each, the quantity of materials to order, and so on. Some time should be set aside for all to view the blue-prints and for the production workers to practice their production method using the practice material provided. In addition, you might lead a discussion with all members on the kind of information the staff observers should look for. Try to get all decisions made by the group through group participation.

Low Involvement Groups. In the initial planning session you should divide up activities so that members will work on their own. Point out some alternative methods of production that could be used; individual production, 2-man assembly, and so on. Pick the initial method, without discussion, on the basis of efficiency. Have each production worker look through the blue-prints on his or her own and determine the number of spacecraft that he or she can produce. This total from the production workers will constitute the number of materials to be ordered. Make sure that discussion is limited, that the staff workers do not participate at all in this session or interact with each other, and that individual activities are emphasized.

In addition, all leaders were told:

You are responsible for record keeping and inventory during this exercise. Materials will be checked in to you. You are to keep track of them, keep track of the craft produced, as well as the leftover materials.

Subject Compensation

Individual sense of involvement in group activities was manipulated via the activities involved in the initial planning session, the behavior of the leader, and finally, through the method of awarding compensation to the subjects for their participation in this exercise. As part of the written description of the exercise, presented above, all subjects were thanked in advance for their participation.

High Involvement Groups. Your participation in this exercise is greatly appreciated and it is felt that each group should be compensated for the effort they will be putting forth. As this exercise has been used in the past, the "average" total profit level (over all three production

periods) achieved by previous groups is known. To encourage your group to strive for profit maximization in each production period, your group's profitability will be judged in relation to this average group and your compensation will vary accordingly. Those groups which achieve a profitability level higher than this average figure over the three production periods will be compensated at a rate twice that of those groups failing to attain this average profitability level. Therefore, if your group fails to achieve the average profit level for the exercise, your group will be compensated at a rate of only $.25 for every $1,000,000 of profit generated by your organization in this exercise. If however your group exceeds the average profit level for the exercise, then your group will earn $.50 for every $1,000,000 your organization earns on the sale of spacecraft. The compensation you will receive for participating in this exercise is, in effect, a matter of your group's productivity.

Low Involvement Groups. Your participation in this exercise is greatly appreciated and it is felt that each of you should be compensated for the time you will be spending on this exercise. Although we do have data on how much profit the average group has been able to earn in the past on the sale of spacecraft, it is felt that an individual's compensation in this exercise should not be connected in any way with his or her assigned duties and/or abilities. Each of you will, therefore, be paid a fixed amount of $3.00 for the time you have spent assisting in this exercise (regardless of how much your organization profits from the sale of spacecraft).

Performance Feedback

The first production period was followed by the administration of the pre-change questionnaire. This actually consisted of two parts. The first part constituted a manipulation check on the task and group involvement treatment conditions. This questionnaire appears in Appendix B. The second part of this questionnaire consisted of a manipulation check on the performance feedback manipulation and instruments tapping the dependent variables of interest.

A crucial part of this experiment occurred between the administration of the two parts of this questionnaire: the feedback of believable, yet random, performance. Immediately upon the completion of

Production Period I, the experimenter entered and handed out the manipulation check questionnaire. As several experimental groups were run concurrently, the experimenter left each group alone to fill out this questionnaire, returning a short time later. Upon returning and seeing that all members had completed this questionnaire the experimenter, according to a predetermined schedule, manipulated the feedback of performance in the following fashion:

> High Performance Feedback. I'll take these (the spacecraft and leftover materials) to get them checked for quality and to have your organization's profit (or loss) computed. Of course, right now I can't tell if you'll make a profit or not, but I can tell that based on what I see here (look at the craft produced) and what other groups have done, you appear to be in great shape. As long as your quality is not disasterous you should be one of the top groups so far, after the first production period at least. Usually groups don't do well at all in the first production run for a variety of reasons, but you are a pleasant surprise.
>
> While I'm taking this stuff to get checked for quality, so we can get your actual financial status calculated as soon as possible, I'd like each of you to fill out the second part of this initial questionnaire and then proceed to the second planning session. In this way we can keep pretty much on schedule. You are off to a great start but you still have two production periods to go.
>
> Low Performance Feedback. I'll take these (the spacecraft and leftover materials) to get them checked for quality and to have your organization's profit (or loss) computed. Of course, right now I can't tell if you'll make a profit or not, but I can tell that based on what I see here (look at the craft produced) and what other groups have done, you don't appear to be off to a very good start. In fact, usually groups do quite well, right from the start, but this low level of output, even if quality holds up, will leave you near the bottom of the groups so far. But, you still have a couple of production periods left to get back on track.
>
> While I'm taking this stuff to get checked for quality, so we can get your actual financial status calculated as soon as possible, I'd like each of you to fill out the second part of this initial questionnaire and then proceed to the second planning session. In this way we can keep pretty much on schedule. You got off to a poor start but don't be discouraged; you've still got two periods to go.

This method of manipulating performance feedback between the two

parts of the so-called pre-change questionnaire; that is, between the manipulation check and the dependent measure instruments, was necessary. It must be established whether or not the task and group involvement manipulations were successful prior to the performance feedback treatment being given. To collect all of the data after the feedback of performance would be to confound the manipulation check with the attribution process being studied. Stated differently, to check the manipulations on task and group involvement after the performance treatment was imposed, would have left the results on these manipulation checks open to an attributional interpretation.

End of the Experiment

After obtaining individual responses to the manipulation check and dependent measures questionnaires, each group, as indicated above, was instructed to proceed to Planning Session II, and finally to Production Period II. Upon the completion of this production period, spacecraft and unused materials were again collected. At this time, however, each of the two types of groups were instructed:

> High Involvement Groups. Right now we have all the data that is necessary for the purposes of this study. Therefore, it is not necessary for you to actually perform the third planning and production periods. They were included in the exercise description to hold the attention of those of you assigned to the staff roles.
>
> All I can tell you about this experiment is that it was designed to determine the differences in perceptions associated with different group structures. This experiment is part of Jim McElroy's dissertation and he will, after collecting all of the data, come to the class from which you were recruited and thoroughly explain the nature of this study. We only ask that you refrain from talking with anyone about this experiment for a couple of weeks so as to not bias the participation of other students. McElroy has spent nearly a year putting all of this together and only asks for two weeks of your additional cooperation.

As far as your compensation goes you have a choice. You have made something less than $10.00 as a group so far. You may, if you like, proceed through the third planning and production periods and take a chance on how much your group will earn, (If you lose money in period III, it will be deducted from your current earnings.), or I'll simply assume you could have produced at approximately the same rate and pay you right now $15.00 (as a group); $3.00 each for your participation in this exercise.

Your participation and cooperation is greatly appreciated. If you have any questions about this exercise prior to the time he comes to your classes, do not hesitate to contact Jim McElroy. He's told me he'll be very happy to discuss it with you.

Low Involvement Groups. Right now we have all the data that is necessary for the purposes of this study. Therefore, it is not necessary for you to actually perform the third planning and production periods. They were merely included in the exercise description to hold the attention of those of you assigned to the staff roles.

All I can tell you about this experiment is that it was designed to determine the differences in perceptions associated with different group structures. This experiment is part of Jim McElroy's dissertation and he will, after collecting all of the data, come to the class from which you were recruited and thoroughly explain the nature of this study. We only ask that you refrain from talking with anyone about this experiment for a couple of weeks so as to not bias the participation of other students. McElroy has spend nearly a year putting all of this togehter and only asks for two weeks of your additional cooperation.

As far as your cooperation goes, you were promised $3.00 each for the time you spent in this exercise. This you will be paid even though the third planning and production periods will not be completed.

Your participation and cooperation is greatly appreciated. If you have any questions about this exercise prior to the time he comes to your classes, do not hesitate to contact Jim McElroy. He has told me he'll be very happy to discuss it with you.

At this point, the subjects were given a redeemable coupon (worth $3.00), urged again to remain silent on the nature of this experiment, and released.

Hypotheses

The Attribution Effect

Proposition I: In general, members of experimental groups receiving high performance feedback describe their groups and group members in more favorable terms than members of groups receiving poor performance feedback.

This proposition is a statement of the so-called attribution effect; that is, the effect of knowledge of performance on self-report measures. The following research hypotheses were generated from Proposition I. The null form of each of these hypotheses specifies no directional difference in dependent measure scores and/or a directional difference opposite that stated in the research hypotheses.

I. (A) Cohesiveness scores for high performance feedback group members tend to be greater than cohesiveness scores for low feedback group members.

I. (B) Communication scores for members of high performance feedback groups tend to be greater than the communication scores for low feedback group members.

I. (C) Task conflict scores for high performance feedback group members tend to be greater than task conflict scores for low feedback group members.

I. (D) Leader initiating structure scores for high performance feedback group members tend to be greater than initiating structure scores for low feedback group members.

I. (E) Leader consideration scores for high performance feedback group members tend to be greater than consideration scores for low feedback members.

I. (F) Group member ability scores for high performance feedback group members tend to be greater than group member ability scores for low feedback group members.

I. (G) Group member motivation scores for high performance feedback group members tend to be greater than group member motivation scores for low feedback group members.

I. (H) Satisfaction with work scores for high performance feedback group members tend to be greater than satisfaction with work scores for low feedback group members.

I. (I) Satisfaction with supervision scores for high performance feedback group members tend to be greater than satisfaction with supervision scores for low feedback group members.

I. (J) Satisfaction with co-worker scores for high performance feedback group members tend to be greater than satisfaction with co-worker scores for low feedback group members.

The above set of hypotheses was tested using analysis of variance. These hypotheses would be supported by statistically significant main effects for the performance feedback treatment (in the directions predicted) on each of the dependent variables taken separately. For the above hypotheses, and those to follow, directional hypothesis testing was possible within the analysis of variance framework because each variable involved only two levels. Rigorously speaking, this would require interpreting the two-tailed probability estimates reported by analysis of variance in light of the one-tailed nature of these hypotheses.

Interaction Effects

Proposition II: The Attribution Effect (Proposition I) is affected by situational characteristics (group involvement and task involvement)

and by individual characteristics (locus of control).

The actual behavior of individual group members is one source of information used by individuals in describing groups and group members. This constitutes an informational source internal to the group. Performance feedback, as outlined by attribution theory, provides an additional source of information. This latter source, provided by the experimenter at random, is external to actual group behavior. The hypotheses derived from Proposition II posit separate interactions for group involvement, task involvement, and locus of control with performance feedback on self-report descriptions.

A full discussion of the theoretical development of these interaction effects was presented in Chapter II. The following, however, is a brief restatement of those arguments as they relate to this study. Both of the situational variables used in this study deal with the degree to which the individual group member is involved. Individual members of low involvement groups are hypothesized to be in a better (less involved) position to objectively describe a group and its members. Likewise, staff workers (lower task involvement) are hypothesized to be in a similar position. Both should, as a result, be less likely to resort to external sources of information (performance feedback) in their descriptions.

The individual characteristic used in this study is locus of control. By definition (Rotter, 1966), externals are more likely to rely on external sources of information. They are, therefore, expected to make more use of performance feedback in their descriptions than internals.

II. (A1) The change in mean cohesiveness scores across the feedback levels tends to be greater for members of high involvement

groups than for low group involvement individuals.

II. (A2) The change in mean cohesiveness scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (A3) The change in mean cohesiveness scores across the feedback levels tends to be greater for externals than for internals.

II. (B1) The change in mean communication scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (B2) The change in mean communication scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (B3) The change in mean communication scores across the feedback levels tends to be greater for externals than internals.

II. (C1) The change in mean task conflict scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (C2) The change in mean task conflict scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (C3) The change in mean task conflict scores across the feedback levels tends to be greater for externals than for internals.

II. (D1) The change in mean leader initiating structure scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (D2) The change in mean leader initiating structure scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (D3) The change in mean leader initiating structure scores across the feedback levels tends to be greater for externals than internals.

II. (E1) The change in mean leader consideration scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (E2) The change in mean leader consideration scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (E3) The change in mean leader consideration scroes across the feedback levels tends to be greater for externals than for internals.

II. (F1) The change in mean group member ability scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (F2) The change in mean group member ability scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (F3) The change in mean group member ability scores across the feedback levels tends to be greater for externals than for internals.

II. (G1) The change in mean group member motivation scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (G2) The change in mean group member motivation scores across

the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (G3) The change in mean group member motivation scores across the feedback levels tends to be greater for externals than for internals.

II. (H1) The change in mean satisfaction with work scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (H2) The change in mean satisfaction with work scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (H3) The change in mean satisfaction with work scores across the feedback levels tends to be greater for externals than for internals.

II. (I1) The change in mean satisfaction with supervision scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (I2) The change in mean satisfaction with supervision scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (I3) The change in mean satisfaction with supervision scores across the feedback levels tends to be greater for externals than for internals.

II. (J1) The change in mean satisfaction with co-worker scores across the feedback levels tends to be greater for members of high involvement groups than for low group involvement individuals.

II. (J2) The change in mean satisfaction with co-worker scores across the feedback levels tends to be greater for subject production workers than for subject staff workers.

II. (J3) The change in mean satisfaction with co-worker scores across the feedback levels tends to be greater for externals than for internals.

The null form of each of these hypotheses would specify no directional differences in the dependent variable changes across the feedback levels and/or an opposite directional difference than that stated. Support for these hypotheses will depend upon the significance level and direction of these interaction effects as shown in separate analyses of variance performed on the dependent variables.

Although third and fourth order interactions and other second order interaction effects are possible within a 2X2X2X2 analysis of variance framework, they were not hypothesized a priori in this study. They do not deal with this study's main interests.

Expected and Actual Future Performance

Proposition III: Attributions of self, other group members, and the group, which are at least partially affected by performance feedback, can be expected to influence future behavior and future performance.

