IMPACT OF LOCUS OF CONTROL AND INCENTIVES
ON TEAM PERFORMANCE AND
JOB SATISFACTION

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Betty A. Cooper, B.S., M.Ed.
Denton, Texas
December, 1998

With the growing use of teams in organizations and schools there is a need to better understand the individual differences of employees that might potentially increase performance and improve attitudes. The purpose of this study was to assess the impact of locus of control, which was the individual difference of interest in this study, and incentives on team performance and job satisfaction. The independent variables were locus of control and performance-based incentives. The dependent variables were team performance and team job satisfaction. Decision-quality as measured by the NASA Moon Survival Problem provided an objective assessment of team performance. The Minnesota Satisfaction Questionnaire was used to measure job satisfaction. Team structure was based on locus of control which was measured by the Rotter I-E Scale.

University students comprised the research sample of 115 teams. The unit of measurement was the small group or team. Participating class sections were randomly assigned to the treatment which was a performance-based incentive. A two-way analysis of variance provided the statistical
analysis of the dependent variables. Statistical significance of the main effect of locus of control was found for job satisfaction. Teams comprised of individuals with an internal locus of control scored significantly higher on the job satisfaction measure than did teams comprised of externals. No statistical difference was found for the main effect of incentive. Team performance also revealed no statistically significant difference between the groups. Recommendations for further study include replication using similar populations and field research in business or industry. Longitudinal studies are recommended to demonstrate progression or change over time. The use of different test instruments such as situation specific locus of control measurements and job referent measures of job-satisfaction are suggested.
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CHAPTER 1

INTRODUCTION

Faced with the ever-increasing need to improve effectiveness and efficiency, United States businesses and institutions are taking a comprehensive look at their human resources, both as individuals and as groups. Numerous factors that potentially affect individual and group performance are being scrutinized by practitioners and researchers alike. Among these factors are (a) individual differences, (b) job design, and (c) compensation strategies. This study examined these three factors and their impact on job satisfaction and performance.

The individual difference of interest in this study was locus of control. This construct describes one's perception of control over an outcome. Rotter (1990) described locus of control as the extent to which an individual believes a reward or outcome is contingent upon his or her actions versus the belief that an outcome is dependent upon luck or fate. Locus of control is reviewed in detail in chapter 2. The job design used for this research involved teams or autonomous work groups. It is within this group structure that the independent variables (i.e., locus of control and performance-based incentives) and the dependent variables (i.e., group performance and group job satisfaction) were examined. The compensation strategy was limited to
performance-based incentives given to groups for performance on a
decision-quality task.

The explosive use of autonomous work groups or teams within
organizations is evidence of corporate America's attempt to restructure the
workplace and redesign jobs in order to maintain a competitive advantage.
Katzenbach and Smith (1993) explained why teams are becoming the
primary unit of performance for an increasing number of organizations:

The performance challenges that face large companies in every
industry—for example, customer service, technological change,
competitive threats, and environmental constraints demand the kind
of responsiveness, speed, on-line customization, and quality that is
beyond the reach of individual performance. (p. 5)

Through the years, work groups have undergone a unique evolution
to arrive at the self-directed teams or autonomous work groups seen in
organizations today. Leana and Florkowski (1992) described autonomous
work groups as having increased employee control over the content and
procedures of work, as well as the opportunity to make group decisions
concerning job assignments and processes.

Past research has revealed numerous advantages of the use of
autonomous work groups. Lawler (1986) noted that improved decision
quality was one positive outcome associated with the use of teams. Other
studies have demonstrated that greater job satisfaction is related to working
within self-directed teams (Cohen & Ledford, 1991; Trist, Susman, &
Brown, 1977; Wall, Kemp, Jackson, & Clegg, 1986). For the purpose of this
study, performance as measured by improved decision quality and job satisfaction were the advantages of greatest interest.

According to Training's 1996 industry report ("Industry Report," 1996), the team concept is no esoteric intervention. This survey reported that 73% of all companies used teams in some capacity. In companies with 10,000 or more employees 81% reported using teams. The sheer proliferation of teams, as well as the time and expense incurred in the redesign and training efforts needed to execute them, justifies further study of variables that may affect the performance and job satisfaction attributed to this job design.

The use of teams can also be seen in the educational system, where teams of employees or students work together to improve their effectiveness and efficiency. Teamwork in education can be divided into two areas. The first concerns faculty, staff, administrators, parents, or community members working together to meet common goals. The second area of teamwork within school systems directly involves the students, who learn and practice how to work in a collaborative environment.

For several years school reform has moved toward greater site-based management. Although implemented in a myriad of ways and called a variety of terms, it is simply a formal way of expanding participation, cooperation, and account ability among the constituents in an individual school (Tewel, 1995). These are some of the same characteristics seen in organizational teams. Teams within this decentralized school management
concept consist of leadership teams, process improvement teams, problem-solving teams, teaching teams, and school-business partnerships.

In regard to teaming among students, the group structure may take many forms. It may involve students collaborating on projects for a particular subject or working as a team within an integrated curriculum. This integrated approach encourages systems thinking and affords students the opportunity to see the connections between the knowledge and skills of different disciplines. Student teaming may cross over grade levels or school boundaries via distance learning through computer technology. Just as with the teacher-parent-administrator teams, student teams empower the participants by providing feedback and a sense of autonomy.

Whether the team is used in the business world or in the educational setting there is a continual interest in what impacts team effectiveness. One facet of team effectiveness that has undergone extensive study is the area of job satisfaction. Researchers have been concerned with this concept and how it affects organizations, as well as what contributes to or detracts from it. Locke (1976) noted that, as of 1976, there had already been 3,350 published studies dealing with job satisfaction. Although numerous definitions of job satisfaction exist throughout the research literature, Locke defined it as "a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences" (p. 1300).

Researchers have studied a myriad of variables in the hope of discovering a promising relationship to job satisfaction. Such variables have
included job design (J. R. Hackman & Lawler, 1971; J. R. Hackman & Oldman, 1980), pay (Schwab & Wallace, 1974), absenteeism, turnover, age, education, job level, and productivity or performance, among others (Gruneberg, 1976).

The relationship between job satisfaction and locus of control has been of particular interest to researchers for decades. Locus of control—being either internal or external—refers to an individual's perception about who or what has control of a reward or reinforcement. The individual who has an internal locus of control sees outcomes as a result of personal actions, whereas one with an external locus of control attributes a reward or reinforcement to fate, circumstances, or something outside of personal control (Rotter, 1966). Studies have suggested that a directional relationship does exist between these two variables (Andrasani & Nestel, 1976; Gemmill & Heisler, 1972; Tseng, 1970).

In the current investigation, autonomous work groups add still another dimension to the research on job satisfaction. It is within this job-design context that the present study has attempted to support and extend the body of knowledge regarding job satisfaction and performance as affected by locus of control and performance-based incentives.

While studies show a directional relationship between locus of control and job satisfaction, research has also examined the effect that locus of control has on decision making. These investigations encompass a wide range of variables, from risk taking (Suresh & Rajendran, 1995) to college
or career selection (Martin & Dixon, 1991). Research has shown that
decision-making behaviors differ, depending on perception of control
(Huber, Debeutz, Pratscher, & Quehenberger, 1990). Little if any research
has been conducted to determine whether or not locus of control affects the
quality of decision making within working groups. Because decision quality
has been linked to group performance (Faden, 1995), determining the
impact of locus of control on group decision making is important to
organizations seeking to improve their performance.

Theoretical Foundations

Empirical research attempts to develop new theories or to strengthen
existing ones, because it is upon this framework that methods and tools are
developed for practical application (Senge, 1994). Senge noted that
methods and tools are limited in their usefulness when they are not based
on sound theory, because there can be no understanding of why they work
effectively or fail miserably. Based upon this reasoning, the theoretical
foundations underlying autonomous work groups and the behavioral
constructs of locus of control and job satisfaction are examined in this
study, along with their particular relationship to performance.

The proliferation of the use of autonomous work groups requires that
they be firmly established on a theoretical base. Two streams of thought
have contributed significantly to this job design. They include the
sociotechnical design that developed in England from the Travistock studies
of the 1950s (Trist & Bamforth, 1951) and the job redesign model of J. R. Hackman and Oldman (1976). The influence of these two lines of reasoning are explored in order better to understand the rationale for the use of autonomous work groups. Within the educational context these same theories of job redesign apply to the teams used to implement the various aspects of site-based management. The team structure that forms the basis for student learning is founded on the motivational theory of cooperation, as well as two cognitive theories: developmental and elaboration (Slavin, 1990).

The research model of Gist, Locke, and Taylor (1987) provided the variables used to study group effectiveness. They proposed that group structure, group strategies, leadership, and rewards are variables by which group performance may be judged. The present study focuses on two of these variables: group structure based on locus of control and rewards or incentives.

Rotter's (1966) concept of locus of control forms the theoretical foundation for the discussion of this variable. Rotter noted that social learning theory provides the general theoretical framework for the concept of locus of control.

In social learning theory, a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by that reinforcement in the future. Once an expectancy for such a behavior-reinforcement sequence is built up the failure of the reinforcement to occur will reduce or extinguish the expectancy. It seems likely that, depending upon the individual's history of
reinforcement, individuals would differ in the degree to which they attributed reinforcements to their own actions. (p. 2)

The theoretical framework for the discussion of job satisfaction is based on need-satisfaction models, as well as dispositional and situational theories. A thorough discussion of the theoretical foundations pertinent to this research is discussed in detail in chapter 2, which is a review of the literature.