This proposition and its hypotheses are an exploratory attempt to test the performance→attribution→subsequent performance cycle. The four research hypotheses that follow deal with both expected (individual intentions) and actual subsequent performance.

III. (A) The number of quality spacecraft produced in Production

Period II by those groups initially receiving high performance feedback tends to be greater than the number produced by those initially receiving low feedback.

III. (B) The level of earnings from Production Period II achieved by those groups initially receiving high performance feedback tends to be greater than that earned by those initially receiving low feedback.

III. (C) Members of groups receiving high performance feedback tend to report higher expected production quantities in Production Period II than members of low feedback groups.

III. (D) Members of groups receiving high performance feedback tend to report higher expected profit increases in Production Period II than members of low feedback groups.

The null form of these hypotheses specifies no directional difference and/or a directionality opposite that stated above.

CHAPTER V

ANALYSIS OF THE DATA

Introduction

This chapter involves the evaluation of the hypotheses stated in the previous chapter. Prior to testing the research hypotheses, the results associated with the manipulation checks and the methodological adequacy of the instruments is presented. The statistical analysis was performed using the SPSS Computer Package (Nie et. al., 1975) available at the Oklahoma State University Computer Center.

Manipulation Checks

Performance

One of the independent variables used in this study, feedback, was the direct result of an experimental manipulation. Feedback was randomly assigned (high or low) to experimental groups. Attribution theorists assume that feedback is a primary cue in making attributions. In order to substantiate this assumption it must be shown that differences in self-report descriptions are, in fact, due to feedback cues and not due to differences in actual performance (i.e., behavioral cues). A manipulation check was performed, therefore, to insure that the experimental groups used in this study differed in terms of the feedback received but did not differ in terms of actual performance.

Two separate measures of actual performance were utilized: quantity of acceptable quality spacecraft produced and the amount of profit earned by each experimental organization. Spacecraft were inspected by two independent raters (inter-rater reliability = .95). Spacecraft not meeting the quality standards outlined in the exercise instructions were discarded and deducted from organization profits.

Each performance measure was used as a dependent variable in an analysis of variance design. The effect of feedback was not statistically significant for either the production quantity or profit measures. The high feedback groups did not produce a statistically greater number of spacecraft ($\bar{X}$ = 3.60 craft) than the low feedback groups ($\bar{X}$ = 3.05 craft), nor did their profit levels differ significantly ($\bar{X}_H$ = \$-5.56 million versus $\bar{X}_L$ = \$-4.72 million). Any differences in the dependent measures reported by members of high and low feedback groups must, therefore, be the result of the type of feedback received rather than a result of actual performance-oriented behavioral cues.

Task and Group Involvement

Two other variables involving direct manipulations were group and task involvement. Use of these as independent bipolar variables required some evidence that individuals assigned to these conditions reported feelings consistent with those treatments.

To check these experimental manipulations, a ten-item questionnaire was used (See Appendix B). The items involved were adapted from existing instruments. Five of the items (even-numbered) were designed to check the task involvement manipulation and five (odd-numbered) were designed to check the group involvement manipulation. Each scale was

summed in order to obtain single score estimates on each dimension of involvement. The internal reliability of the scales was .88 for the task involvement and .75 for the group involvement instruments, respectively.

Individual summative scores on these instruments were then subjected to analyses of variance across the two treatments they were designed to check: task involvement and group involvement. The results of these analyses are presented in Table I. It was expected that those individuals randomly assigned to high task involvement positions (production workers) would report higher task involvement scores than those assigned to low involvement tasks (staff workers). Similarly, those individuals randomly assigned to the high involvement groups were expected to report higher group involvement scores than those assigned to the low involvement groups. Thus, a main effect for the task involvement was expected on the task involvement scale and a main effect for the group involvement variable was expected on the group involvement scale.

Table I shows the predicted main effects. Subject production workers did report feeling significantly more involved with their tasks ($\bar{X}_P = 22.3$) than subject staff workers ($\bar{X}_S = 15.8$). In addition, high involvement group members reported feeling significantly more a part of a group effort ($\bar{X}_H = 20.7$) than low involvement group members ($\bar{X}_L = 18.1$). The main effect for group involvement on the task involvement scale, as well as the evidence of interaction effects may be more indicative of correlated feelings associated with the treatments than it is indicative of a confounding of those treatments per se. The treatments did, after all, involve separate and distinct manipulations. In addition, if the two treatments were truely confounded, one would

TABLE I

ANOVAS: TASK AND GROUP INVOLVEMENT MANIPULATION CHECKS
N=164

	Dependent Variables	
Sources of Variation	Task Involvement Scale (F-value)	Group Involvement Scale (F-value)
Task Involvement	109.193***	.371
Group Involvement	11.761***	18.900***
Task X Group Involvement	3.596	4.499*

*$p \leq .05$

***$p \leq .001$

have expected a similar set of results on the group involvement scale. Perhaps members of high involvement groups give more meaning to their tasks than individuals in low involvement groups. Stated differently, perceived task involvement may be a subset of group involvement, but group involvement scores appear to be independent of the type of task.

Performance Feedback Believability

The final manipulation check concerned the question of the believability of the performance feedback. Since performance data was fed back to the groups in a random manner it was imperative that it be believable if it was to have any utility as a dominant cue (Staw, 1975).

A manipulation check question, similar to that used by Staw (1975) was employed in this study. The question asked individuals to "rate (on an eleven-point scale) your group's ability to perform in this exercise compared to other groups." If the feedback given to the groups was believable, individual members of groups receiving high performance feedback should rate their groups significantly higher in ability than individual members of low feedback groups. Individual members of high feedback groups did, in fact, rate their groups statistically higher ($P \leq .001$) in ability ($\bar{X}_H = 8.39$) than did members of the low feedback groups ($\bar{X}_L = 6.52$).

In summary, the experimental manipulations used in this study to bi-polarize the independent variables were successful. While the distinction between task involvement and group involvement was, perhaps, not as distinct and clean as one might wish, the predicted main effects were, in fact, statistically significant.

Selection of the Appropriate Analysis

The design of this experiment might appear to warrant a split-plot form of statistical analysis. That is, each group of subjects could be viewed as a unique plot or whole unit. The whole units would randomly be assigned to two treatment conditions: group involvement (high/low) and feedback (high/low). Subplots existing within each of these whole units would include the type of task (production/staff) an individual is assigned and the individual's locus of control (internal/external). These latter treatments are assumed under the split-plot design to be randomly assigned within each whole unit rather than across all experimental subjects.

Two problems are associated with the use of the split-plot analysis in this case. (1) It was necessary to allow students to volunteer for specific time slots. This negated the randomization of the locus of control variable within each whole unit, or group. For some time slots, only internals volunteered, while for others more internals volunteered than externals, and vice versa. Rather than discarding this data or turning away participants, this variable was randomized over the entire population of subjects. Therefore, the use of the split-plot analysis, in this instance, would have involved many empty cells (treatment combinations). (2) A statistical package often recommended to deal with the split-plot design is the Statistical Analysis System, S.A.S., (Service, 1972). This system requires equal cell sizes which would have necessitated a reduction in the data set, even without the locus of control variable, from 164 to 144 subjects. This loss of 20 individuals (5 groups) would have represented more than 12% of the data

collected.

The above problems were examined on theoretical and empirical grounds. Theoretically, it can be argued that the most appropriate use of the split-plot design concerns the case of having a unique unit which has special characteristics which cannot be divided. The fact that the groups of students used in this study were experimental groups-not unique social groups - constitutes one avenue of argument. Stated differently, the experimental groups in this study did not have the time to develop interaction and social patterns making one group unique from another. It can, therefore, logically be argued that a necessary precondition for the use of the split-plot design was absent in this case.

Empirically, would it make any difference? As a preliminary analysis, both a 2X2X2 factorial and split-plot designs were used with the same data set (N=144, nine observations per treatment combination). The locus of control independent variable was not used because, as was discussed above, its inclusion would have resulted in an unbalanced design. Of the 66 tests of significance associated with this study's hypotheses, only four would have been affected enough by the method used (ANOVA versus split-plot) to alter the level of significance. Thus the difference between the two techniques appears to be minimal for this study.

In summary, theoretically as well as empirically, the factorial design seems adequate for this study. The split-plot design, although perhaps more aesthetically pleasing, is not necessary for use in this case. It is conceivable that had the groups had longer histories, the use of the split-plot design may have been necessary. A 2X2X2X2 fac-

torial design was, therefore, used as the basis for analyzing the results of this study. This allowed for the use of the full range of variables (including locus of control) and data available.

Instrumentation Adequacy

Measures of self-report descriptions used in this study were divided into two types: individuals' descriptions of their groups and individuals' descriptions of individuals within those groups. Group descriptions involved cohesiveness, communications and leader behavior. The three-item cohesiveness instrument had a coefficient alpha of .83. The two-item communication instrument had a coefficient alpha of .84. The LBDQ, Form XII, was used to tap leader behavior (initiating structure and consideration). This instrument's psychometric properties were reported earlier (Chapter IV). The two-item scale intended for use in gathering individual descriptions of group task conflict proved to be too internally inconsistent (coefficient alpha of .36) to be used.

Individual descriptions involved ability, motivation and satisfaction (with work, supervision and co-workers). The three-item group member ability instrument had a coefficient alpha of .81. The two-item group member motivation instrument had a coefficient alpha of .79. The psychometric properties of the Job Description Index, from which the satisfaction scales were taken, were discussed previously (Chapter IV).

Proposition I: The Attribution Effect

A major premise of this study was that knowledge of performance would affect the self-reporting of group and individual characteristics

as reflected in Hypotheses I(A) through I(J). The main effects for feedback shown in Tables II and III support this phenomenon. A main effect for feedback was found with respect to descriptions of group cohesiveness, leader initiating structure, leader consideration, individual group member ability, group member motivation, individual satisfaction with supervision, and individual satisfaction with their co-workers. All of the research hypotheses stemming from Proposition I were, therefore, supported except I(B) and I(H) dealing with descriptions of group communications and individual satisfaction with work, respectively.

An examination of cell means (Table IV) reveals that members of high feedback groups described their groups as more cohesive, and their group leaders as exhibiting more initiating structure and consideration than members of groups receiving low performance feedback. Self-reported descriptions of individual group members followed a similar pattern. Members of high feedback groups reported individuals within their groups as higher in ability and higher in motivation than members of low feedback groups. In addition, high feedback group members described themselves as more satisfied with the type of supervision they were receiving, and more satisfied with their co-workers than individuals in groups receiving low performance feedback.

To summarize, the main effects for feedback shown in Tables II and III provide strong support for the existence of the attribution effect posited in Proposition I. Support was found for a majority of the hypotheses stemming from this proposition. Members of groups (experimental), receiving high performance feedback, did describe their groups and its members in significantly more favorable terms than did members of low

TABLE II

ANOVAS: SELF-REPORT DESCRIPTIONS OF GROUP DIMENSIONS
N=164

Sources of Variation	Cohesiveness (F-value)	Communication (F-value)	Leadership: Initiating Structure (F-value)	Leadership: Consideration (F-value)
Main Effects				
Group Involvement (GRPINV)	9.489**	21.866***	.030	9.643**
Feedback (FEED)	5.293*	.351	12.982***	12.285***
Locus of Control (LOC)	.032	.096	.143	.325
Task Involvement (TASKINV)	4.843*	11.840***	.668	5.079*
Two-Way Interactions				
GRPINV X FEED	.291	.7.8	2.536	5.814*
GRPINV X LOC	.362	.001	.294	.293
GRPINV X TASKINV	.729	4.400*	2.872	5.268*
FEED X LOC	.109	.623	.563	.381
FEED X TASKINV	.224	.055	4.170*	.861
LOC X TASKINV	1.328	.282	.085	5.279*
Three-Way Interactions				
GRPINV X FEED X LOC	.143	.346	.017	.707
GRPINV X FEED X TASKINV	.698	.217	.023	2.031
GRPINV X LOC X TASKINV	.374	.549	.031	.279
FEED X LOC X TASKINV	.169	.058	.048	1.180
Four-Way Interaction	.136	.001	.199	.012

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

TABLE III

ANOVAS: SELF-REPORT DESCRIPTIONS OF INDIVIDUALS
N=164

	Individual Descriptions				
			Satisfaction		
Sources of Variation	Group Member Ability (F-value)	Group Member Motivation (F-value)	With Work (F-value)	With Supervision (F-value)	With Co-Workers (F-value)
Main Effects					
Group Involvement (GRPINV)	10.506***	7.928**	3.334	1.838	1.936
Feedback (FEED)	21.515***	4.389*	1.195	14.189***	6.079*
Locus of Control (LOC)	.927	.230	.005	1.254	.350
Task Involvement (TASKINV)	.517	3.266	2.527	1.133	.159
Two-Way Interactions					
GRPINV X FEED	.000	.647	.048	1.232	.033
GRPINV X LOC	.017	.006	.007	.310	.059
GRPINV X TASKINV	.619	1.469	2.724	3.315	4.440*
FEED X LOC	.235	1.415	3.819*	.342	.044
FEED X TASKINV	2.448	4.480*	.290	.652	1.029
LOC X TASKINV	.289	1.680	1.029	2.108	3.287
Three-Way Interactions					
GRPINV X FEED X LOC	1.282	.290	.452	.239	.021
GRPINV X FEED X TASKINV	.117	.154	.604	2.476	.698
GRPINV X LOC X TASKINV	.418	.000	.330	.868	.258
FEED X LOC X TASKINV	1.646	2.744	.023	6.013*	.434
Four-Way Interaction	.871	3.033	1.412	.174	.001

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

TABLE IV

MEAN HIGH AND LOW FEEDBACK
GROUP MEMBER RESPONSES
N=164

Dependent Variables	Mean Values: High Performance Feedback	Mean Values: Low Performance Feedback	F Value
Group Descriptions			
Cohesiveness	27.95	26.33	5.29*
Communication	16.71	16.24	.35
Leader Initiating Structure	28.19	24.01	12.98***
Leader Consideration	30.93	27.77	12.29***
Individual Descriptions			
Group Member Ability	24.47	21.03	21.52***
Group Member Motivation	18.91	18.05	4.39*
Satisfaction with Work	39.55	38.26	1.20
Satisfaction with Supervision	49.29	46.42	14.19***
Satisfaction with Co-Workers	47.90	46.08	6.08*

*$p \leq .05$

***$p \leq .001$

performance feedback groups.