Purpose of the Study

The purpose of this study is twofold. It first seeks to investigate what impact individual differences have on job satisfaction and performance for individuals working within autonomous work groups or teams. Locus of control is the specific individual difference that was examined in this study. A second purpose is to determine whether the addition of performance-based incentives has an impact on the job satisfaction and performance of employees working within these groups, which have been structured on the basis of locus of control.

The primary research intent is to strengthen the existing body of knowledge concerning the effect of individual differences and incentives on job satisfaction and performance. The practical intent is to provide human resource practitioners and organizational managers, as well as school administrators, with information that can be utilized as they seek to implement and train teams. The need to consider individual differences among employees, such as locus of control, and the motivational impact of
performance-based incentives may have profound implications for team composition and compensation strategies.

Statement of the Problem

The continuing movement toward team implementation in business and education makes it essential to understand team composition from an ever-expanding point of view. The broad central issue of this study is whether or not team composition can affect team performance and job attitudes such as job satisfaction. The element of team composition to be investigated focuses on locus of control, or perception of control. This personality characteristic has been studied extensively in individuals, but rarely in the team or group context. The need for organizations and educational institutions to form the most effective and efficient work groups presents a problem requiring further study.

Research Hypotheses

The research hypotheses for this study consist of comparisons between groups comprised solely of individuals with either an internal locus of control or an external locus of control. These group comparisons are based on two dependent variables, performance, as measured by decision quality, and job satisfaction. Garson (1995/1996) proposed similar hypotheses.
**Within-Group Comparisons of Performance**

Hypothesis 1: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task when receiving a performance-based incentive than will similar groups not receiving an incentive.

Hypothesis 2: Autonomous work groups comprised of participants with an external locus of control will perform significantly better on the decision-quality task when receiving a performance-based incentive than will similar groups not receiving an incentive.

**Between-Group Comparisons of Performance**

Hypothesis 3: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task than will autonomous work groups comprised of participants with an external locus of control when all groups receive a performance-based incentive.

Hypothesis 4: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task than will autonomous work groups comprised of participants with an external locus of control when no groups receive an incentive.
Within-Group Comparisons of Job Satisfaction

Hypothesis 5: Autonomous work groups comprised of participants with an internal locus of control will score significantly higher on the job satisfaction measure when receiving a performance-based incentive than will similar groups not receiving an incentive.

Hypothesis 6: Autonomous work groups comprised of participants with an external locus of control will score significantly higher on the job satisfaction measure when receiving a performance-based incentive than will similar groups not receiving an incentive.

Between-Group Comparisons of Job Satisfaction

Hypothesis 7: Autonomous work groups comprised of participants with an internal locus of control will score significantly higher on the job satisfaction measure than will autonomous work groups comprised of participants with an external locus of control when all groups are given a performance-based incentive.

Hypothesis 8: Autonomous work groups comprised of participants with an internal locus of control will score significantly higher on the job satisfaction measure than will autonomous work groups comprised of participants with an external locus of control when no groups receive a performance-based incentive. The direction of the hypotheses is shown in Table 1.
Table 1

**Direction of Hypotheses**

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<td>7. Effect of incentives on job satisfaction of groups with internal and external locus of control</td>
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<tr>
<td>8. Effect of no incentives on job satisfaction of groups with internal and external locus of control</td>
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**Significance of the Study**

This study is needed to confirm and extend past research concerning the role played by individual differences and group incentives with regard to job satisfaction and performance within a team environment rather than on an individual basis. For years researchers have been concerned with how to increase the effectiveness of groups in order to improve performance.
Group structure is only one element thought to affect group performance (Gist et al., 1987), and, for the purposes of this study, group structure is based on locus of control.

Earlier research has considered locus of control as a basis for group composition and has explored its impact on job satisfaction scores and group performance from the standpoint of productivity rather than decision quality (Garson, 1995/1996). Countless studies have been conducted on the role that locus of control plays regarding the health decisions or career choices of individuals, but little if any work has emphasized what part locus of control might play in group decision quality.

The concept of autonomous work groups has greatly expanded from production duties to knowledge and problem-solving teams. This maturation of the concept of teams warrants further study to ascertain whether or not individual differences such as locus of control can make a significant difference in group performance as measured by decision quality.

Similarly, no clear understanding exists concerning the utility of incentives for good group performance (Shepperd, 1995). Research has focused on the relationship between locus of control and incentives for individuals (C. R. Anderson, 1977; Hollenbeck & Brief, 1987; Kren, 1992), but little evidence is available for the group as the unit of measurement. The dearth of empirical research in this area and the practical significance to organizations make it essential that further studies be conducted. This study contributes to the research literature concerning the effects that
individual characteristics and incentives have on group performance and job satisfaction.

B. Staw (1991) submitted that a part of "what we normally think of as macro-organizational behavior is really individual behavior in disguise" (p. 809). This line of reasoning permits the researcher to observe individual characteristics (i.e., locus of control) in order to measure group outcomes (i.e., job satisfaction and performance), which is the case in the present study.

Human resource practitioners may utilize these findings to redesign jobs, modify compensation systems, and develop training for the implementation of autonomous work groups, but further assurances are needed before these practical applications come to fruition. There is a significant need for a better fit between employee and job design, which has the potential for improving performance and quality of work life for both the employee and the organization.

Basic Assumptions

In this study will was assumed that the simulation used to measure decision quality as an indicator of performance within autonomous work groups is appropriate and sufficient adequately to evaluate a difference between groups receiving a performance-based incentive and those not receiving such reward. For the purposes of this study, the assumption was also made that the terms autonomous work groups, teams, and self-directed
teams are synonymous. This assumption was based on a review of the literature, which revealed numerous terms for this concept (Goodman, Devadas, & Hughson, 1988; Sundstrom, Dmeuse, & Futrell, 1990).

Limitations of the Study

Measurement of job satisfaction and locus of control was restricted to those items included in the Minnesota Satisfaction Questionnaire Short Form (Weiss, Davis, England, & Lofquist, 1967) and Rotter's (1966) Internal-External Locus of Control Scale. Voluntary participation by the subjects limited the generalizability of the results, and student effort exerted in the simulation was limited to the degree that the performance-based incentive is personally of value.

Delimitations of the Study

This study was limited to the investigation of the impact of locus of control and group incentives on job satisfaction and group performance. For statistical purposes the unit of measurement was the team or autonomous work group. The experiment was confined to those classes within the education and business colleges at the University of North Texas, Denton, that willingly chose to participate.

Definition of Terms

For the purposes of this study the following definitions are provided. Autonomous work groups are defined as groups of individuals that
have a high level of self-management in their activities, which includes the pace of the work as well as the distribution and organization of the tasks. This involves the performance of interrelated tasks by workers who are responsible as a group for the end product (Wall et al., 1986). This term is used synonymously with self-directed work teams. Goodman et al. (1988) noted that the two terms have no conceptual difference.

Decision quality is determined through the use of the NASA Moon Survival Problem (Hall & Watson, 1970). Expert opinion used to develop this exercise ascertained the best possible solution. Scores deviating the least from this expert solution are deemed to have the highest decision quality.

Job satisfaction is "the extent to which rewards actually received meet or exceed the perceived equitable level of rewards" (Porter & Lawler, 1965, p. 31).

Locus of control—Rotter (1990) defined locus of control as follows:

[It is] the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable. (p. 489)

Performance-based incentives are defined for the purposes of this study as those incentives granted to the group for its performance on a group task measuring decision quality. In this instance the measure of performance is a consensus task. Shepperd (1995) noted that "individuals will be willing to exert effort on a collective task only to the degree that they
expect their efforts to be instrumental in obtaining outcomes that they value personally" (p. 137).

Summary

The first chapter is designed to be an overview of the research project. It begins with an introduction, highlighting the major areas of interest. This is followed by the purpose of the study, statement of the problem, and significance of the work. A succinct look at the theoretical framework is also given. The specific hypotheses to be addressed in this work are enumerated. Finally, the basic assumptions, limitations, and delimitations of the study, and definition of terms are presented for clarity.
CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

This chapter consists of a review of the literature pertinent to the design of this study and the variables of interest. A historical overview of related theories provides background for the present use of the study variables.

The first section is a discussion of autonomous work groups because this work structure forms the basis for the present study. Careful consideration is also given to the theories that form the framework for this job design. This is followed by a review of the pivotal research examining the effectiveness of autonomous work groups with respect to quality, performance, and job satisfaction. The use of teams in education is examined, along with the theories which form the foundation for this practice.

The locus of control of the individual subjects is the basis for the group composition in this study; therefore, the research pertaining to this variable is examined in the second section. Although this construct has been studied extensively, it is important to review the general theory. Attention is also given to the relationship that locus of control has to job design,
performance, and job satisfaction. This latter relationship is examined in the review on job satisfaction.

This chapter concludes with an exploration of the studies of job satisfaction. The emphasis is on the theories and models that have contributed to the most prevalent thought on this subject. Job satisfaction as it specifically relates to performance and locus of control is reviewed.

Autonomous Work Groups

Antecedents of Autonomous Work Groups

Although years of study and many researchers have contributed to the current understanding of work group behavior, this study focuses on a review of group dynamics, the sociotechnical system, and the job characteristics model. Evidence of work team effectiveness as demonstrated in quality improvement, increased performance, and possible attitudinal changes is examined through a review of the major studies in the area.

Group dynamics. From a historical perspective, autonomous work groups have been greatly influenced by the group dynamics studies led in part by Kurt Lewin, who became interested in the nature of groups and what influenced them. He believed in the value of group participation and democratic decision making. Lewin predicted the following (as cited in Johnson & Johnson, 1994):

Although the scientific investigations of group work are but a few years old, I don't hesitate to predict that group work that is, the
handling of human beings not as isolated individuals, but in the social setting of groups—will soon be one of the most important theoretical and practical fields. There is no hope for creating a better world without a deeper scientific insight into the function of leadership and culture, and of other essentials of group life. (p. 31)

One of Lewin's greatest contributions was the belief that complicated social phenomena could be studied by experimental research methods. This led the way for extensive research on many aspects of group behavior (Johnson & Johnson, 1994).