Proposition II: Interaction Effects

Proposition II (Chapter III) argues that the relationship between performance feedback and self-report descriptions (the attribution effect) will be affected by the individual describer's locus of control, the degree of task involvement, and/or by the degree of group involvement. Hypotheses II(A1) through II(J3) were stated in Chapter IV proposing how each of the above factors might interact with feedback. The effects of these two-way interactions on the dependent variables described earlier are also shown in Tables II and III. While all two-way interactions are shown in these tables, only those involving the feedback variable are of concern at this time.

Only four of these two-way interaction effects were statistically significant. This small number of significant interaction effects indicates only limited evidence for an impact of situational and individual variables on the effect of performance feedback on self-report descriptions. This does not mean that these variables may not directly impact on self-report descriptions. These direct impacts are not a part of the original research question but will be addressed in a post hoc analysis.

Leader Behavior

Two of the interaction effects involve descriptions of leader behavior. Task involvement interacted with feedback in the description of leader initiating structure, while group involvement and feedback interacted with respect to leader consideration descriptions. Figure 7

illustrates the interaction between task involvement and feedback on descriptions of initiating structure. It was expected in the hypotheses stemming from Proposition II that production workers, because of a higher degree of task involvement, would react more to feedback cues than staff workers. The opposite occurred, however. The staff worker, in a much better position to objectively observe leader behavior, relied more heavily on performance feedback in describing leader initiating structure behavior.

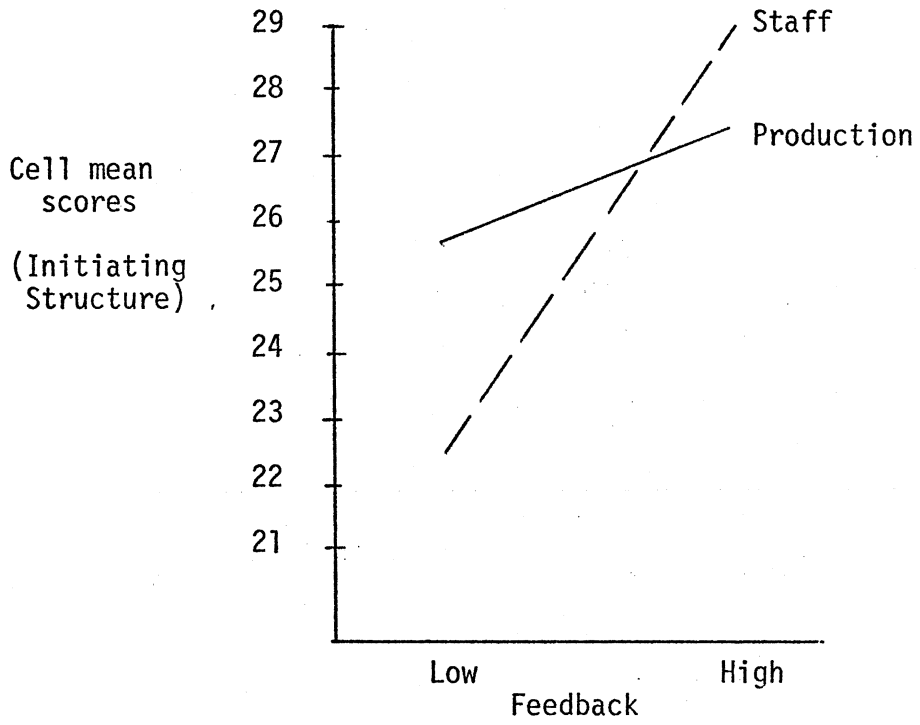


Figure 7. Interaction Effect: Feedback and Task Involvement on Leader Initiating Structure Scores

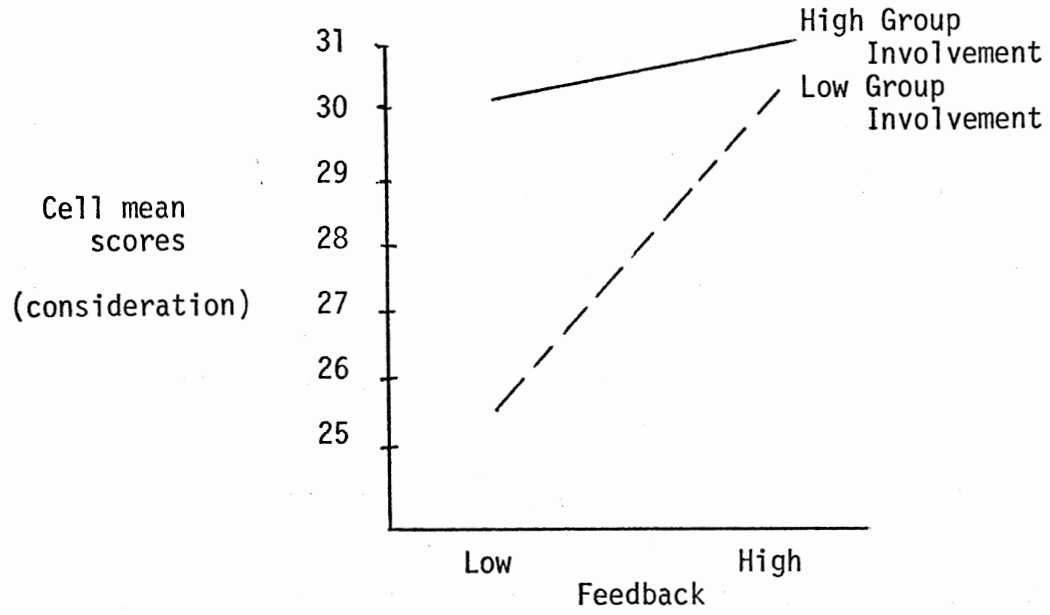


Figure 8. Interaction Effect: Feedback and Group Involvement on Leader Consideration Scores

Figure 8 illustrates the interaction between the group involvement and feedback treatments on ratings of leader consideration. Again, a similar pattern emerges. Members of low involvement groups, seemingly in a better position to objectively observe leader consideration behavior, relied more heavily on performance feedback in ascribing consideration behavior to their group leaders.

These findings are surprising in light of the fact that there was a distinct difference in actual leader behavior. It was, in fact, one of the bases of experimentally manipulating group involvement. Leaders (confederates) were instructed to behave in a more considerate fashion in the high involvement groups than in the low group involvement treatment. This experimental manipulation was effective as evidenced by the presence of a main effect for group involvement on the consideration scores. Members of high involvement groups did perceive their leaders

as more considerate ($\bar{X}_H$ = 30.75) than did low involvement group members ($\bar{X}_L$ = 27.96). However, this manipulation was independent of performance feedback.

Group Member Motivation

A two-way interaction, feedback by task involvement, also emerged for individual descriptions of group member motivation. Figure 9 details this interaction effect. Once again, those individuals, in a position fostering objectivity by virtue of a lower degree of task involvement, made more use of performance data in describing the motivational state of others.

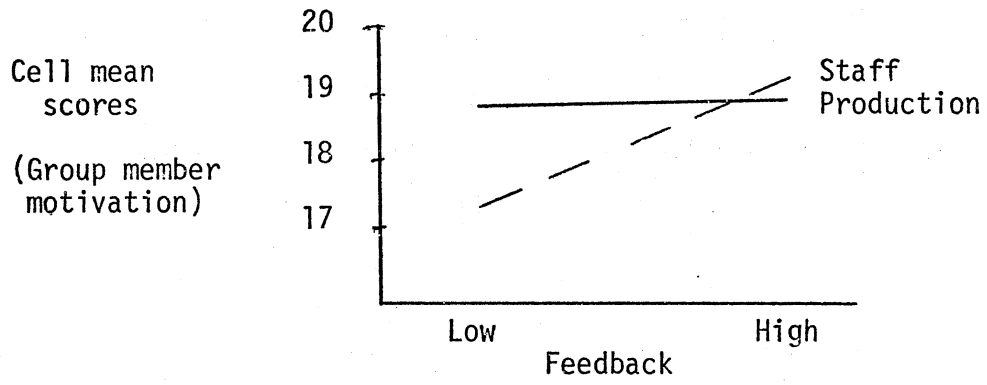


Figure 9. Interaction Effect: Feedback and Task Involvement on Group Member Motivation Scores

The results associated with these three interactions contradict what was expected. The hypotheses (II A1&2, B1&2, ..., J1&2) dealing with task and group involvement interactions with feedback were written to reflect actor-observer differences. Jones and Nisbett (1972)

reported that actors attributed their own behavior to the situation they were faced with (an external explanation) while observers attributed behavior to the actors' qualities or dispositions (an internal causal explanation). The limited results reported here suggest that individuals in less involved positions (observers) are more apt to resort to external cues (i.e., performance feedback) than are those in more actively involved positions (actors).

Satisfaction With Work

The remaining significant two-way interaction involved the effect of feedback and locus of control on individual reported work satisfaction. Figure 10 illustrates this relationship. This result is also in the direction opposite of that predicted by hypothesis II (H3).

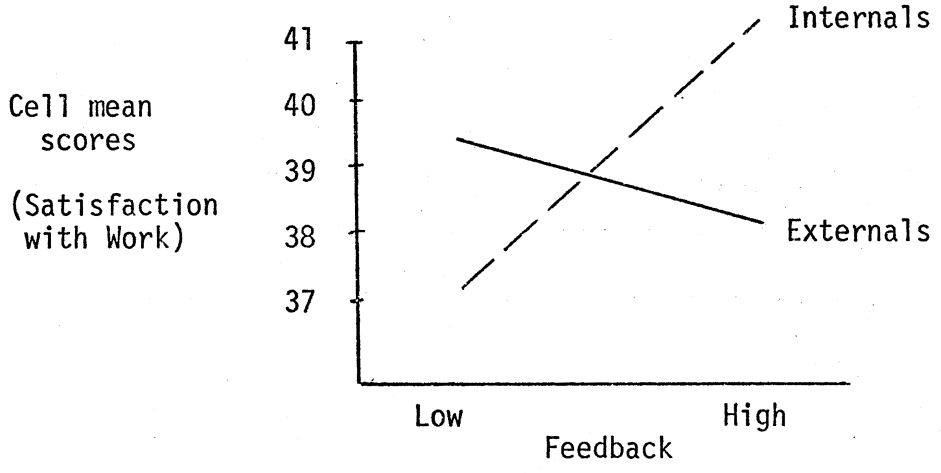


Figure 10. Interaction Effect: Feedback and Locus of Control on Satisfaction with Work Scores

Internals made more use of performance feedback in reporting work satisfaction than did externals.

In summary, no support was found for any of the two-way interaction effects as stated in Hypotheses II (A1) through II (J3). Limited support was found for implying a reverse relationship to that hypothesized, in some instances.

Proposition III: Expected and Actual Future Performance

Table V shows that the performance feedback received following the first production period had no significant affect on individual expectations for performance (production or profits) in Production Period II. Similarly, the level of performance feedback received after period I had no significant effect on the actual quantity produced or profits earned in period II. Members of high feedback groups (period I) did not produce a significantly greater number of acceptable spacecraft in period II ($\bar{X}_H$ = 3.43 craft) than did members of low feedback groups ($\bar{X}_L$ = 4.15 craft), nor were their profit levels significantly different ($\bar{X}_H$ = \$-5.10 million versus $\bar{X}_L$ = \$-1.08 million). These results failed to confirm the possibility of blaming or crediting as leading to subsequent performance given the initial level of feedback received. In conclusion, no support was found for Hypotheses III (A) through (D). Perhaps the novel nature of the task used precluded these effects.

Post Hoc Analysis

The results of this study indicate that performance feedback is a strong determinant of self-reported descriptions, at least in experi-

TABLE V

ANOVAS: PREDICTED FUTURE PERFORMANCE
N=164

Sources of Variation		Predicted Performance: Expected Production (F-value)	Predicted Performance: Expected % Profit Increase (F-value)
Main Effects			
Group Involvement	(GRPINV)	7.700**	4.195*
Feedback	(FEED)	.198	.066
Locus of Control	(LOC)	3.035	.736
Task Involvement	(TASKINV)	.135	.014
Two-Way Interactions			
GRPINV X FEED		1.915	.685
GRPINV X LOC		.157	1.536
GRPINV X TASKINV		.327	.302
FEED X LOC		.008	2.178
FEED X TASKINV		.341	.737
LOC X TASKINV		.280	1.850
Three-Way Interactions			
GRPINV X FEED X LOC		.633	1.325
GRPINV X FEED X TASKINV		.001	.856
GRPINV X LOC X TASKINV		1.641	.051
FEED X LOC X TASKINV		.241	.034
Four-Way Interaction		.545	.055

*$p \leq .05$

**$p \leq .01$

mental groups working on a novel task. Post hoc analysis allows for considering a more fundamental question: Is performance feedback the only cue utilized in making self-report descriptions? Stated differently, what are the direct effects of group involvement, task involvement, and locus of control on self-reported descriptions of groups and group members? Tables II and III show the direct effects of these variables on self-descriptions, separately and in combination.

Group involvement impacted directly on descriptions of group member ability, and group member motivation. The first three of these main effects were expected due to actual differences between the low and high involvement conditions. That is, as Table VI shows, members of high involvement groups reported higher levels of group cohesion, group communication, and leader consideration than low involvement group members. These results cannot be tied directly to attribution theory as they are likely the product of actual behavioral cues. On the other hand, members of high involvement groups did ascribe higher levels of ability and motivation to members of their groups than low group involvement members. High involvement group members attributed to their group members greater degrees of ability and a desire to perform well (motivation), when their groups were, in fact, not better performers. A comparison of actual performance for high and low involvement groups revealed that there was no significant difference between them with respect to either production quantity or profits. It is possible, therefore, that certain group conditions (e.g., high interaction) may be used as cues for describing individual characteristics.

Task involvement impacted directly on the self-reported descriptions of group cohesion, group communication, and leader consideration

TABLE VI

MEAN RESPONSES FOR HIGH AND LOW
GROUP INVOLVEMENT MEMBERS
N=164

Dependent Variables	Mean Values: High Involvement Group Members	Mean Values: Low Involvement Group Members	F Value
Group Descriptions			
Cohesiveness	28.20	26.07	9.49**
Communication	17.98	14.90	21.87***
Leader Initiating Structure	26.09	26.21	.03
Leader Consideration	30.75	27.96	9.64**
Individual Descriptions			
Group Member Ability	23.97	21.55	10.51***
Group Member Motivation	19.06	17.90	7.93**
Satisfaction with Work	39.94	37.85	3.33
Satisfaction with Supervision	48.40	47.35	1.84
Satisfaction with Co-Workers	47.52	46.48	1.94

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

(Table II). An examination of mean responses (Table VII) reveals that production workers reported significantly higher degrees of group cohesion, group communication, and leader consideration than staff workers. The task involvement variable had no impact, however, on reported descriptions of individuals within the groups.

The main effects of group involvement and task involvement on self-report descriptions reveal an interesting pattern. Both variables represent situational factors. Group involvement is a situational variable affecting all members of the same group. Task involvement, meanwhile, affects individual members within groups. It is interesting to note that situational factors common to all group members (group involvement) seem to lead to biases in descriptions of members within those groups. On the other hand, situational factors unique to individuals (task involvement) seem to hamper objectivity in descriptions of group characteristics. Evidence exists, therefore, supporting the notion that performance feedback is an important, but not the sole, source of ascriptive information.

In addition to their main effects, group involvement and task involvement have an interactive effect on descriptions of group communication, leader consideration, and individual satisfaction with co-workers. Figures 11, 12, and 13 illustrate each of these interaction effects, respectively. In all three cases, descriptions reported by staff workers (low task involvement) were more affected by the type of group to which they belonged (group involvement) than descriptions reported by production workers (high task involvement). Although no pattern of bias emerged, as in the main effects, previous results were supported. Staff workers, occupying the more potentially objective

TABLE VII

MEAN RESPONSES FOR HIGH AND LOW
TASK INVOLVEMENT INDIVIDUALS
N=164

Dependent Variables	Mean Values: High Involvement Task Individuals (Production)	Mean Values: Low Involvement Task Individuals (Staff)	F Value
Group Descriptions			
Cohesiveness	27.91	26.41	4.84*
Communication	17.61	15.35	11.84***
Leader Initiating Structure	26.63	25.67	.67
Leader Consideration	30.39	28.39	5.08*
Individual Descriptions			
Group Member Ability	23.06	22.52	.52
Group Member Motivation	18.85	18.13	3.27
Satisfaction with Work	38.02	39.82	2.53
Satisfaction with Supervision	48.30	47.48	1.13
Satisfaction with Co-Worker	47.16	46.86	.16

*$p \leq .05$

***$p \leq .001$

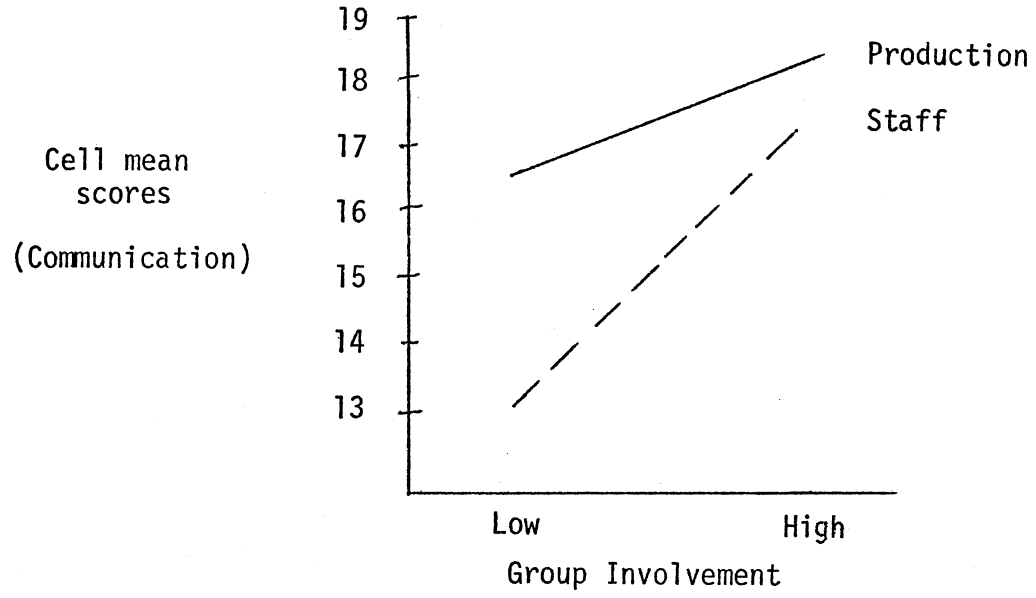


Figure 11. Interaction Effect: Group and Task Involvement on Group Communication Scores

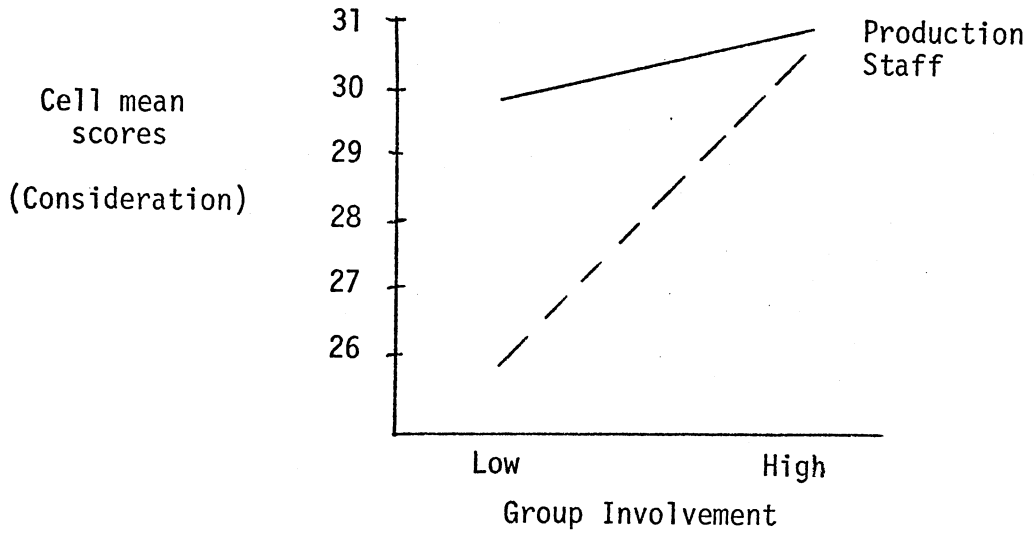


Figure 12. Interaction Effect: Group and Task Involvement on Leader Consideration Scores

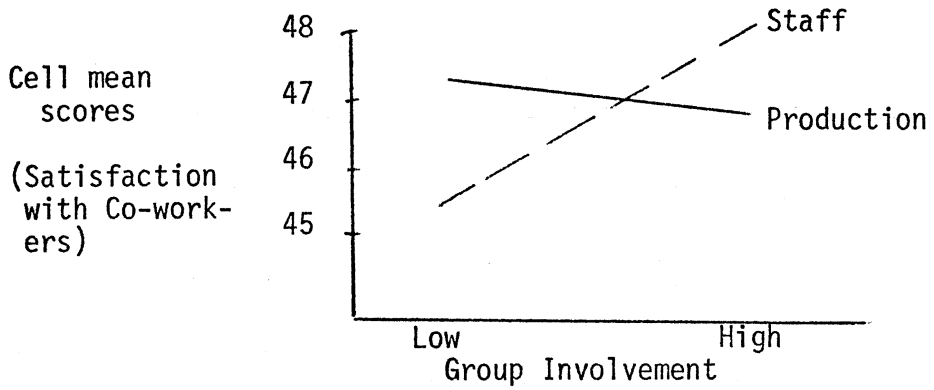


Figure 13. Interaction Effect: Group and Task Involvement on Satisfaction with Co-Worker Scores

position, were more affected by group involvement cues than those individuals assigned to more involved tasks (production workers).

No significant main effects for the locus of control treatment were found. Only one interaction effect occurred between it and the situational factors discussed above; i.e., the interaction between locus of control and task involvement on leader consideration. Figure 14 describes this interaction. The affect of the assigned task on descriptions of leader consideration was much greater for internals than externals. Because of the lack of other interaction and main effects involving the locus of control variable, and due to the large number of tests of significance conducted, this result may well have been due to chance.

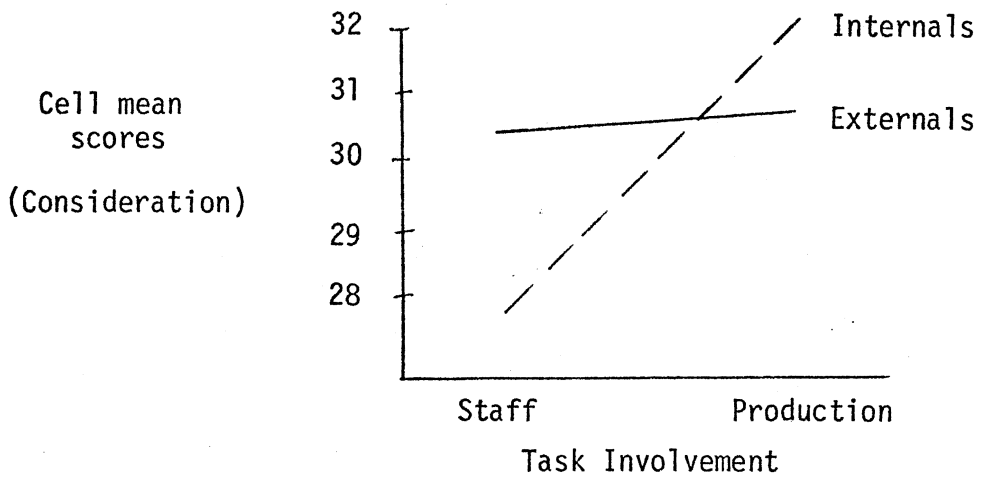


Figure 14. Interaction Effect: Locus of Control and Task Involvement on Leader Consideration Scores

CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter is fivefold. First, a brief summary of the research questions and findings involved in this study will be reviewed. Next, conclusions will be presented, followed by a discussion of their research, theoretical, and managerial implications. Following this, the limitations of the study will be examined. Finally, several recommendations will be proposed.

Summary

Understanding behavior in organizations requires information on organizational, group and individual characteristics. Researchers, and managers alike, are often not in a position to directly observe for themselves the behavior of others. This, in turn, necessitates obtaining information from others. The comprehension and prediction of individual behavior in organizations, therefore, hinges on the quality of the organizational, group, and individual descriptions supplied by others.

Attribution theory, in general, proposes that in an effort to better understand and maneuver within their environments, individuals develop their own theories of action (Heider, 1958). When confronted

with phenomena, individuals will use these internalized theories to explain what they encounter.

Attribution theory, as applied to the area of organization research (e.g., Staw, 1975), deals with the special case of individuals' internalized theories of performance. Individuals are said to develop their own theories as to the causes of good or bad performance. When asked to describe individuals or events in a performance-based situation, individuals will, according to attribution theory, elicit their internalized theories of performance as the bases of the descriptions they report. What results is the possibility that performance data may, in effect, bias descriptions. Upon the receipt of performance data, or outcomes of behavior, individuals may abandon behavioral cues as the source of their descriptions in favor of reporting a set of generalized attributes consistent with their internalized explanations of the type of outcome encountered. Rather than receiving a particular descriptive account of individual, group, or organizational characteristics, the researcher and/or manager may actually receive a set of generalized cognitive ascriptions.

To test whether knowledge of performance affects self-reported descriptions and whether this effect exists regardless of situational and individual factors, a laboratory experiment was designed using students as subjects. One hundred sixty-four subjects were administered Rotter's (1966) locus of control instrument and randomly assigned to high or low feedback groups, high or low involvement groups, and high or low involvement tasks. Nine separate instruments were used as dependent variables tapping individual descriptions of the experimental groups' and group members' characteristics.

The results showed that: (a) the experimental manipulations of feedback, group involvement, and task involvement, were successful; (b) performance feedback influenced self-report descriptions on seven of the nine instruments; (c) limited evidence was found concerning the impact of situational and individual characteristics on this performance feedback effect; and (d) there was no evidence that the performance feedback bias in self-reported descriptions affected future performance. Further, a post hoc analysis implied that performance data may not be the only source of attributed descriptions.