An early area of research into group behavior focused on the performance of groups in decision-making tasks (Shaw, 1932; G. Watson, 1931). Empirical research has shown that, generally, group performance surpasses that of individual performance. Using equivalent forms of an intelligence test, Watson compared individual and group performance. He found that 11 out of 15 groups scored higher than their average member and that 6 groups scored higher than their brightest individual. A year later Shaw compared individual behavior to group behavior and found much the same results. While trying to solve a series of intellectual puzzles, 3 of 5 groups were successful as compared to an individual success ratio of 3 to 21.

Later research also has supported the conclusion that group decision making is superior to an individual effort (Baron, Kerr, & Miller, 1992; Davis, 1969; Johnson & Johnson, 1989). A study conducted by Michaelsen, Black, and Watson (1989) concluded that a majority of groups can outperform their most knowledgeable member on decision-making tasks. Previously, it was thought that the upper limit of group performance would
be the knowledge base of the most capable member. It appears that group sharing of insights and ideas ultimately leads to superior decision making (Falk & Johnson, 1977; Hall & Williams, 1966). Errors are more frequently recognized by a group, and the group can take advantage of the collective memory to recall facts and details (Ziller, 1957).

These studies in group versus individual performance help to support present claims that teams or autonomous work groups are often an effective work design for organizations to consider, but, as with most any variable, there are those who refute the conclusion that group decisions are superior to those of individuals. Campbell (1968) reported contradictory evidence in his study of 80 mid-level managers. He found that group participation and discussion proved to have an inhibiting effect on the group and that the solution was actually inferior to the average individual solution.

Sociotechnical systems. The sociotechnical systems theory that developed in England in the 1950s provides the theoretical framework for the establishment of autonomous work groups. Edward Trist was credited with coining the term sociotechnical system, which refers to the interrelatedness that exists between the technical and social subsystems within an organizational environment (Trist & Bamforth, 1951). This type of organizational system considers both the technical requirements of the work and the needs of the employees while trying to optimize both. Consideration of the psychological needs of the employee is in direct
contrast to the mechanistic approach of Frederick Taylor's scientific management theory.

The social component of a sociotechnical system is comprised of the human element in the organization. The social subsystem also includes "the reasons that organizational members choose to work in the organization, their attitudes toward it, their expectations of it, patterns of supervisory-subordinate relationships, skill levels of employees, and the nature of the subgroups within the population" (Pasmore, Francis, Haldeman, & Shani, 1982, p. 1183). It is within this social subsystem that attitudes toward the organization may be manifested in some degree of job satisfaction, and locus of control often affects employee expectations.

The second major element of the sociotechnical system is the technical subsystem. It is here that the physical equipment, knowledge, skills, and processes are utilized by the social subsystem to achieve the goals of the organization (T. G. Cummings & Srivastva, 1977). The type of technology required by the organization often dictates some of the responses of the social system. Task variety, span of control, participation, and degree of interrelatedness needed are often defined by the technology.

To be effective, it is necessary that the two subsystems work interdependently within the confines of the organizational environment. This can be brought about when employees are able to control variances (Van de Ven & Joyce, 1981). Pasmore et al. (1982) defined a variance as "any unprogrammed deviation from standards or procedures that is brought
about by the state of materials used, or the normal state of technical procedures" (p. 1187). It can be further described as "incorrect assumptions, mistakes, guesses, misinformation, misunderstanding, and trade-offs" (Purser & Pasmore, 1992, p. 53). This demonstrates the need for appropriate training and adequate access to essential information as well as autonomy over decision making. The major concern of sociotechnical systems, as well as autonomous work groups, is to design jobs that will both improve the quality of work life and increase performance. Although this theory offers little help in how this is to be accomplished, it does provide a way of thinking about the design of jobs that had not been considered before.

An extension of the sociotechnical system could be felt in the 1960s, when employee participation became increasingly prevalent in organizations that practiced the human resources approach, often called humanistic management (Greenberg, 1977). The main focus was on the growth and development of the employee (Argyris, 1964) rather than on management. Nevertheless, the organization benefited from increases in the skill and ability levels of the employee as greater opportunities for autonomy and responsibility were given.

**Job characteristics model.** The assumption is that increased control, autonomy, and responsibility can be motivating to the employee, resulting in greater productivity and satisfaction. J. R. Hackman and Oldman's
Job Characteristics Model is a job design motivation theory that greatly expands the concept of employee involvement and demonstrates how job designs can be motivating to the employee. It is based on the premise that the content of a job is a vital determinant of internal motivation. This approach to job design calls for skill variety, task identity, task significance, autonomy, and feedback (R. Hackman, Oldham, Janson, & Purdy, 1975).

Skill variety attempts to alleviate monotony and increase meaningfulness. J. R. Hackman and Oldman (1976) emphasized task identity for the purpose of understanding the whole. Although less complex, task identity is compatible with systems thinking, which views an organization and the respective environment as a complex whole of interrelating, interdependent parts. It stresses the relationship and the processes that make up the organizational context rather than separate entities or the sum of the parts (Senge, 1994). Task significance, the third component of this job design theory, further underscores the need for meaningfulness. This involves the degree to which a job has an impact on the lives of others (R. Hackman et al., 1975).

The last two job dimensions of this model are seen as equally critical in determining a person’s motivation and job satisfaction. Autonomy requires a high degree of personal responsibility, which applies to either an individual or a team work environment. Finally, feedback makes
improvement possible and heightened performance a reality (R. Hackman et al., 1975).

Although this model was developed with individual jobs in mind, the rationale applies to autonomous work groups, because they too incorporate the five design elements of the job characteristics model that are assumed to be intrinsically motivating. This internal motivation is thought to lead to greater job satisfaction, with enhanced performance. The basic theoretical rationale for autonomous work groups is that employees are more motivated to accomplish an objective when given control over the whole task (Goodman et al., 1988).

Employee participation continues to be pervasive today as organizations attempt to flatten their traditional hierarchal structure with the implementation of autonomous work groups. Site-based management is the attempt made by educational systems to shift from their traditional hierarchal organizational structure to one where responsibility is pushed to the point of service delivery (Tewel, 1995).

Successful functioning of autonomous work groups depends on employee involvement. The employee participation movement has taken many different forms and has been termed everything from participative goal setting, Total Quality Management, and quality circles to self-managing work teams or autonomous work groups. Continuous Quality Improvement is to education as Total Quality Management is to business. Regardless of the nomenclature, this concept is used to improve
performance, quality, employee motivation, and job satisfaction while providing for greater information sharing and employee development (Leana & Florkowski, 1992).

Goodman et al. (1988) pointed to several key attributes of autonomous work groups, or self-managing teams. These included face-to-face interaction; interdependent tasks or activities needed to produce a product or provide a service; a physically defined area; and control or autonomy over assignments, scheduling, processes, and procedures. Similarly, the Johnson and Johnson (1994) model for effective groups has three core activities: (a) completing group purposes or objectives, (b) establishing and supporting good working relationships with team members, and (c) understanding and adjusting to dynamic conditions.

Within organizations, the major difference in autonomous work groups is the control over support functions as well as the main production goal. If team leader or facilitator roles exist, they are often rotated throughout the membership. These types of working relationships may have a definite termination point, such as the completion of a project, or they may exist indefinitely (Johnson & Johnson, 1994).

**Effectiveness of Autonomous Work Groups**

With the widespread use of this intervention, there is concern about the effectiveness of autonomous work groups. Team effectiveness has a two-part definition, including performance and viability. Performance refers
to the adequacy of a product, a service, information, or decisions to either internal or external customers. The second part of work team effectiveness concerns team viability, which refers to group member satisfaction (Sundstrom et al., 1990). Performance as defined by decision-quality and job satisfaction are the areas of team effectiveness that are germane to this study.

The Center for Effective Organizations noted that there was a paucity of empirical evidence concerning the effectiveness of autonomous work groups or self-managing teams, but in the research literature it was hypothesized that they have the potential to improve productivity and enhance the quality of work life or job satisfaction (Cohen & Ledford, 1991). The basis for these hypotheses rests in the very definition of autonomous work groups—that they are self-regulating groups performing interrelated tasks who recognize group responsibility for the successful completion of their goals.

Much of the evidence on the effectiveness of autonomous work groups comes from case studies at single sites, which makes it difficult to draw causal inferences or to generalize results. Few rigorous experimental or quasiexperimental research studies have been conducted (Cohen & Ledford, 1991). Studies of team effectiveness have focused primarily on the measurement of work performance, such as quality improvement or productivity, and attitudinal indicators, such as job satisfaction.
Quality improvement. Most of the single-site studies and the meta-analyses reported that autonomous work groups have a significant impact on quality improvement. One of the earliest organizations to implement this intervention was the General Foods plant in Topeka, Kansas, where a study was conducted that demonstrated high product quality and lower costs associated with the autonomous work groups (Walton, 1972). Subsequently, a meta-analysis by T. G. Cummings, Molloy, and Glen (1977) reviewed 58 studies to draw a similar conclusion. The meta-analysis conducted by Pasmore et al. (1982) has been criticized for methodological issues pertaining to selection of studies for review, but they did find a positive impact on quality in all of the 134 studies on self-managing teams.