Conclusions

Four conclusions emerge from the above results: (1) Knowledge of performance causes individuals to cognitively attribute and report one set of characteristics for high performing groups and their members and a different set of characteristics for low performing groups and their members. (2) Situational factors (i.e., group involvement and task involvement) have a greater impact than individual factors (i.e., locus of control) on self-report descriptions, directly and indirectly through performance feedback. The individual factor employed in this study, locus of control, had little impact on self-reported descriptions, either directly or indirectly, while significant effects were found for the situational factors. (3) The less involved an individual's group or assigned task, the more likely that person is to rely on performance feedback cues as a basis for describing that group and its members. (4) Some evidence exists to preliminarily conclude that situational factors may affect self-reported descriptions differently. That is, a post hoc analysis of the data in this study

revealed that group involvement directly affected individual group member descriptions, while task involvement directly affected group descriptions. Members of high involvement groups used one set of characteristics to describe individual group members, while members of low involvement groups used a different set of characteristics. Similarly, individuals performing highly involved tasks used a different set of characteristics in describing their groups, in general, than did individuals assigned tasks lower in involvement.

Implications

Research Implications

Self-report measures, of the sort used in this study, are commonly used in organization research. According to attribution theory, knowledge of performance "causes" a set of systematic responses to self-report measures. This has important implications for organizational research.

Research results employing both performance-based and self-report descriptions may need to be re-interpreted in light of attribution theory. This is especially true for correlational research using cross-sectional methodologies; i.e., where performance data and self-report descriptions are collected simultaneously. The self-report descriptions collected may merely reflect a subset of individuals' internalized theories of performance.

Results of other studies using a cross-sectional methodology may also be subject to re-examination even though performance-based information is not directly involved in the research questions. This is because people know their own performance and, in organizations at

least, they have perceptions of the performance of their group or unit. Since knowledge of performance has been shown to affect self-reported descriptions, data collected, even though not involving performance per se, may still be reflective of respondents' knowledge of performance. Correlation studies examining the relationship between group and individual characteristics, for example, may merely be correlating data on the degree of consistency among components comprising individuals' internalized theories of action.

Moreover, performance may not be the only source of attributions. Should additional research confirm the existence of situational factor (group and task involvement) effects on self-reported descriptions (directly or through performance feedback), cross-sectional methodologies will be further threatened. Research results correlating self-reported group characteristics (e.g., cohesiveness) with individual descriptions of others (e.g., ability, motivation), may be as much a by-product of attribution theory as are correlations between group characteristics (e.g., cohesiveness) and performance. In other words, individuals may have internalized theories of group behavior just as they have theories of performance.

Staw (1975) has advocated the use of more causally-oriented methodologies (e.g., longitudinal) as a means of coping with the attribution effect associated with knowledge of performance. However, the fact that individuals carry their theories of action with them in their heads may pose as great a threat to longitudinal methods as it does to cross-sectional methods. Gathering data over points in time may not be as much a means of determining changes in actual conditions as it is a means of determining the test-retest reliability of these indi-

vidual theories of action.

Theoretical Implications

Aside from supporting the existence of the attribution effect, as defined in this paper, the results of this study have theoretical implications for attribution theory in the area of actor-observer differences. Jones and Nisbett (1972) concluded that actors look to the situation which they face in explaining events while observers look to actor dispositions. Bouchard (1976), on the other hand, contends that the observer is in the best position to give an unbiased objective account of a phenomenon. The results associated with situational (group and task involvement) factor - performance feedback interactions fails to support either of these views. Those individuals more detached from a situation (less group or task involvement) resorted to performance cues as the basis of their descriptions more than those individuals in highly involved situations (high group or task involvement). In addition, the post hoc analysis revealed similar results for the interactive effects of group involvement and task involvement on self-reported descriptions. Again, individuals assigned to perform less involved tasks (staff workers) relied more on the cues associated with group involvement in their descriptions than those individuals assigned to perform more involved tasks (production workers). Conversely, members of more actively involved groups relied more heavily on task performance cues in their descriptions than those individuals in less involved groups.

A logical explanation for these unexpected results concerns the relative saliency of the various sources of information. It is possible

that members of less involved groups and/or individuals performing less involved tasks view other sources of information as more salient than actual behavioral cues. This may be especially true for performance feedback. The increased status of the experimenter giving the feedback may have caused individuals in less involved positions (groups or tasks) to attach increased significance to it. Moreover, the novel nature of the experimental task may have caused those assigned to observe it (staff workers) to attach less significance to what task performance actually entailed. Although this information saliency argument is intuitively appealing, the recency effect of the feedback information cannot be ruled out as a rival explanation. The feedback received was the last source of information prior to the administration of the dependent measures. Recency, however, does not account for the differences in the effects of performance feedback on those in more or less involved groups or assigned tasks.

Managerial Implications

Should the results of this study be duplicated for other subject samples over other types of tasks, potential managerial areas of application become readily apparent. Two of these involve performance appraisals and organizational diagnosis.

Performance appraisal techniques entail one person (e.g., a supervisor) rating, describing, another (e.g., a subordinate) for compensatory and developmental purposes. Often the person doing the rating has access to organizational or subunit performance data. An attributional interpretation of performance evaluations would contend that knowledge of organizational or subunit performance leads to the elici-

tation of a set of ratings for the individual members of that unit. These ratings, while consistent with organizational or subunit performance data, may not necessarily be a valid description of unit members' behavior and characteristics.

Two implications stem from this: (1) The causes of performance may erroneously be attributed to the human element. That is, the work force may get credited for success and blamed for failure when, in fact, other factors may have actually had more to do with performance. (2) More importantly, however, is the fact that the developmental value of performance appraisals may be lost. One primary purpose of performance appraisals is to determine organizational members' strong and weak characteristics. This is part of the maintenance of the organization's human element. It involves utilizing individuals' strong points and either minimizing the potential impact of their weaknesses or developing those weaknesses into assets. This rests, however, on the ability to obtain accurate descriptions of organizational members. According to attribution theory, knowledge of performance may preclude this.

Organizational diagnosis, the essential ingredient in organizational development, involves the identification of an organization's problem areas. The identification of the problems underlying an organization's symptoms as well as the movement of that organization from its current state to a better state of affairs is usually accomplished with the aid of a change agent. If the results of this study are supported in future research, the change agent, due to his or her less involved position, may have a more difficult time gaining an objective view of that organization's behavior, than a manager actively involved

in a problem department within that organization. The change agent may use performance data as a cue for the elicitation of his or her own theory of performance. This internalized theory may then serve as the basis for the kinds of questions asked and eventually may lead to the agent's official diagnosis. The implication of this is that the final problem diagnosis may be the result of the initial performance information as processed through a change agent's cognitive theory of performance, rather than an objective analysis of the focal organization's problems.

Implications also exist for the role of organization members in this process. The mere arrival of the change agent constitutes a performance cue, in addition to ordinary performance data. Their responses to any diagnostic instruments may, therefore, reflect their internalized explanations of performance (and the presence of the change agent) more than actual conditions.

Sound organization diagnosis rests on getting accurate, objective information about organizational and individual characteristics and behavior. Attribution theory implies that knowledge of performance on the part of the change agent and organizational members will causally determine the final diagnosis.

Limitations

There are at least six limitations inherent in this study. The conclusions and implications discussed above must be viewed in light of these limitations.

The experimental manipulations used to create the group and task involvement treatments were successful, but were not as "clean" as

might be desired. The results (Chapter V) revealed some overlap between responses to the manipulation check instruments. In addition, clean research involves one manipulation per independent variable. This was not the case for the group involvement treatment. Three separate manipulations (participation in planning activities, compensation, and leader behavior) were used to establish high versus low degrees of group involvement. Therefore, although determining which of these manipulations caused high/low group involvement was not germane to this study's research questions, the treatment was not as precise as it could have been.

Two other potential limitations deal primarily with the question of laboratory experimentation. This type of research is commonly criticized for relying on students as subjects and for the creation of an artificial situation; in this case, "experimental" as opposed to "social" groups. Since laboratory experiments are attempts to determine cause/effect relations in a controlled setting, artificial situations are, by definition, inherent in this type of research. This, along with the use of student subjects is not necessarily bad, nor is it to be criticized a priori. The high control associated with the laboratory method leads to high internal validity. That is, the effects observed are typically the result of the treatments imposed.

The more valid area of criticism lies in the external validity of laboratory research. Generalizing from a sample of students to the larger population is, indeed, risky. However, one must keep in mind two important points: (1) Laboratory research investigates a phenomenon rather than a particular sample of the world's population, and (2) generalization involves the "application of a theory supported

by an experiment rather than the direct extrapolation of the results of a single experiment" (Zelditch, 1969; p.530). While the issues involving the use of students in a laboratory setting are not to be taken lightly, they are often merely a by-product of the more basic decisions surrounding the research questions being addressed.

A fourth potential limitation of this study involves the experimental task used. The making of elaborate paper airplanes was chosen specifically for its novelty as discussed in Chapter IV. However, its novelty may have led to unique results. As discussed earlier, the novelty of the task may have made performance feedback more salient to those individuals unfamilar with and less involved in the production of spacecraft. This could account for the unexpected results showing that staff workers relied more heavily on performance feedback than production workers in their descriptions, even though they (the staff workers) occupied the potentially more objective position.

A further limitation deals with the locus of control variable. The way this variable was dichotomized may have precluded its significance as an independent variable. Since most of the scores fell near the median, using the median as a means of dividing the distribution into internals and externals may have resulted in only minimal difference between them. The importance of locus of control can not, therefore, be entirely ruled out. It can be stated, however, that within the normal range of values, locus of control does not significantly affect self-reported descriptions, either directly or in combination with knowledge of performance.

Finally, an additional weakness of this study may involve the length of time subjects interacted in their groups. Although previous

research (Downey, Chacko and McElroy, forthcoming) ruled out history as a factor affecting the role of performance data on self-reported descriptions, it may, in fact, play a large part in the performance → attribution → performance cycle. A single instance of feedback and a single reiteration of a novel task may have been insufficient cause for altering behavior. As a result, the proposed cycle may be more aptly described and tested using Kelley's (1967) covariation model of attribution (Chapter III), which is based on individual possession of relevant causal information over successive points in time.

Recommendations

The results of this study suggest that further research is warranted in the following areas:

(1) The attribution effect has been supported with respect to the self-reporting of group and individual characteristics. Further research could be aimed at determining whether this same effect holds in the description of organizational variables (e.g., organizational climate, structural dimensions, and environmental uncertainty).

(2) If self-descriptions are subject to attribution effects, then research is deemed warranted aimed at determining whether question format has any impact on this phenomenon. Do certain types of instruments (e.g., forced-choice, checklist, Likert scale, open-ended) cause individuals to turn to performance, group, or task-oriented cues for their response sets more readily than other instruments?

(3) Additional work resolving actor-observer differences in the utilization of performance-based or other cue-oriented information would be useful. Being able to identify what cues are turned to by

individuals, and why, should lead researchers toward the development of better instruments and perhaps more refined respondent sample selection. This latter point addresses the issue of whom to ask for descriptions of a situation, group, or organization. Resolving the apparent differences in actor-observer attribution processes would assist greatly in examining this basic research question.

(4) Laboratory experimentation has turned up strong evidence supporting attribution theory. Some very potent cause/effect relationships have been identified. It would seem appropriate, therefore, to begin the process of reinterpreting behavioral phenomena in organizations in light of attribution theory. Doing this necessitates taking what has been done in the laboratory into the field. At present, examples of field studies applying attribution theory concepts are rare.

(5) Finally, in this study the method of data analysis (ANOVA versus split-plot) made little difference in the results. The question was raised, however, whether group history is a necessary prerequisite for the use of the split-plot routine in behaviorally-oriented research. This issue deserves further attention, especially as research in this area moves from the laboratory to the field. It would be valuable to determine whether the shift from experimental to mature groups necessitates a change in analysis, since it is imperative that the appropriate statistical technique be used to handle the data collected in light of the research questions being addressed.

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APPENDIX A

ROTTER'S INTERNAL-EXTERNAL LOCUS OF CONTROL SCALE

(ROTTER, 1966)

For each of the following twenty-nine items, choose the statement (either "a" or "b") which best represents your feelings about the subject. There are no right or wrong answers.

1. a. Children get into trouble because their parents punish them too much.
   b. The trouble with most children nowadays is that their parents are too easy with them.

2. a. Many of the unhappy things in people's lives are partly due to bad luck.
   b. People's misfortunes result from the mistakes they make.

3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
   b. There will always be wars, no matter how hard people try to prevent them.

4. a. In the long run, people get the respect they deserve in this world.
   b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5. a. The idea that teachers are unfair to students is nonsense.
   b. Most students don't realize the extent to which their grades are influenced by accidental happenings.

6. a. Without the right breaks, one cannot be an effective leader.
   b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7. a. No matter how hard you try, some people just don't like you.
   b. People who can't get others to like them don't understand how to get along with others.

8. a. Heredity plays the major role in determining one's personality.
   b. It is one's experiences in life which determine what they're like.

9. a. I have often found that what is going to happen will happen.
   b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student, there is rarely if ever such a thing as an unfair test.
    b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
    b. Getting a good job depends mainly on being in the right place at the right time.

12. a. The average citizen can have an influence in government decisions.
    b. This world is run by the few people in power, and there is not much the little guy can do about it.

13. a. When I make plans, I am almost certain that I can make them work.
    b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14. a. There are certain people who are just no good.
    b. There is some good in everybody.

15. a. In my case, getting what I want has little or nothing to do with luck.
    b. Many times we might just as well decide what to do by flipping a coin.

16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
    b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
    b. By taking an active part in political and social affairs, the people can control world events.

18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
    b. There really is no such thing as "luck".

19. a. One should always be willing to admit mistakes.
    b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
    b. How many friends you have depends upon how nice a person you are.

21. a. In the long run, the bad things that happen to us are balanced by the good ones.
    b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22. a. With enough effort, we can wipe out political corruption.
    b. It is difficult for people to have much control over the things politicians do in office.

23. a. Sometimes I can't understand how teachers arrive at the grades they give.
    b. There is a direct connection between how hard I study and the grades I get.

24. a. A good leader expects people to decide for themselves what they should do.
    b. A good leader makes it clear to everybody what their jobs are.

25. a. Many times I feel that I have little influence over the things that happen to me.
    b. It is impossible for me to believe that chance or luck plays an important role in my life.

26. a. People are lonely because they don't try to be friendly.
    b. There's not much use in trying too hard to please people; if they like you, they like you.

27. a. There is too much emphasis on athletics in high school.
    b. Team sports are an excellent way to build character.

28. a. What happens to me is my own doing.
    b. Sometimes I fhel that I don't have enough control over the direction my life is taking.

29. a. Most of the time, I can't understand why politicians behave the way they do.
    b. In the long run, the people are responsible for bad government on a national as well as on a local level.

APPENDIX B

PRE-CHANGE QUESTIONNAIRE: PART 1

TASK AND GROUP INVOLVEMENT

MANIPULATION CHECK

PRE-CHANGE QUESTIONNAIRE PART 1

Directions: Respond to each of the following questions by circling the number that best corresponds to your feelings at the present time.

1. To what degree do you feel you are really involved in a "group" effort in this exercise?

1	2	3	4	5
I very much feel as though this is a group effort.	I somewhat feel as though this is a group effort.		I somewhat feel as though I work on my own.	I very much feel as though I work on my own.

2. Do you get any sense of accomplishment out of the task you are doing in this exercise?

1	2	3	4	5
I am getting a strong sense of task accomplish-ment.	I am getting some sense of task accomplish-ment.		I am getting little sense of task accomplish-ment.	I am getting no sense of task accomplish-ment.

3. In this exercise, what is good for my organization is good for me.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

4. I feel that my task in this exercise is relatively unimportant to my group.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

5. To what extent do you identify with the other members of this exercise in terms of striving toward a common cause.

1	2	3	4	5
I strongly identify with other members.	I somewhat identify with other members.		I somewhat do not identify with other members.	I strongly do not identify with other members.

6. I feel that my task in this exercise is more interesting than others I could have gotten.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

7. Rather than acting as one unified group, it seems as though we are working more as separate individuals in this exercise.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

8. In this exercise, to what extent is your task crucial to the success of your group?

1	2	3	4	5
My task is extremely important.	My task is somewhat important.		My task is somewhat unimportant.	My task is extremely unimportant.

9. In this exercise, each of us will personally benefit most when the group as a whole makes progress.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

10. My task in this exercise is interesting enough to keep me from getting bored.

1	2	3	4	5
I strongly agree.	I somewhat agree.		I somewhat disagree.	I strongly disagree.

APPENDIX C

PRE-CHANGE QUESTIONNAIRE: PART 2 - PERFORMANCE FEEDBACK MANIPULATION CHECK AND DEPENDENT MEASURES

Student I.D. Number_____

Part A. This part of the questionnaire concerns what went on in your group. Place an "X" on the scale below each question in such a way that your feelings about each question are made clear.

1. To what extent do you enjoy working with your teammates?

Not at all												To a great extent
___	___	___	___	___	___	___	___	___	___	___	___	___

2. In working on this exercise, what are your personal feelings toward your teammates?

I dislike them												I like them
___	___	___	___	___	___	___	___	___	___	___	___	___

3. How would you rate the cohesiveness or group spirit of your group?

Extremely low												Extremely high
___	___	___	___	___	___	___	___	___	___	___	___	___

4. How would you rate the quantity of communication between you and your teammates?

Extremely low												Extremely high
___	___	___	___	___	___	___	___	___	___	___	___	___

5. How would you rate the quality of communication between you and your teammates?

Extremely low												Extremely high
___	___	___	___	___	___	___	___	___	___	___	___	___

6. To what extent do you and your teammates each have different ideas about methods to use in this exercise?

Not at all												To a great extent
___	___	___	___	___	___	___	___	___	___	___	___	___

7. If you and your teammates have had different ideas about solving this exercise, to what extent have you had an open confrontation of ideas?

Not at all — To a great extent

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

8. In general, how would you rate your ability in exercises of this type?

Very low — Very high

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

9. In general, how would you rate your teammates' ability in exercises of this type?

Very low — Very high

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

10. In general, how would you rate your group's ability to perform in this exercise compared to other groups?

Extremely lower — Extremely higher

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

11. To what extent are you interested in performing well on this exercise?

Not at all — To a great extent

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

12. To what extent were your teammates interested in performing well on this exercise?

Not at all — To a great extent

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

Part B. This section is to be used to describe the leader of your group (leaders skip this section). Your opinions of your leaders behavior are to be indicated by placing a circle around one answer for each question.

1. He makes his attitudes clear to the group.

   always often occasionally seldom never

2. He assigns group members to particular tasks.

   always often occasionally seldom never

3. He schedules the work to be done.

   always often occasionally seldom never

4. He maintains definite standards of performance.

   always often occasionally seldom never

5. He encourages the use of uniform procedures.

   always often occasionally seldom never

6. He asks that group members follow standard rules and regulations.

   always often occasionally seldom never

7. He lets group members know what is expected of them

   always often occasionally seldom never

8. He decides what shall be done and how it shall be done.

   always often occasionally seldom never

9. He makes sure that his part in the group is understood by the group members.

   always often occasionally seldom never

10. He tries out his ideas with the group.

    always often occasionally seldom never

11. He does little things to make it pleasant to be a member of the group.

    always often occasionally seldom never

12. He keeps to himself.

always often occasionally seldom never

13. He refuses to explain his actions.

always often occasionally seldom never

14. He acts without consulting the group.

always often occasionally seldom never

15. He treats all group members as his equals.

always often occasionally seldom never

16. He is willing to make changes.

always often occasionally seldom never

17. He is friendly and approachable.

always often occasionally seldom never

18. He puts suggestions made by the group into operation.

always often occasionally seldom never

19. He gives advance notice of changes.

always often occasionally seldom never

20. He looks out for the personal welfare of group members.

always often occasionally seldom never

Part C. In this section of the questionnaire, you are asked to judge the extent to which each of the following descriptive words accurately describes your job or work environment. For each statement, ask yourself how true the statement is, so far as you are concerned. If the statement is true, then it satisfactorily describes your own feelings. If you feel that the word is untrue then it does not accurately describe your feelings. In this case the word would be unsatisfactory as far as you are concerned.

This part of the questionnaire is composed of three categories; work, your supervisor (leader), and your coworkers. Under each category you will find a list of words. Place a "Y" beside a word if the word describes the particular aspect of your job in this exercise (work, leadership, coworkers). Place

an "N" if the word does not describe that aspect of your job in this exercise, or a "?" if you cannot decide.

For example: under the work category, the first word is facinating. If you believe that this word describes your work in this exercise, place a Y in the space. If it is not an accurate description, place an N, and if you have no opinion, place a ? in the space.

WORK

____Fascinating
____Routine
____Satisfying
____Boring
____Good
____Creative
____Respected
____Hot
____Pleasant
____Useful
____Tiresome
____Healthful
____Challenging
____On your feet
____Frustrating
____Simple
____Endless
____Gives a sense of accomplishment

SUPERVISION (Group Leader)

____Asks my advise
____Hard to please
____Impolite
____Praises good work
____Tactful
____Influential
____Up-to-date
____Doesn't supervise enough
____Quick-tempered
____Tells me where I stand
____Annoying
____Stubborn
____Knows job well
____Bad
____Intelligent
____Leaves me on my own
____Around when needed
____Lazy

CO-WORKERS

____Stimulating

____Boring

____Slow

____Ambitious

____Stupid

____Responsible

____Fast

____Intelligent

____Easy to make enemies

____Talk too much

____Smart

____Lazy

____Unpleasant

____No privacy

____Narrow interests

____Loyal

____Hard to meet

Part D. Estimate to the best of your ability how well your group will do in the next production period.

1. How many high quality spacecraft do you feel your group will be able to produce in the next production period?

   _____high quality spacecraft.

2. Do you feel your group's profit will increase or decrease in the next production period? (check one)

   _____increase
   By what percentage? _____%
   _____decrease

APPENDIX D

INSTRUCTIONS AND MATERIAL FOR HIGH INVOLVEMENT GROUPS

LINE-STAFF INTERACTION EXERCISE

The purpose of this exercise is to examine line-staff interactions. Therefore, two of you will be assigned production roles (a line activity), one of you will be assigned a leadership role (a line activity), while the remaining two will be assigned the role of observational change agents (a staff role).

Prior to your arrival, a drawing was made in order to assign you to these tasks in a random fashion.

Production Worker. "A" and "B" (subject names selected in advance), you are to perform the role of the production worker. Your task is to produce (fold) as many spacecraft (paper airplanes) as possible during each of three 5-minute production periods. You will also be responsible for ordering the proper quantity of materials and for maintaining the quality of production. You are not responsible for checking the quality of the craft produced and it would be advisable for you not to waste valuable production time and effort on this. Quality will be tested for by a third party to insure objectivity and consistency.

Leader. "C" (name selected randomly), you are to assume the role of the leader. You will be in charge of all decisions made by this organization and will perform the coordinating and recording functions as well.

Staff Personnel. "D" and "E" (subject names), you will be assigned to the staff roles. Your task, essentially, will be to observe the processes used in the production function in order to detect any weaknesses. Later in this exercise, you will be asked to make recommendations concerning how the production processes can be improved, based upon what you have observed. To maximize the potential number of change recommendations, the two staff members should make their observations independently of each other, not discussing their observations with each other.

Because this experiment is concerned with line-staff interactions, you will each be requested to fill out a pre-change questionnaire. This is simply a measure of how each of you feel about things prior to any changes recommended by the staff change agents. Later in the exercise, a post-change questionnaire will be administered. This is designed to determine how each of you feels about things after the staff people have had a chance to make their recommended changes and after the recommendations have been tried out.

Specific Exercise Instructions

Your participation in this study centers around a role playing exercise. Assume your organization (the five of you) has just been awarded a government contract to produce as many Enterprise Spacecraft as your production facilities will allow during the next three months (represented in this exercise by three 5-minute production periods). The government has supplied you with a set of blue-prints for the spacecraft. Each spacecraft must meet a set of quality control specifications (listed in the handout given to organizational members). Only those spacecraft meeting these specifications will be purchased by the government (the game coordinator).

You must buy the raw materials needed for each spacecraft from me (experimenter). The cost of these materials is variable with the quantity ordered as shown in the schedule on your instruction sheet (Appendix A). This schedule allows for quantity discounts. No carryover of raw materials is permissible from month to month. In addition, no raw materials may be returned. Whatever remains at the end of each production period is simply deducted from your organization's profits for that period.

The objective of each organization is to maximize profits over each of the three production periods by producing as many high quality spacecraft as efficiently as possible. This means not only the production of quality craft but also the proper estimation of production capacity and the ordering of the appropriate quantity of raw materials.

Included in your materials is an activity schedule (Appendix B), showing the sequence of events that is to occur during this exercise. There are three planning sessions and three 5-minute production periods. Planning Session I is 20 minutes long to allow for enough time to decide upon the amount of materials to order as well as to study the blueprints (Appendix C), and to practice the production process. Planning Session II is short, 10 minutes, since no more practice time is needed. Planning Session III is 30 minutes in duration to allow the staff people, who have been observing the production process in action for the first two production periods, time to recommend changes needed to improve the organization's processes.

Each production period is 5 minutes in length. All spacecraft and leftover materials will be collected at the end of each production period. At this time the spacecraft will be subjected to quality control inspection.

As mentioned earlier, after Production Period I, a questionnaire measuring your initial feelings will be administered Following Production Period III a modified version of this questionnaire will also be administered in order to measure your feelings following the changes made by the staff change agents in the production process.

Activity Schedule

Planning Session I is the initial meeting of your organization (all 5 members) in which the production process to use and the quantity of materials to order must be decided upon. Time should also be set aside for reviewing the blueprints, using the attached practice materials (Appendix C). All five of you will participate in this initial planning session.

Following this, Production Period I takes place. The production workers begin folding the spacecraft while the staff people begin their separate observation roles. Observation will continue from this point on, through the second planning and production periods. This should give each of the staff observers time enough to get a feel for how well the production processes work as well as to how it might be improved.

After each production period all spacecraft and leftover materials will be collected. To facilitate the timetable of activities and to insure objectivity and consistency in judgement, quality of the spacecraft will be checked by a third party. As this will take some time to do, since each spacecraft must pass several tests (as explained in your materials, Appendix A), your organization will be urged to proceed to the next planning session. Profitability will be reported to you as soon as it is calculated.

At the end of Production Period I each of you will be asked to complete a pre-change questionnaire, described earlier. Planning Session III is the time when staff change recommendations will be considered. The effectiveness of these changes will then be determined in the final production period of this exercise. At the end of the exercise, the post-change questionnaire will be administered. Following the completion of this final questionnaire, you will be compensated and released.

Subject Compensation

Your participation in this exercise is greatly appreciated and it is felt that each group should be compensated for the effort they will be putting forth. As this exercise has been used in the past, the "average" total profit level (over all three production periods) achieved by previous groups is known. To encourage your group to strive for profit maximization in each production period, your group's profitability will be judged in relation to this average group and your compensation will vary accordingly. Those groups which achieve a profitability level higher than this average figure over the three production periods will be compensated at a rate twice that of those groups failing to attain this average profitability level. Therefore, if your group fails to achieve the average

profit level for the exercise, your group will be compensated at a rate of only $.25 for every $1,000,000 of profit generated by your organization in this exercise. If however, your group exceeds the average profit level for the exercise, then your group will earn $.50 for every $1,000,000 your organization earns on the sale of spacecraft. The compensation you will receive for participating in this exercise is, in effect, a matter of your group's productivity.