Productivity. Autonomous work groups have also affected productivity, although in many instances the gains have been shown to be nominal. Goodman et al. (1988) noted that accurately assessing these gains is difficult due to other causal variables that are often present. At the Topeka General Foods plant there was found to be an increase in productivity for 9 of the 10 years in which data were collected (Walton, 1972). Similarly, after the implementation of autonomous work groups, an increase in productivity was achieved at the Volvo Udevalla plant when compared with similar plants (Kapstein & Hoerr, 1989).
On the other hand, one of the most comprehensively evaluated projects was the Rushton Quality of Work Experiment, in which a nonstatistically significant increase of 3 or 4% was estimated (Goodman, 1979). The prominent study of a British confectionery plant by Wall et al. (1986) was unable to compare productivity for autonomous work groups and traditional groups, because data revealed that different organizational strategies were used to maintain the efficient production of candy. However, cost savings were realized with the need for fewer supervisory staff. Four meta-analyses all found that autonomous work groups showed productivity increases, although modest in some cases (Beekum, 1989; T. G. Cummings et al., 1977; Guzzo, Jette, & Katzell, 1985; Pasmore et al., 1982).

Attitudinal changes. Many studies of various types of task configurations and job design have focused on attitudinal changes. This review concentrates on the relationship between job design and job satisfaction. In the pivotal studies on self-managing work teams (Goodman et al., 1988), worker attitudes did make a positive change in regard to job satisfaction, but the magnitude of the change did not remain constant. The positive attitude change declined to a certain point at which it remained virtually stable. In some instances the attitude changes were more specific to the intervention rather than to an overall general satisfaction. This was
reflected in a positive attitude toward the increased responsibility, autonomy, and variety that is characteristic of autonomous work groups.

The Rushton Quality of Work Experiment also found that autonomous work groups had a positive effect on employee attitudes, specifically job satisfaction, but an unexpected discovery was made. The study found that autonomous work groups "did not demonstrably affect reported levels of job motivation" (Wall et al., 1986, p. 298). This seemed to contradict the theoretical underpinnings upon which these groups were founded.

Two later studies attempted to refute the findings of Wall et al. (1986) and furnish further empirical evidence that employee attitudes were affected by this work design strategy. A longitudinal evaluation of autonomous work groups by Pearson (1992) was conducted at a unionized industrial site in Australia. This study revealed significant differences between the autonomous work groups and the comparison groups with respect to job satisfaction, job motivation, and productivity, although job satisfaction decreased slightly during the experiment and job motivation made its greatest increases toward the end of the study. Cordery, Mueller, and Smith (1991) confirmed their hypothesis that employees in autonomous work groups would report higher levels of job satisfaction, thus lending support to the basic theoretical framework for autonomous work groups. Lawler (1973) was quick to note that, while research is supportive of the relationship between job satisfaction and job characteristics, the
characteristics of the individual are also a factor, giving further evidence of
the need to match the individual to the job. Both a micro- and meta-
analysis of numerous studies revealed that autonomous work groups are
worthy of consideration as an organizational strategy for improving quality,
increasing productivity, and enhancing job satisfaction.

Use of Teams in Education

In the last 50 years, education in the United States has undergone
three waves of reform. Throughout the 1950s, 1960s, and 1970s there was
substantial evidence of a continuing decline in academic performance in
public schools. The main reaction to this poor performance was economic
in nature with vast amounts of legislation passed which called only for more
of the same. Recommendations were made to upgrade textbooks, stress the
basics, give more homework, teach study skills, lengthen instruction time,
and increase the standards for teacher certification (Murphy, 1984).

Critics of this first wave of reform saw a need for fundamental
restructuring of public education rather than merely attempting to repair or
revitalize it. David and Elmore reported that by the mid-1980s efforts
focused on empowering teachers and school-based management (as cited in
believed that this restructuring process must concentrate on
decentralization of the organization, management and governance of
schools, empowerment of teachers, and transformation of the learning
process. It was during this time that the move to school-based management came into real prominence. The third wave of school reform began under the Bush administration and continues today. It represents a fundamental move toward national standards with the Goals 2000 Educate America Act. Also emphasized in this wave of reform is an increase in parental choice and the promotion of school-business teams (O'Donoghue & Dimmock, 1998).

**School-based management.** School-based management or site-based management is an organizational structure borrowed from the corporate sector (O'Donoghue & Dimmock, 1998). There is a variety of labels for school-based management, including school-site management, school-based budgeting, school-site autonomy, and shared governance (Clune & White, 1988). One of its major goals is to broaden participation in school decision making and operation. This can include governance issues and a myriad of planning activities, from process to quality improvement teams. In school-based management there are ample opportunities for involvement from faculty, staff, parents, community members, or administrators. As in business organizations, the assumption is made that greater, more meaningful involvement can bring about conditions that will increase student learning (Tewel, 1995).

Tewel (1995) described what school-based management is:

The basic assumption of school-based management is the same as that of decentralization efforts in general, namely, that personnel at the point of service delivery, e.g., individual schools, are better able to identify the specific problems and needs of their own students and
schools. Thus, they should be given the authority, responsibility, and opportunity to alter procedures and practices to meet those needs. This added leeway and flexibility, it is further theorized, should better stimulate school personnel to improve their ability to educate and motivate students and enable them to introduce new ideas more rapidly to better match the needs of their own students. It is further assumed that school-based management will encourage the development and implementation of new ways of educating students—ways that might meet resistance if imposed from the outside. (p. 77)

Empirical research on the effectiveness of school-based management is scarce. Weiss (as cited in Tewel, 1995) notes that shared decision making promotes a greater sense of ownership for new instructional innovations, but there is little evidence that school-based management leads to improved learning. In a study by Hallinger (as cited in Tewel, 1995), neither teachers nor principals made much of a connection between the new management structures and the teaching-learning process. Although early literature on school restructuring efforts predicted that changes in teaching practices could be expected, a study by Taylor and Teddlie (as cited in Tewel, 1995) did not find that greater participation on the part of teachers had any effect on teaching methods.

**Team teaching.** In an effort to better utilize the strengths and skills of different teachers and improve learning, team teaching or interdisciplinary team organization came into being (Erb & Doda, 1989). This is a different approach from the team-teaching initiatives of the 1960s, where little attention was given to the working of the team (Thomas, 1992). The value
of interdisciplinary teaching for the students comes in the ability to see connections and relationships between different disciplines.

Some of the elements of team teaching or interdisciplinary teaching is that teachers come from different subject areas, and they usually have a common planning period, a common block schedule, a common set of students, and adjacent classrooms. Team teaching results in radically different communication patterns, greater involvement in decision making, transformed curriculum, and more relevant instruction (Erb & Doda, 1989).

The advantages of interdisciplinary team teaching are numerous. Erb (1988) felt that this form of organization allowed the teacher to gain more control of the teaching-learning environment, which in turn allowed for greater autonomy. Rosenholtz (1985) found that the collegial arrangement of team teaching improved teaching and professional pride. Johnston, Markle, and Arthar's (1988) research concluded that collaboration resulted in greater job satisfaction. The effectiveness of interdisciplinary teaching can be seen by an increase in efficacy or a teacher's sense of power to influence learning. Doda (as cited in Erb & Doda, 1989) compared teacher efficacy in teamed and nonteamed schools to find that in the team environment teachers had higher levels of confidence in their teaching competence.

Closely associated with interdisciplinary team teaching is the concept of a school-within-a-school. These are simply small units within a large
school. A benefit of these small units is the opportunity "to form bonds of familiarity, identification, and support" (Tewel, 1995, p. 83). This takes place as numbers of students and teachers are limited, and shared activities are increased. These small units support a more concentrated and coordinated approach to teaching, as is found in interdisciplinary team teaching.

Cooperative learning. Teams are used in the management of schools and the planning and implementation of teaching, but they are also used by the students as they work within collaborative learning environments. Cooperation has been studied since the 1920s, but its application in schools began in the 1970s (Slavin, 1977). Cooperative learning methods have certain common characteristics. Students work together to learn and are responsible for their teammates' learning as well. The goal is not to do something as a team, but to learn as a team. Slavin (1990) believes that three concepts are crucial to all cooperative learning environments. These involve team rewards, individual accountability, and equal opportunity for success. Teams work for rewards if they achieve above a given criterion. Individual accountability means that all team members must learn and be ready for the assessment to be taken without teammate help. Equal opportunity for success means that all team members must improve on their own past performance. He or she is competing, not against teammates, but
against self. These concepts give the students a reason to work together and help one another.

There are some drawbacks to cooperative learning. One is called the 
free-rider effect. This occurs when individual accountability is lacking, often 
when a single task is asked of the group (Slavin, 1990). Another drawback 
is the time superior students take to tutor slower students. This is often 
troublesome to parents and students.

Research has supported increases in achievement through cooperative 
learning. Slavin (1990) presented a summary of 60 studies that evaluated 
the achievement increases of cooperative learning. This analysis revealed a 
median effect size of +.30. The results were consistent with earlier reviews 
by Davidson (1985) and Newmann and Thompson (1987).

Although improvement in student achievement is reason enough to 
consider the use of cooperative learning, there is also a positive effect on 
noncognitive outcomes. Research on the effect of cooperative learning on 
tergroup relations has shown that children in cooperative environments 
are more likely to have friends of another race than are children in 
traditional classrooms (Weigel, Wiser, & Cook, 1975). Handicapped 
students are more readily accepted in cooperative classrooms (Slavin, 
1990). Self-esteem, time on task, altruism, and cooperation are other 
positive outcomes Slavin (1990) found to result from cooperative learning. 
Evidence appears to be overwhelmingly in favor of the use of cooperative 
learning for part if not all of the school day.
Theoretical foundations of cooperative learning. Both motivational and cognitive theories support the use of cooperative learning. Motivational theories focus on the goal attainment structures under which students work. Johnson and Johnson (1994) maintained that three goal structures affect group work. These goal structures are competitive, cooperative, or individualistic. The competitive environment represents a negative correlation among group members' goals. Individuals work against each other to achieve goals. In the cooperative context group members work toward shared goals. There is a positive correlation among group members' goal attainment. The individualistic goal structure exists when group members see no correlation among group members' goal attainment. Individuals see their goals as unrelated to the goals of others in the group. It is within this shared goal or cooperative environment that cooperative learning takes place. The motivation or incentive is to reach the goal, and this is accomplished by the efforts of every member.