APPENDIX A

Quality Control Standards

(1) Each spacecraft must stay aloft for over two seconds during test flight.

(2) There can be no "extra" folds in the spacecraft.

(3) The markings must appear as in the blue-print, give or take a small margin for error.

(4) The two wings must be level and even with each other.

Schedule of Material Costs

Number Purchased	Cost per spacecraft
0-4	$3,500,000
5-9	3,400,000
10-14	3,300,000
15-19	3,200,000
20-24	3,100,000
25 and over	3,000,000

Computation of Profit per Production Period

Total Profit per Period	=	$5,000,000 Sales Price per Space-craft	X	Total Number of Spacecraft Meeting Quality Standards	-	Total Cost of Materials Ordered for the Period

APPENDIX B

ACTIVITY SCHEDULE

Activity

A. Read General Instructions

B. Planning Session I
   Production workers and staff meet with leader to discuss materials to be ordered, appropriate production process to be used, and so on.
   Production workers look over blue-prints and practice production.
   This session ends with the placement of an order for materials and the disposal of practice materials.

C. Production Period I
   Production workers produce spacecraft.
   Leader keeps records and inventory.
   Staff personnel observe the process.

D. Administration of Pre-change Questionnaire and Collection of Spacecraft and Unused Materials.

E. Planning Session II
   Production personnel and leader meet to discuss next production period.
   Staff people continue observation.

F. Production Period II
   Repeat of "C" above.

G. Collection of Spacecraft and unused Materials

H. Planning Session III
   Staff personnel meet with others to make change recommendations in the production processes they feel, based on their observations, will make the organization more productive.

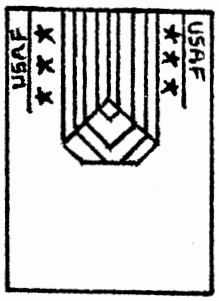
I. Production Period III
   Repeat of "C" above.

J. Post-change Questionnaire

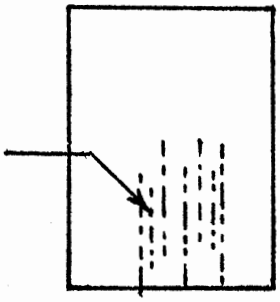
APPENDIX C

The following directions will serve as a blueprint for the manufacture of the aircraft.

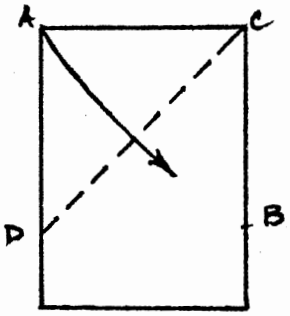
1. You should have a sheet of paper that looks like this:



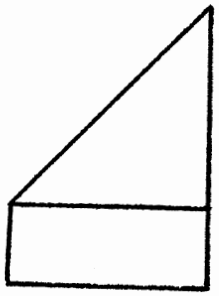
2. Turn the paper over to the blank side so that the markings are at the bottom:



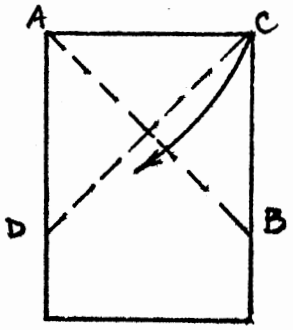
3. Fold corner A to point B



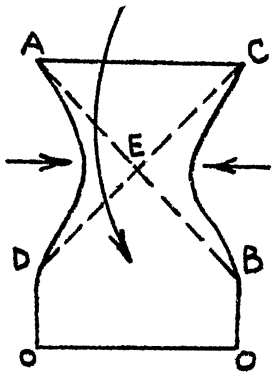
so that it looks like



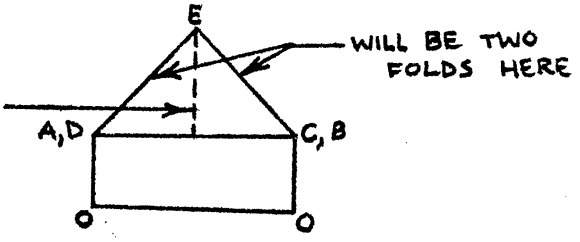
4. Reopen and fold point C to D, thus establishing fold lines AB and CD.



5. Reopen and press side AD towards side CB while pushing flat surface ACE towards the surface EDOOB

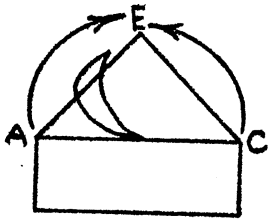


so that the aircraft will take this shape and press folds.

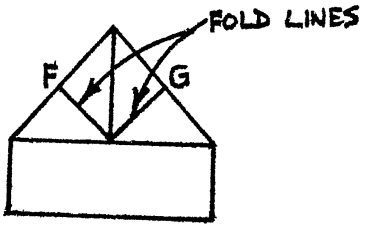


an interior fold where ADE meets CBE

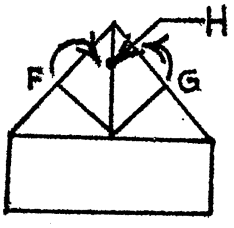
6. Bring points A and C to point E and press folds



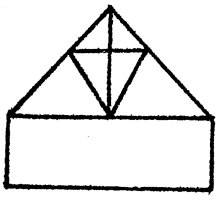
so that the aircraft now looks like:



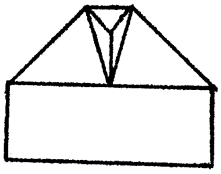
7. Bring points F and G to point H and fold



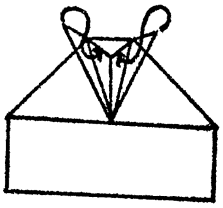
so that the aircraft looks like:



8. Fold the tip over line FG so the aircraft looks like:

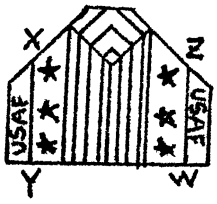


9. Open the first tabs underneath the folded-over tip

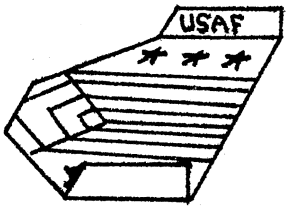


and tuck into pocket which exists on both sides of the folded-over tip. The aircraft retains the shape of step 8, but with the tabs tucked in, all the folds will hold together.

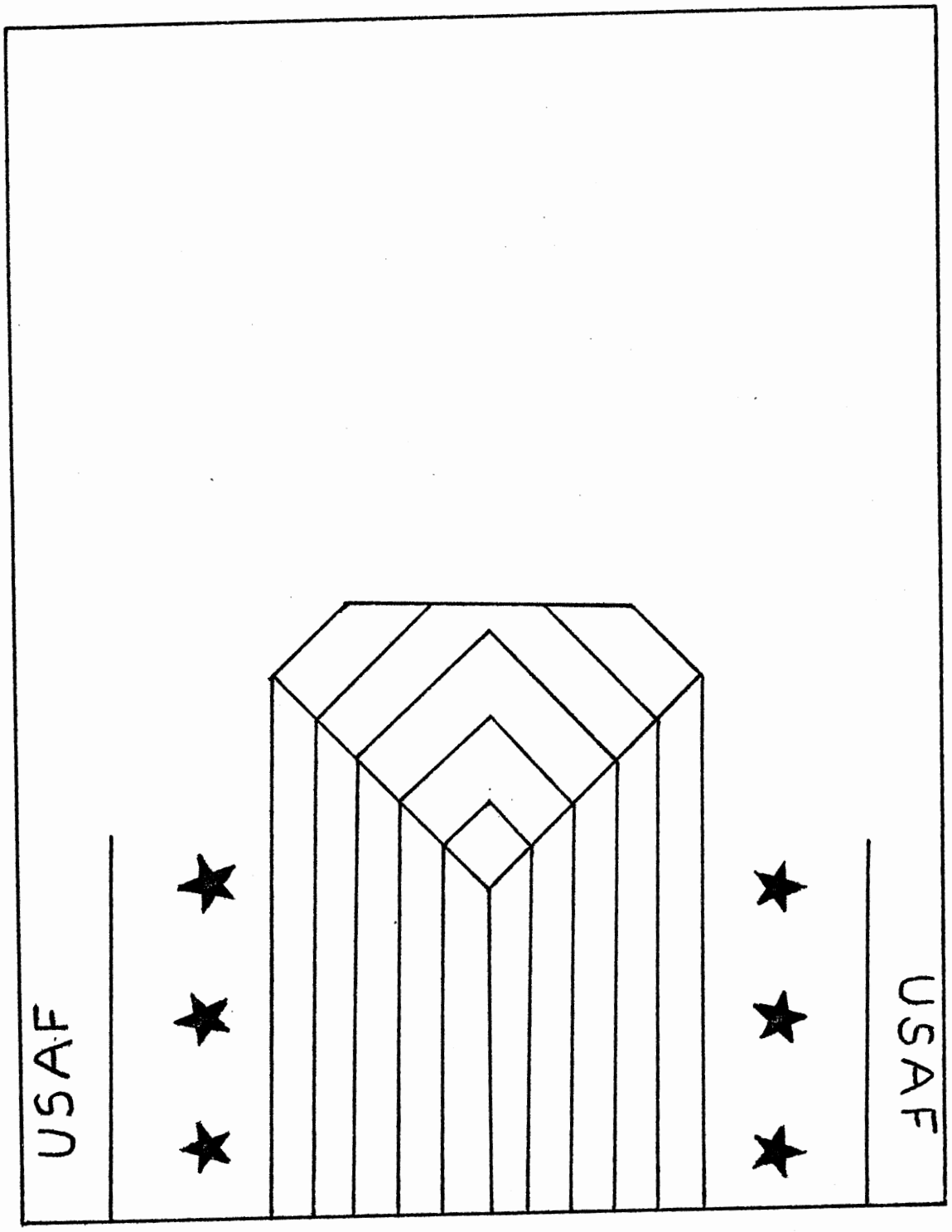
10. Turn aircraft over. It should look like this:



11. Fold wing tips up to sharp 90° angle at the lines x-y, and z-w. The finished aircraft should now look like this:



You will be given one piece of paper to test this procedure



This is a reduction from an 8½ by 11 page.

APPENDIX E

INSTRUCTIONS AND MATERIAL FOR LOW INVOLVEMENT GROUPS

LINE-STAFF INTERACTION EXERCISE

The purpose of this exercise is to examine line-staff interactions. Therefore, two of you will be assigned production roles (a line activity), one of you will be assigned a leadership role (a line activity), while the remaining two will be assigned the role of observational change agents (a staff role).

Prior to your arrival, a drawing was made in order to assign you to these tasks in a random fashion.

Production Worker. "A" and "B" (subject names selected in advance), you are to perform the role of the production worker. Your task is to produce (fold) as many spacecraft (paper airplanes) as possible during each of three 5-minute production periods. You will also be responsible for ordering the proper quantity of materials and for maintaining the quality of production. You are not responsible for checking the quality of the craft produced and it would be advisable for you not to waste valuable production time and effort on this. Quality will be tested for by a third party to insure objectivity and consistency.

Leader. "C" (name selected randomly), you are to assume the role of the leader. You will be in charge of all decisions made by this organization and will perform the coordinating and recording functions as well.

Staff Personnel. "D" and "E" (subject names), you will be assigned to the staff roles. Your task, essentially, will be to observe the processes used in the production function in order to detect any weaknesses. Later in this exercise, you will be asked to make recommendations concerning how the production processes can be improved, based upon what you have observed. To maximize the potential number of change recommendations, the two staff members should make their observations independently of each other, not discussing their observations with each other.

Because this experiment is concerned with line-staff interactions, you will each be requested to fill out a pre-change questionnaire. This is simply a measure of how each of you feel about things prior to any changes recommended by the staff change agents. Later in the exercise, a post-change questionnaire will be administered. This is designed to determine how each of you feels about things after the staff people have had a chance to make their recommended changes and after the recommendations have been tried out.

Specific Exercise Instructions

Your participation in this study centers around a role playing exercise. Assume your organization (the five of you) has just been awarded a government contract to produce as many Enterprise Spacecraft as your production facilities will allow during the next three months (represented in this exercise by three 5-minute production periods). The government has supplied you with a set of blue-prints for the spacecraft. Each spacecraft must meet a set of quality control specifications (listed in the handout given to organizational members). Only those spacecraft meeting these specifications will be purchased by the government (the game coordinator).

You must buy the raw materials needed for each spacecraft from me (experimenter). The cost of these materials is variable with the quantity ordered as shown in the schedule on your instruction sheet (Appendix A). This schedule allows for quantity discounts. No carryover of raw materials is permissible from month to month. In addition, no raw materials may be returned. Whatever remains at the end of each production period is simply deducted from your organization's profits for that period.

The objective of each organization is to maximize profits over each of the three production periods by producing as many high quality spacecraft as efficiently as possible. This means not only the production of quality craft but also the proper estimation of production capacity and the ordering of the appropriate quantity of raw materials.

Included in your materials is an activity schedule (Appendix B), showing the sequence of events that is to occur during this exercise. There are three planning sessions and three 5-minute production periods. Planning Session I is 20 minutes long to allow for enough time to decide upon the amount of materials to order as well as to study the blue-prints (Appendix C), and to practice the production process. Planning Session II is short, 10 minutes, since no more practice time is needed. Planning Session III is 30 minutes in duration to allow the staff people, who have been observing the production process in action for the first two production periods, time to recommend changes needed to improve the organization's processes.