Cooperative learning also is grounded in the cognitive theories that emphasize the effects of working together rather than the attainment of goals. In the developmental cognitive theories it is assumed that the interaction among children working on appropriate tasks increases their ability to perform the tasks (Damon, 1984). It is argued that the interaction among group members will lead to better achievement. "Students will learn from one another because in their discussions of the content, cognitive
conflicts will arise, inadequate reasoning will be exposed, and higher-quality understandings will emerge" (Slavin, 1990, p. 16).

The second cognitive theory to support cooperative learning is the elaboration theory. For information to be retained and connected to prior knowledge it must be restructured in some fashion. This restructuring is called elaboration, and explaining is the best source of elaboration. Webb's (1985) research found that students in cooperative groups gained the most from providing elaborate explanations to others. Both developmental and cognitive theories of learning support the use of cooperative groups.

Educational systems as well as business organizations benefit from the use of teams. Research to establish sound criteria for the formation of these teams could greatly enhance their potential.

Locus of Control

Theory of Locus of Control

Rotter's theory of locus of control. The general theory of locus of control emanated from the field of clinical psychology. Rotter (1966) developed this concept from his social learning theory. He succinctly described social learning theory:

In social learning theory, a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by the reinforcement in the future. Once an expectancy for such a behavior-reinforcement sequence is built up, the failure of the reinforcement to occur will reduce or extinguish the expectancy. (p. 2)
Rotter further noted that, depending on an individual's history of reinforcement, there will be a difference in the degree to which the individual perceives that reinforcements are due to his or her own actions.

Rotter (1966) believed that this perception of reinforcement was a crucial part of locus of control. He described locus of control as follows:

[It is] the degree to which the individual perceives that the reward follows from, or is contingent upon, his own behavior or attributes versus the degree to which he feels the reward is controlled by forces outside of himself and may occur independently of his own actions. (p. 1)

Rotter classified individuals who perceive that their rewards or reinforcements are contingent on their own behavior as having an internal locus of control. They are commonly referred to as internals. Those who perceive that the reinforcement or outcome is outside their control have an external locus of control and are called externals.

The development of one's locus of control has been attributed to both biological and experiential factors. One line of research contends that generalized control expectancies are partially inherited (Miller & Rose, 1982; Pedersen, Gatz, Plomin, Nesselroade, & McClearn, 1989). Internals and externals appear to have differences in cerebral functioning on the Rotter scale. Laboratory experimentation has shown that internals use the left hemisphere of the brain more than do externals (De Brabander, Boone, & Gerits, 1992).
Other research has shown evidence that the development of the locus of control is due in part to one's experiences. This may be either an accumulation of events or episodic occurrences (MacDonald, 1973). Spector (1982) saw this relationship between locus of control and experience as an interactive one in which locus of control may affect behavior and the consequences of behavior may similarly affect locus of control. Internals tend to move toward the external direction when faced with failure, but externals do not change following success (Krolick, 1978/1979). C. R. Anderson (1977) found in a longitudinal study that externals also shift in their generalized control expectancies. He noted that businessmen with an external locus of control became more external after their business performance worsened, but did not move toward internality when their business improved. Under the same conditions, businessmen with an internal locus of control became more internal as business improved, but did not become more external as business worsened. Although these two studies revealed conflicting results, the implication is that locus of control is influenced by experiences and is dynamic. Contrary to this is the belief espoused by Newton and Keenan (1990) that locus of control is "concerned with relatively stable beliefs about personal efficacy" (p. 1233).

Causal attribution. It should be mentioned that closely associated with the theory of locus of control is the theory of causal attribution. The
causal explanations for one's successes or failures are referred to in the psychological literature as causal attribution. Heider (1944) was one of the earliest and most noted contributors to this theory. He stressed the human need to stabilize or balance the perceived environment by designating appropriate cause and effect assignments.

Causal attribution differs from locus of control in that it is concerned with the causes of past events, not the expectations of future events (Lefcourt, 1991). These causal interpretations may be either correct or erroneous. Locus of control is often associated with the perceived cause of future events based on past history. Furnham and Steele (1993) stated that locus of control beliefs are in part influenced by causal attributional beliefs that individuals have about prior events. Past successes tend to increase internal locus of control beliefs, and past failures or disappointments perpetuate the feeling that things are outside of one's control (Furnham, Sadka, & Brewin, 1991).

A noted model for causal attribution comes from Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1972). They asserted that individuals can explain the perceived determinants of success or failure by four causal elements: ability, task difficulty, effort, and luck. An individual assesses his or her own ability level or that of another, the effort expended, the difficulty of the task, and the size and direction of the experienced luck. Values are assigned to these elements, and the outcome is attributed to one or more dimensions. Future outcomes are based on the relationship between level of
ability and difficulty, as well as an estimation of effort and the possibility of luck.

Ability and effort are qualities of the individual, whereas task difficulty and luck are environmental factors. Ability and task difficulty are elements that are not subject to change, whereas luck and effort are dynamic in nature. These four elements can be seen in terms of internal and external, much like locus of control. They may also be viewed as stable or unstable (Weiner et al., 1972). These elements are summarized in Table 2.

Table 2
Classification Scheme for the Perceived Determinants of Achievement

<table>
<thead>
<tr>
<th>Locus of Control</th>
<th>Stability</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>Ability</td>
<td>Task difficulty</td>
<td></td>
</tr>
<tr>
<td>Unstable</td>
<td>Effort</td>
<td>Luck</td>
<td></td>
</tr>
</tbody>
</table>


Information and social cues are used to explain a past outcome or to anticipate future expectations. Perceived ability at a given task is often
related to the degree of past success at similar tasks. "Thus, consistency and
generality of performance are salient cues for ability attributions" (Weiner
et al., 1972, p. 99).

As an unstable element, luck is inferred by the pattern of previous
outcomes. If the pattern of prior outcomes was random or highly varied, it
is more likely to be attributed to luck.

Individuals who attribute an outcome to effort usually rely on
outcome results to determine the effort expended. If the outcome is
successful, it is thought that greater effort was involved. The contrary is true
if failure is experienced. Knowledge of outcome and prior success combines
to make attributions to these four causal elements.

Social norms help dictate perceived task difficulty. If a task has been
successfully completed by others, it will be perceived as easy. The stable
components of task difficulty and ability are given the greatest attributions
when current outcomes are consistent with past performance. To the
contrary, when present outcomes are inconsistent with past experiences,
luck or effort may be perceived as the contributing factors. One who
experiences success after failing often in the past may attribute the present
outcome to luck (Weiner et al., 1972). Weiner et al. summarized this
theory as follows:

It is concluded that individuals are able to process a wealth and
diversity of information to reach inferences about the causes of their
own and others' behaviors, that the causal categories in achievement
settings include ability, effort, task difficulty, and luck, that the
causal ascriptions are schematized into the dimensions of locus of
control and stability, that the attributions made have motivational significance. (p.102)

Research has shown that individuals tend to attribute success to their own efforts and to blame external causes for negative outcomes (Bettman & Weitz, 1983). It can be seen that causal attribution can have far-reaching ramifications for organizations as performance and financial assessments are made.

Locus of control as a criterion for group composition. Locus of control is a personality construct that has been the subject of considerable study, yet the contribution of such constructs to organizational behavior has largely been ignored (Adler & Weiss, 1988). Many different criteria for group composition have been studied, ranging from ability to need comparability (Reddy & Byrnes, 1972). Terborg, Castore, and DeNinno's (1976) research suggested that attitude similarity can increase performance and cohesion. They hypothesized that similar attitudes facilitated interpersonal interaction. Spector and O'Connell (1994) reported that, after years of neglect, there is a resurgence of interest in personality variables by researchers in the organizational domain. This newfound interest in the influence of personality on organizational goals provides further justification for the necessity of this study.

The primary emphasis has been on situational determinants such as job design or task characteristics rather than on dispositional influences (George, 1992). George asserted that both dispositional and situational
variables are necessary for understanding organizational behavior and that they are not mutually exclusive. In personality research aimed at identifying and measuring dispositional variables that account for behavior, Sarason, Smith, and Diener (1975) found that the greatest percentage of variance could be explained by the interaction of personality and situation. This supports the research premise of this study, which investigates both dimensions—job design and individual differences.

In summary, locus of control is a construct used to explain the perceived control that an individual feels he or she has over life's events. It is a personality variable that has an impact on several organizational variables, such as job performance, job satisfaction, motivation, leadership, and turnover (Spector, 1982). As of yet, the extent of this relationship is unclear.

Locus of Control and Performance

This study focuses on the impact that locus of control has on job performance, as measured by decision quality. In order to understand this relationship, it is helpful to consider the differential behavior and attitudes seen in externals and internals that affect job performance of all types.

Differential behavior. Phares (1976) has studied the differential behavior exhibited by internals and externals and found that internals seem to perform better in learning as well as in seeking information and in using
it to a greater extent in complex problem-solving situations. This has led to the prediction of higher performance by internals.

Several studies have noted that internals exert greater effort on the job and perform better because of their perceptions that their efforts will affect the outcome and that they are more in control of their environment (Andrasani & Nestel, 1976; Heisler, 1974; Valecha, 1972). Greater effort by internals is hypothesized to produce higher job motivation, which is often operationalized in terms of effort and task orientation. There appears to be no difference in internals and externals with regard to personal motivation.

According to Spector (1982), the job performance exhibited by internals is sustained only if they perceive that their efforts will lead to rewards that are meaningful to them. Internals make a stronger connection between performance and pay than do externals (Kimmons & Greenhaus, 1976). Similarly, C. R. Anderson (1977) found that internals respond more proactively than externals when incentives are included. Kren's (1992) research found that, when incentives are not involved, the performance of internals is less than that of externals. This evidence shows that there is an interaction between locus of control, effort, and incentive.

This effort-performance-reward relationship is closely akin to Vroom's (1964) expectancy theory, which proposes that effort will lead to good job performance and that this performance will result in rewards. Theoretically, internals hold higher expectancies than do externals. Several studies have
yielded a positive relationship between internal locus of control and expectancies (Broedling, 1975; Mitchell, Smyser, & Weed, 1975; Szilagyi & Sims, 1975). Lawler (1971) proposed that this expectancy tendency on the part of internals made them the better candidates for pay incentives. The present research investigated this performance-reward contingency in an autonomous work group context to determine the effect.

**Differential attitude.** Attitude differentials are noted in internals and externals. Ferguson and Kennelly (1974) saw the attitude of internals toward management or authority as being markedly different from that of externals. Internals view superiors as supportive, encouraging, positive, having predictable standards, and basing actions on issue-related reasoning. Internals reach higher levels of job satisfaction in a work environment where participation exists rather than they do in an authoritarian structure (Runyon, 1973; Spector, 1982). Internals also demonstrate greater involvement with their work and perceive it to be more meaningful than externals (Organ & Greene, 1974; Runyon, 1973). Although numerous studies have investigated this relationship between locus of control and participation preference and work involvement, there has been a dearth of research on locus of control within the team environment (Garson, 1995/1996).

Of interest to organizations is the research of Boone and De Brabander (1993), which found that organizations run by internal CEOs
performed better than companies led by externals. The same is true of other positions within an organization. Hammer and Vardi (1981) noted that the internals in their research achieved greater vertical and horizontal mobility than did the externals.

Distinctions can also be seen between internals and externals with regard to job demands and psychological strain. Several studies reported that increased job demands result in greater psychological strain on the part of externals (C. Anderson, Hellriegel, & Slocum, 1977; Jackson & Schuler, 1985; Keenan & McBain, 1979). The rationale for these observations is that externals see themselves as more dependent on the environment than do internals and, therefore, have a greater sensitivity to what the environment has placed on them. A later study revealed that this was a narrow view of how externals and internals differed in regard to job demands and psychological strain. Newton and Keenan (1990) found that increased psychological strain depended on the type of job demand. Increases in ambiguity and environmental frustration within the job context saw resultant increases in strain variables for externals. Similarly, increases in strain were significantly greater for internals when increases in role conflict and quantitative workload were present.

These findings give clear evidence that there is a relationship between locus of control and job performance and attitudes. Although these results appear to be positively skewed in the direction of the internals, they do have implications for placement and training.
Job Satisfaction

**Theoretical Framework for Job Satisfaction**

Job satisfaction has been defined in a myriad of ways, but Cook, Hepworth, Wall, and Wan (1981) suggested a general definition, stating that job satisfaction is "the level to which given aspects of the job meet the expectations and aspirations of the individual occupying that job" (p. 37). It manifests itself in the attitude or affective response of the individual toward various aspects of the job. Lawler (1990) observed that job satisfaction is a consequence of past events, because it refers to a person's feelings about rewards that have already been received.

The theories concerning the determinants or consequences of job satisfaction are examined through three conceptual approaches. These include need satisfaction models, the individual differences or dispositional approach, and situational theories.

**Need-satisfaction models.** The need-satisfaction models stress the importance of individual motives or needs. According to this theory, individuals have either innate or acquired propensities to seek out or avoid certain stimuli. It has long been felt that these needs are a driving force behind behavior and are major determinants of performance. When these needs are achieved there is a feeling of satisfaction (Katzell & Thompson, 1990). Theories differ in the number of needs or arrangement of
importance, but Maslow's (1943) hierarchy of needs theory serves as the cornerstone for all subsequent need-based theories.

The premise of this theory is that individuals have a hierarchy of needs and that when a lower level need is attained it no longer serves as a motivator of behavior. This need satisfaction enables one to proceed to the attainment of other needs. This is not to say that complete and total satisfaction of one need restricts the attainment of another, because several needs may be active at a time (Hersey & Blanchard, 1993).

This hierarchy begins with the most basic of all needs, physical well-being. This is followed by a closely related need for safety. When these are not threatened, the individual can proceed to a higher order need for socialization. Everyone desires to be accepted and belong, and organizations should be cognizant of this need level, especially as they attempt to implement a team structure. Socialization is taken one step further in the need for esteem, which includes esteem for self and from others. This comes in the form of recognition or respect. Maslow (1943) divided the need for esteem into two types of ego needs. He defined these as "needs that relate to one's self-esteem, for independence, achievement, competence and for knowledge . . . needs that relate to one's reputation, status, recognition, appreciation, and for respect of one's peers" (p. 380).

The pinnacle of the needs hierarchy is self-actualization. Often this is stated as being the best that one can be. It is usually measured by achievement or competence. McClelland found that the need for
achievement is a separate human need, distinct from other motives (as cited in Hersey & Blanchard, 1993). The expression of self-actualization changes throughout different life cycles. The way it may be accomplished at 20 years of age may be vastly different from the way it is accomplished at 60.

There has been little empirical research to support Maslow's theory, but it continues to be a popular way to categorize and think about human needs. It is focused on the needs of individuals, but groups have needs as well. For groups to be truly effective there must be some harmony between the needs and goals of the individuals and those of the group. Research has shown that techniques used to simultaneously to bring about the accomplishment of both individual and group goals result in groups with the highest productivity (Hersey & Blanchard, 1993).

The motivation-maintenance theory developed by Herzberg, Mausner, and Snyderman (1959) was an extension of Maslow's hierarchy of needs theory. They found from 200 interviews with engineers and accountants that certain needs result in job satisfaction and are highly motivating when present. These center on the job itself, such as achievement, recognition, responsibility, growth, and development. They correspond to Maslow's theory of need for esteem and self-actualization and are referred to as motivators.

Conversely, Herzberg et al. (1959) found other needs of the employee that must be fulfilled in order to prevent the worker's dissatisfaction. These are maintenance factors such as working relations and
conditions, policies, supervision, pay, and security. They compare to
Maslow's three lower order needs, which are physiological, security, and
socialization. They result in job satisfaction only from the standpoint that
their lack results in dissatisfaction, but after a certain level they fail to
motivate. It is at this point that the motivating factors allow the individual
to grow, to develop, and to improve performance. These theories speak in
general terms to form a framework from which to understand job
satisfaction and motivation, but needs vary with individuals according to
circumstances and time. Other individual differences that affect job
satisfaction are delineated in the subsequent section. The work of Herzberg
et al. has been criticized at times, because the same factors can cause both
satisfaction and dissatisfaction (Gruneberg, 1976).

The appeal of the need-satisfaction theories is due in part to their
simplicity, but critics are quick to point out that the amount of explained
variance is relatively small (Salancik & Pfeffer, 1977). Wanous (1974) was
able to explain 34% of the variance in job satisfaction by job autonomy
when the sample was split on the basis of higher-order need strength.

Another criticism of these models is the assumption that individuals
react to their environment within the framework of relatively unchanging
needs and that, when these are not compatible, dissatisfaction occurs. There
is the option to change the present environment or move to a new one, but
not to cope with the existing one. Salancik and Pfeffer (1977) stated the
following:
The need-satisfaction model ultimately denies persons the creative capacity to cope with their environment, in part by constructing meaning that makes the context more satisfying, and, in part by redefining the situation and attending to selected aspects of the situation. The function of producing satisfaction is delegated to outsiders, those who design the environment. Individuals are presumed to be incapable of perceiving their environments to create their own satisfaction. (p. 440)

**Individual differences approach.** When job satisfaction levels vary widely among employees in the same work environment, one must consider individual differences as a possible determinant of job satisfaction. These include different expectations and values. Great variation exists within and between groups. Other researchers credit dispositional factors or biological differences for the variances observed in job satisfaction. In a subsequent review the role of locus of control as an individual difference is considered in relation to job satisfaction.

Expectations may vary for many reasons, but, when left unfulfilled, dissatisfaction results. Sex, age, education, or social background are but a few of the variables that may account for differing expectations, although research in these areas has been inconsistent (Blood & Hulen, 1967; Dalton & Maris, 1987; Hulen & Smith, 1964; Klein & Maher, 1966). Ability variation also affects job satisfaction in that one's ability level is tied to the effort-performance-rewards relationship (Schneider, Reichers, & Mitchell, 1982). Two studies found that previous job satisfaction was a predictor of present satisfaction, intimating that one's prior experiences influence present expectations (Gerhart, 1987; B. M. Staw & Ross, 1985).
Expectations concerning one's job have a great impact on job satisfaction. Locke (1969) stressed that these expectations are an individual perception, which implies that they may or may not be realistic. Nevertheless, if one's perception is that the expectations have not come to fruition, then job dissatisfaction results.

Locke (1969) noted that expectations are only one dimension of individual differences that are related to job satisfaction. A more accurate analysis of job satisfaction must include value fulfillment. One may have an expectation of being dismissed, but the fulfillment of this does not bring satisfaction. Gruneberg (1976) stated, "Often values and expectations will coincide, as one tends to confine what one values on the job to what one has some expectation of achieving. Satisfaction occurs when the job fulfills what one values" (p. xi).