Each production period is 5 minutes in length. All spacecraft and leftover materials will be collected at the end of each production period. At this time the spacecraft will be subjected to quality control inspection.

As mentioned earlier, after Production Period I, a questionnaire measuring your initial feelings will be administered. Following Production Period III a modified version of this questionnaire will also be administered in order to measure your feelings following the changes made by the staff change agents in the production process.

Activity Schedule

Planning Session I is the initial meeting of the production group of your organization. The production workers are to meet with the leader to determine the appropriate production process to use and the initial quantity of materials to order. Time should also be set aside to allow the production workers to review the enclosed blue-prints using the practice material provided (Appendix C). The staff people do not participate in this session. Instead, they begin their separate observations of the production group's activities.

Following this session, Production Period I takes place. The production workers begin folding the spacecraft while the staff people continue to observe (separately). Observation will continue through the second planning and production periods. This should give each of the staff observers time enough to get a feel for how well the production process works as well as to how it might be improved.

After each production period all spacecraft and leftover materials will be collected. To facilitate the timetable of activities and to insure objectivity and consistency in judgement, quality of the spacecraft will be checked by a third party. As this will take some time to do, since each spacecraft must pass several tests (as explained in your materials, Appendix A), your organization will be urged to proceed to the next planning session. Profitability will be reported to you as soon as it is calculated.

At the end of Production Period I each of you will be asked to complete a pre-change questionnaire, described earlier. Planning Session III is the time when staff change recommendations will be considered. The effectiveness of these changes will then be determined in the final production period of this exercise. At the end of the exercise, the post-change questionnaire will be administered. Following the completion of this final questionnaire, you will be compensated and released.

Subject Compensation

Your participation in this exercise is greatly appreciated and it is felt that each of you should be compensated for the time you will be spending on this exercise. Although we do have data on how much profit the average group has been able to earn in the past on the sale of spacecraft, it is felt that an individual's compensation in this exercise should not be connected in any way with his or her assigned duties and/or abilities. Each of you will, therefore, be paid a fixed amount of $3.00 for the time you have spent assisting in this exercise (regardless of how much your organization profits from the sale of spacecraft).

APPENDIX A

Quality Control Standards

(1) Each spacecraft must stay aloft for over two seconds during test flight.

(2) There can be no "extra" folds in the spacecraft.

(3) The markings must appear as in the blue-print, give or take a small margin for error.

(4) The two wings must be level and even with each other.

Schedule of Material Costs

Number Purchased	Cost per spacecraft
0-4	$3,500,000
5-9	3,400,000
10-14	3,300,000
15-19	3,200,000
20-24	3,100,000
25 and over	3,000,000

Computation of Profit per Production Period

Total Profit per Period = $5,000,000 Sales Price per Spacecraft × Total Number of Spacecraft Meeting Quality Standards − Total Cost of Materials Ordered for the Period.

APPENDIX B

ACTIVITY SCHEDULE

Activity

A. Read General Instructions

B. Planning Session I
   Production workers meet with leader to determine the appropriate production process to be used, the quantity of materials to order, and so on.
   Production workers look over blue-prints and practice production.
   Staff personnel observe carefully.
   This session ends with the placement of an order for materials and the disposal of practice materials.

C. Production Period I
   Production workers produce spacecraft.
   Leader keeps records and inventory.
   Staff personnel continue observation.

D. Administration of Pre-change Questionnaire and Collection of Spacecraft and Unused Materials.

E. Planning Session II
   Repeat of "B" above, with practice time eliminated.

F. Production Period II
   Repeat of "C" above.

G. Collection of spacecraft and Unused Materials

H. Planning Session III
   Staff personnel meet with others to make change recommendations in the production processes they feel, based on their observations, will make the organization more productive.

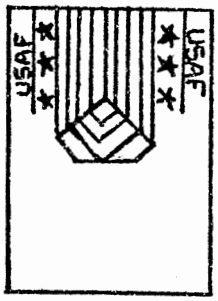
I. Production Period III
   Repeat of "C" above.

J. Post-change Questionnaire

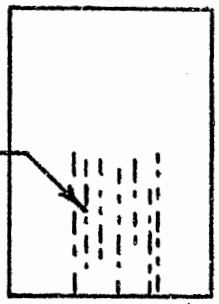
APPENDIX C

The following directions will serve as a blueprint for the manufacture of the aircraft.

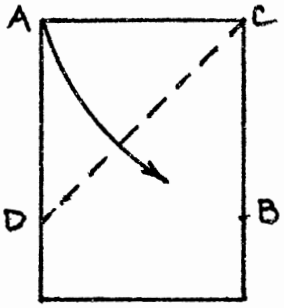
1. You should have a sheet of paper that looks like this:



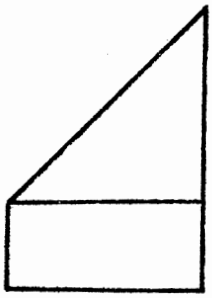
2. Turn the paper over to the blank side so that the markings are at the bottom:



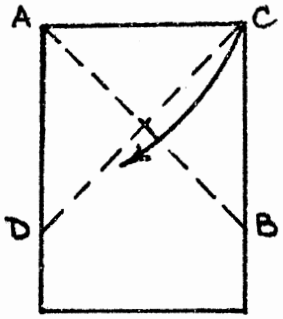
3. Fold corner A to point B



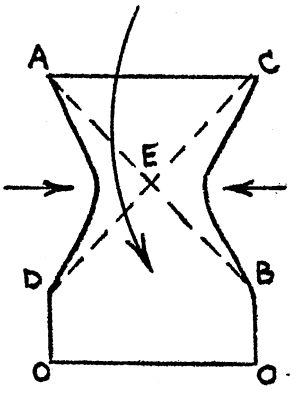
so that it looks like



4. Reopen and fold point C to D, thus establishing fold lines AB and CD.

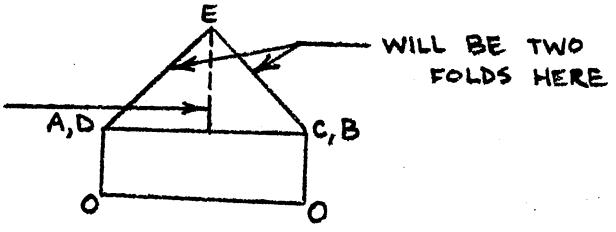


5. Reopen and press side AD towards side CB while pushing flat surface ACE towards the surface EDOOB

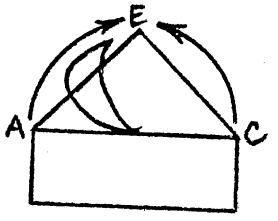


so that the aircraft will take this shape and press folds.

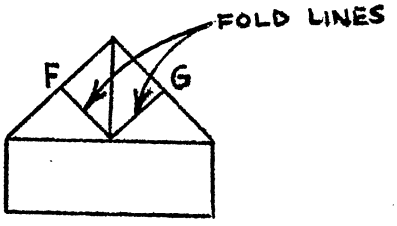
an interior fold where ADE meets CBE



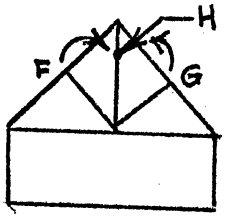
6. Bring points A and C to point E and press folds



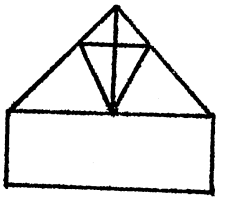
so that the aircraft now looks like:



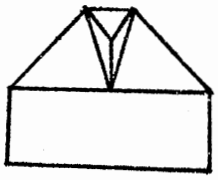
7. Bring points F and G to point H and fold



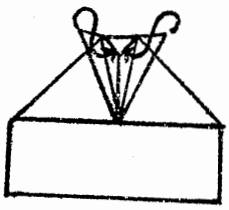
so that the aircraft looks like:



8. Fold the tip over line FG so that the aircraft looks like:

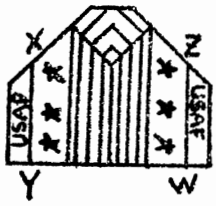


9. Open the first tabs underneath the folded-over tip

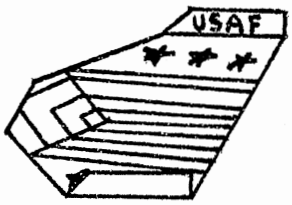


and tuck into pocket which exists on both sides of the folded-over tip. The aircraft retains the shape of step 8, but with the tabs tucked in, all the folds will hold together.

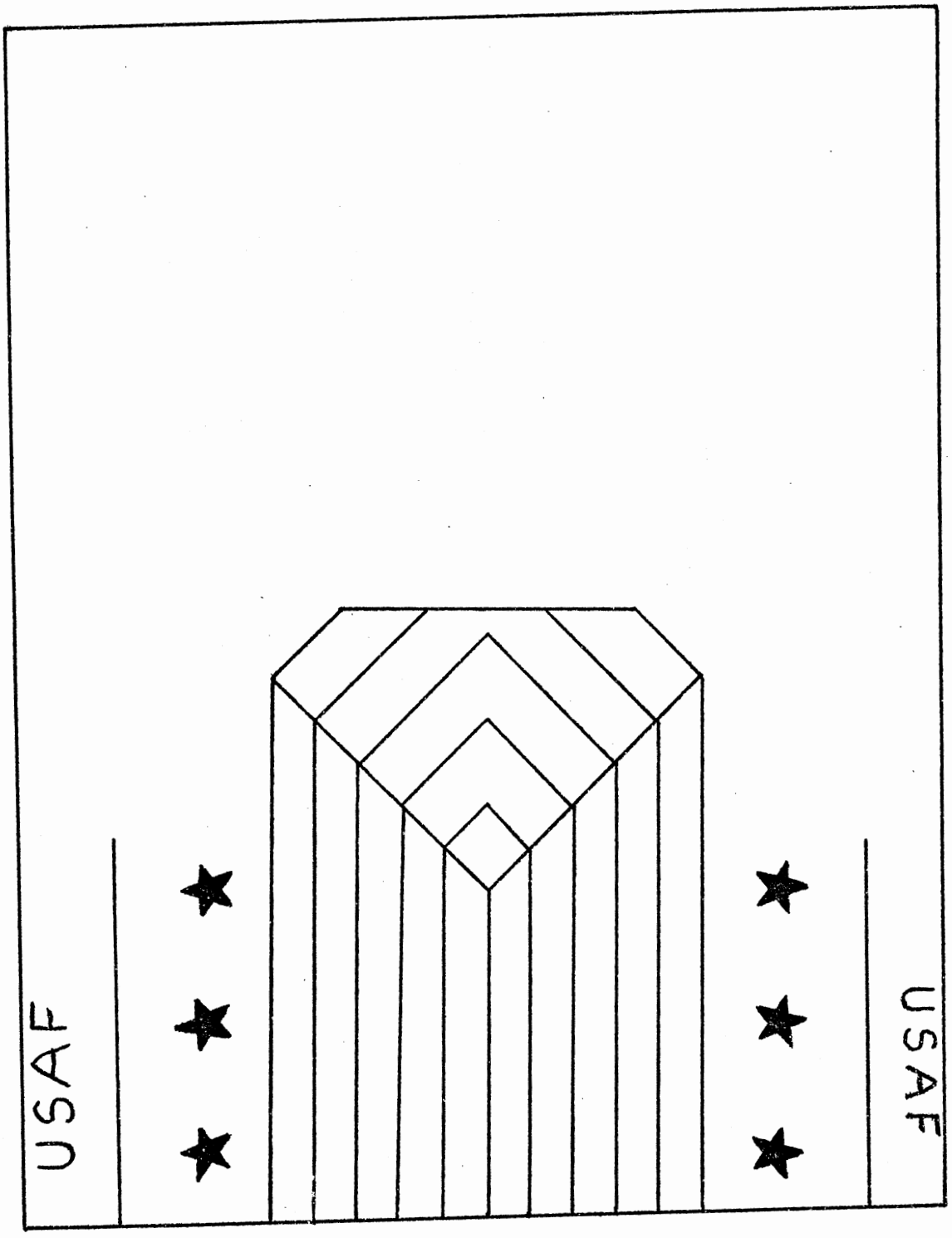
10. Turn aircraft over. It should look like this:



11. Fold wing tips up to sharp 90° angle at the lines x-y and z-w. The finished aircraft should now look like this:



You will be given one piece of paper to test this procedure



This is a reduction from an 8½ x 11 page.

VITA[2]

James Chaloner McElroy

Candidate for the Degree of

Doctor of Philosophy

Thesis: THE ATTRIBUTION PROCESS AND ORGANIZATION RESEARCH: THE EFFECT OF INVOLVEMENT AND LOCUS OF CONTROL ON THE ATTRIBUTION EFFECT ASSOCIATED WITH SELF-REPORT DESCRIPTIONS OF INDIVIDUAL AND GROUP CHARACTERISTICS

Major Field: Business Administration

Biographical:

Personal Data: Born in Glenridge, New Jersey, May 11, 1949, the son of Mr. and Mrs. John E. McElroy.

Education: Graduate from Jamestown High School, Jamestown, North Dakota, in June, 1967; received Bachelor of Science degree in Business Administration from Jamestown College in May, 1971; received Master of Business Administration degree from the University of South Dakota in August, 1972; completed the requirements for the Doctor of Philosophy degree at Oklahoma State University in July, 1979.

Professional Experience: Statistics lab instructor and grading assistant, University of South Dakota, 1971-72; Instructor, College of Business and Economics, University of Wisconsin, Superior, Wisconsin, 1972-76; Graduate Teaching Associate, College of Business Administration, Oklahoma State University 1976-79.

Professional Organizations: Member of the Academy of Management.