Research has also concluded that dispositional factors account for variance in job satisfaction. Dispositional research can be divided into two interrelated lines of thought. The first stresses that job satisfaction itself is a personality trait that exhibits stability over time and consistency across different situations or environments. The second line of reasoning attempts to explain the specific characteristics that produce the trait-like qualities of job satisfaction, which are stability and consistency. These characteristics are referred to as general individual differences in emotionality, which are hypothesized to predispose individuals to be satisfied with their jobs and other facets of their lives as well (D. Watson & Slack, 1993).
Research studying job satisfaction as a trait lends support for its stability. Schneider and Dachler (1978) found that job satisfaction was reasonably stable over a 16-month period. They achieved retest correlations of .58 on subsequent job satisfaction measurements, further indicating stability. Pulakos and Schmitt (1983) investigated an approach for predicting future job satisfaction. They assessed high school graduates' instrumentalities by asking the subjects to rate the extent to which they expected to obtain each of 13 job-related outcomes. The objective was to identify individuals who were more likely to be satisfied prior to employment and to correlate this with actual job satisfaction 1 and 20 months later. Their results showed that high instrumentality resulted in subsequent job satisfaction.

This raises the question of whether or not one has a propensity to be satisfied and whether or not that affects future job success. Schneider (1976) and Blood (1969) proposed that job satisfaction may be partially due to certain individuals' predispositions towards being satisfied, but there is also the possibility that it could be a self-fulfilling prophecy. Another explanation is script theory, in which one has learned certain constructs and experiences associated with work. When these are positive, they are encoded in the brain as such, so that future work experiences will be consistent with one's schema (Abelson, 1975).

B. M. Staw and Ross (1985) analyzed both traits and job factors as determinants of job satisfaction. After a 3- to 5-year period they concluded that prior job attitude accounted for more variance in job satisfaction than did
pay or changes in job status. These researchers attributed this predictive power of previous job satisfaction to trait stability. Consistent attitudes toward job satisfaction were evident, even as employees changed jobs or employers.

Gerhart (1987) cited methodological and conceptual problems associated with the B. M. Staw and Ross (1985) study and attempted a similar study, using dispositional and situational factors as determinants of job satisfaction. In this case the job design variable of job complexity was included along with pay, job status, and previous job satisfaction. The addition of the job complexity component was based on job design theory, which specifies that changes in job complexity will result in changes in job satisfaction. When controlling for prior job satisfaction, Gerhart found that situational factors, particularly job complexity, were strong predictors of satisfaction. Like B. M. Staw and Ross, Gerhart found that previous job satisfaction predicted current satisfaction levels. This lends credibility to the view that job satisfaction is a function of both dispositional and situational factors.

Job satisfaction in relation to general emotionality helps to explain the stability and consistency seen in job satisfaction. This second line of research argues that affective dispositions predispose individuals not only to be satisfied with their employment, but also to be satisfied with other areas of their lives. For instance, satisfaction with life in general is a significant predictor of job satisfaction (Schmitt & Bedeian, 1982; Schmitt & Pulakos, 1985). The reverse is also true in that job satisfaction is indicative of later life satisfaction (Schmitt & Pulakos, 1985).
Studies have revealed that emotional temperament is a major element of personality (D. Watson & Clark, 1984). Negative affectivity and positive affectivity are the two temperament dispositions studied by D. Watson and Slack (1993) to determine the relationship to job satisfaction. Individuals measuring high on negative affectivity are usually seen as negative and dissatisfied, whereas those high on positive affectivity are generally satisfied. The researchers found that both contribute significantly to some job satisfaction criteria, but not to all. Satisfaction with work and coworkers is related to affective temperament, but satisfactory pay and supervision are not. These results support the findings of most dispositional studies that behavioral outcomes are an interaction between individual differences and the environment.

Biological factors as determinants of job satisfaction can be seen as support for the dispositional view, because it has been shown that positively disposed individuals have more enthusiasm and higher satisfaction levels in relation to their jobs. Although there is a dearth of research in this area, one significant study by Avery, Bouchard, Segal, and Abraham (1989) revealed interesting results. They hypothesized that the genetic influence was stronger for intrinsic job satisfaction than for extrinsic job satisfaction. Intrinsic job satisfaction is defined as the degree to which variables such as achievement, creativity, independence, moral values, activity, ability utilization, and responsibility are measured, whereas extrinsic job satisfaction is the degree to which external variables such as supervision, company policies and practices,
working conditions, and perceived advancement are measured. These researchers studied monozygotic twins who were raised in different environments. It was found that 30% of the variance found in general job satisfaction could be explained by innate genetic factors.

The mechanism for the inheritability of job satisfaction may be explained in terms of positive and negative affects. These personality factors have been discussed previously. Positive affect enables one to experience enthusiasm, gratification, or satisfaction, whereas negative affect is the tendency to be fearful, worried, or dissatisfied. Tellegen (1988) conducted a study based on twins in which both of these personality factors demonstrated high inheritability.

**Situational Approaches**

Situational approaches to the study of job satisfaction involve an examination of the environmental or external factors that affect job satisfaction. Numerous situational variables, such as job design or task configuration, supervision, pay, and working conditions or quality of work life, have been cited as determinants of job attitudes, particularly job satisfaction (Locke, 1976). Many of these variables are beyond the scope of this research, but consideration is given to the social-information processing line of thought and the job design or job characteristics model, because these two theories comprise the major thinking on how individuals react to their work environment and are relevant to the design of this study. Pay as a determinant
is also reviewed, because performance-based incentives are examined for their moderating effect on job satisfaction and performance.

The social-information processing supporters contend that job attitudes can be changed by social influence and contextual clues, along with consequences of past behavior (O'Reilly & Caldwell, 1979; Salancik & Pfeffer, 1977, 1978; White & Mitchell, 1979). The social environment provides a crucial source of information, hence the name social-information processing. This social influence may take place in several ways, beginning with statements made by coworkers. Attention may be drawn to certain aspects of the work environment, making them more or less salient, and other employees may influence the interpretation of environmental cues by supplying their own meaning of events. Finally, interaction with coworkers can affect an individual's attitudes by influencing how the person interprets what his or her needs, values, or requirements might be.

Aside from the social-information influences that affect job attitudes, individuals cognitively evaluate the various aspects of the job environment to formulate their attitudes. This involves cognitive processing of all the information absorbed about the job, including past experience, behavior of others, and contextual cues. This stresses the processing aspect of the social-information processing theory (Salancik & Pfeffer, 1978).

In addition to the social context of work, the awareness of the consequences of past actions can influence attitude formation. This is sometimes called the consistency effect, which occurs to the extent that one
piece of information, such as a previous response, affects the answer to a present question. When asked about attitudes, people are inclined to organize information in consistent ways. For this reason, awareness of their answers to previous questions tends to influence subsequent responses (Salancik & Pfeffer, 1978).

Commitment is also a factor in attitude development, because it has been found that individuals are inclined to form attitudes consistent with their level of commitment to past behavior (Salancik & Pfeffer, 1977). Proponents of this theory argue that workers are able "to construct their own satisfaction by selectively perceiving and interpreting their social environment and their own past actions" (Salancik & Pfeffer, 1978).

Diametrically opposed to social-information processing are those supporters of the influence of task design on job satisfaction. As previously noted, J. R. Hackman and Oldman (1976) have been instrumental in studying the outcomes of job design. Job satisfaction is one of these outcomes. Although considered to be a situational theory, this model actually incorporates both situational and dispositional variables. It demonstrates the impact of job characteristics on desired organizational outcomes and the moderating effect of individual differences. There is an abundance of research demonstrating the strengths and weaknesses of this theory. The Hackman and Oldman job characteristics model provides the theoretical basis for autonomous work groups used in this study, and a further review of the literature explores its relationship specifically to job satisfaction.
This model is based on three classes of variables and their interaction with one another. These include job characteristics, psychological states, and personal and work outcomes. It is theorized that the interaction of certain job characteristics produces psychological states that result in beneficial personal and work outcomes. The core job dimensions of skill variety, task identity, task significance, autonomy, and feedback were previously examined in relation to autonomous work groups. These comprise the situational components of this model that can be manipulated by management as jobs are redesigned (J. R. Hackman & Oldman, 1976).

J. R. Hackman and Oldman (1976) postulated that these core job dimensions are causally linked to the three critical psychological states. The first state refers to how meaningful the individual finds the work experience, and the second is the extent to which one feels accountable and responsible for the work that he or she does. Finally, the third state emphasizes the importance of feedback, allowing the employee to evaluate his or her job performance. Experiencing these psychological states produces a positive effect for the individual that is internally reinforcing. This internal reinforcement causes a self-perpetuating cycle that continues until one of the three states no longer exists or the positive effect resulting from good performance is no longer of value to the employee.

According to this theory, these psychological states result in positive outcomes for both the employee and the organization. These outcomes include high internal work motivation, high-quality work performance, high
satisfaction with work, and low absenteeism and turnover. This chain of events among job dimensions, psychological states, and outcomes is moderated by an individual dispositional factor referred to as growth-need strength. It is theorized that an individual who has a high need for personal growth responds favorably to a job that provides ample opportunity for responsibility and challenge. This growth-need variable may influence the extent to which psychological states are realized. Those possessing high growth-need strength may be more likely to experience these psychological states when the core job characteristics are present than are those low in growth-need strength (J. R. Hackman & Oldman, 1976). This theory puts aside the controversy between dispositional and situational proponents and acknowledges the influence that both variables have on the formation of work attitudes. Pervin (1985) stated,

> Given the long standing history of the issues concerning person-situation relationships one might have expected research to focus on issues beyond whether people are consistent and whether situations or persons are more important. Most personality psychologists would have agreed and would still agree that behavior is influenced both by person variables and by situation variables. This would suggest the utility of defining the relevant variables and the processes governing relations between the two. (p. 86)

Since its conception the job characteristics model has had its proponents and opponents. Fried and Ferris (1987) undertook an extensive meta-analysis of the job characteristics model to examine its validity. One criticism has been the use of the self-rated Job Diagnostic Survey to measure job characteristics. This meta-analysis of previous research suggests that the use of self-rating measures has not significantly diminished either the construct or the internal
validity of this instrument. Fried and Ferris found that objective changes in the
nature of job characteristics and incumbents' perceptions were consistent, as
were objective and perceived ratings of incumbents and others concerning the
relationship between job characteristics and outcomes. This analysis
demonstrated that self-rated data can be used with confidence.

Concern has also been expressed about the dimensionality of the core
job dimensions and the relationship between job characteristics and work
outcomes. Supported by numerous factor analyses, the core job dimensions are
necessarily multidimensional, but skill variety, task significance, and job
autonomy might well be combined into one dimension (Champoux, 1978;
Fried & Ferris, 1986). The Fried and Ferris (1987) meta-analysis revealed that
all the job characteristics have moderate to strong relationships to
psychological outcomes such as job satisfaction, growth satisfaction, and
internal motivation. Weaker relationships were evidenced between the job
characteristics and behavioral measures of performance and absenteeism.
Among the individual job dimensions, feedback had the strongest relationship
to job satisfaction. Autonomy was related most strongly to growth satisfaction,
whereas skill variety was related to internal work motivation.

The mediating or intervening effect of the critical psychological states on
the job characteristics-work outcome relationship has been questioned. The
results have been confounded by the overlapping of some of the job
dimensions. The only support for the intervening effect of the psychological
states comes from the evidence that job characteristics relate highly to these
three critical states and that these states correlate more highly with psychological outcomes than do the job dimensions. Further support for the intervening effect of psychological states on the job characteristics-work performance relationship was not indicated by the research. The scarcity of research concerning this mediating effect suggests a need for more study in this area (Fried & Ferris, 1987).

An additional concern focuses on the moderating effect of the growth-need strength variable. As hypothesized, the relationship between job characteristics and performance was greater for people with a high growth-need strength than for those with a low growth-need strength. Here too the paucity of research makes it difficult to draw a conclusion as to the extent of this moderating effect.

A final criticism of need-satisfaction models came primarily from a study conducted by Salanik and Pfeffer (1977), arguing that consistency effects and priming have a significant effect on the responses of employees towards attitudes. The consistency effects result from the questioning process. This often occurs when one is questioned about an attitude after a behavior has taken place. The behavior is used to construct the attitude. If one is reminded of a past behavior, the same may be true. For example, when individuals are asked to what extent they would like to have variety in their work and how much variety they actually have, these questions influence the subsequent attitude question concerning how satisfied they are with their work.
Consistency effects are based on the premise that one piece of information, such as a prior answer, will affect a subsequent question.

Priming is closely associated with consistency effects, but it occurs in the questioning process when certain aspects of the situation are made prominent and the interviewer focuses the respondent's attention on particular information. Salancik and Pfeffer (1977) noted the following:

The priming phenomenon is based on the idea that an individual's attitude is derived from whatever information is available when asked about the attitude. The theory is that it is possible to present a standard set of information to individuals and then manipulate their recall of that information so that the basis of their attitudes can be varied systematically. (p. 450)

Priming and consistency effects can be greatly reduced by measuring attitudes before behavior questions are introduced and by measuring job attitudes without the interests of the investigator present, such as absentee records or regular standardized attitude surveys.

Contrary to the criticism of the job characteristics model, there is abundant support for its use. A field study conducted by Orpen (1979) found that such a job design model can result in substantial improvements in employee attitudes, but the effect on performance must take more factors into consideration than the five job dimensions. Orpen attributed the lack of productivity to the inefficiency of employees' enthusiasm for the innovative work challenges and improper training for the new variety and complexity. Locke's (1976) experiment on job scope resulted in the opposite conclusion.
He found an increase in productivity, but a decrease in employee attitudes. This was a result of an unrealized expectation for higher pay.

Pay and incentives are often investigated as possible determinants for job satisfaction. Although satisfaction with pay is thought to result in job satisfaction, many other variables confound this relationship; thus, pay can be seen as only one of many factors influencing job satisfaction. Often, pay is associated with extrinsic job satisfaction, which refers to satisfaction with supervision, policies and practices, working conditions, and perceptions of advancement (Weiss et al., 1967).

Incentive theory hypothesizes that people will contribute to an organization in exchange for rewards (Montjoy, 1996). When the exchange is perceived to be inequitable, dissatisfaction occurs. This inequity can be perceived to be effort expended or rewards distributed among employees. A recent study concluded that wage inequity between male and female college faculty members had a significant negative total effect on perceptions of global job satisfaction or job satisfaction in general (Hagedorn, 1995).

The impact of pay or incentives on job satisfaction can be seen when employees experience career plateauing. This plateauing is operationalized as the perception that one is limited in terms of career advancement opportunities. Research studying health care workers found that perceptions of career plateauing were negatively related to job satisfaction, indicating that concern over future rewards influenced job satisfaction (Davenport, 1994).
Not every study demonstrated a strong correlation between pay or incentives and job satisfaction. A study by LaMere (1994) noted that individuals working under incentive conditions performed at higher rates than those working for hourly pay, but that neither reward system had any significant effect on job satisfaction. Performance improved as incentives increased, but job satisfaction remained unchanged.

**Job Satisfaction and Performance**

For decades the assumption has been that high job satisfaction on the part of employees would lead to enhanced performance. The conclusion is that happy employees make productive workers. The extent of the relationship between job satisfaction and performance may not be as significant as the consistency of the positive direction of the correlation (Vroom, 1964).

The relationship between satisfaction and performance may not necessarily be a causal one; it may rather be a consequence. Vroom (1964) noted that job satisfaction and job performance have differing causes:

- Job satisfaction is closely affected by the amount of rewards that people derive from their jobs and level of performance is closely affected by the basis of attainment of rewards. Individuals are satisfied with their jobs to the extent to which their jobs provide them with what they desire, and they perform effectively in them to the extent that effective performance leads to the attainment of what they desire. (p. 246)

This line of reasoning shows the relationship between satisfaction and performance. It can be concluded that satisfaction is derived from the attainment of rewards and that good performance is responsible for these rewards. Empirical research strengthens the idea that performance precedes
satisfaction (Bagozzi, 1980; Wanous, 1974). Lawler and Porter (1967) found empirical evidence among middle- and lower-level management in five organizations for this satisfaction performance relationship. The study also found that intrinsic rewards were more closely related to performance than extrinsic rewards. Lawler and Porter's theoretical model of job satisfaction maintains that satisfaction is dependent on performance rather than causing it.

Podsakoff and Williams (1986) examined the relationship between performance and job satisfaction in numerous laboratory and field studies to determine whether or not there was any significant difference in the results obtained in these two different settings. Although the findings in both types of research were consistent, it was interesting to note that more positive relationships existed between performance and job satisfaction when reward contingencies were present than when they were not. It is hypothesized in the present study that the same will be true for group behavior.

Ostroff (1992) also noted that, while the individual-level relationship between job satisfaction and performance may not be apparent, there are reasons for its existence at the organizational level. She noted that organizational performance consists of the aggregated behaviors and interactions among employees and is not subject to the range of restrictions indicative of individual performance. Ostroff concluded that satisfied workers willingly work toward organizational goals.

Empirical research has often failed to show a link between job satisfaction and performance at the individual level (Iaffaldano & Muchinsky,
1985; Jayaratne, 1993). However, research by Keller, Julian, and Kedia (1996) indicated that job satisfaction may be linked to productivity in teams. Job satisfaction and work climate were found to be robust predictors of productivity within research and development teams. These researchers concluded that a climate of participation and cooperation could encourage greater involvement, with increased productivity as the result.

**Job Satisfaction and Locus of Control**

The major hypothesis of this research is whether or not locus of control has any impact on job satisfaction when one works with others of like mind in a team environment. At the team or group level of measurement, the research is scant on this subject, but a plethora of work has been conducted at the individual level.

As noted previously, individual differences and job characteristics influence levels of job satisfaction. Mitchell et al. (1975) conducted a field experiment using public utility workers to determine the impact of locus of control on various aspects of job satisfaction. The results of their study revealed that internally controlled participants were more satisfied with their jobs than were externals. It was also revealed that internals preferred a participative style of management.

Spector (1982) cited four reasons why internals experience greater job satisfaction than externals. Internals tend to be proactive, and when an unsatisfying situation arises, they will act more quickly than externals to
terminate the position. Generally, internals perform better and experience the benefit of rewards associated with good performance more than do externals. They also promote more quickly through the company, which is satisfying. Porter and Lawler (1965) found organization level and satisfaction to be correlated, although direction of causality is unclear. Finally, the cognitive consistency theory indicates that internals who could leave an unsatisfactory situation but do not will find some internal pressure to reevaluate the situation as favorable. This is necessary to justify their actions. A meta-analysis conducted by Spector (1986) consistently found overall support for higher levels of satisfaction for internals. One noted exception is Dailey’s (1978) research, which reported that internals were less satisfied with their coworkers than were externals. This finding was explained in terms of externals having a greater social orientation.

Summary

This chapter has provided a review of the literature that is relevant to the design of this study and the variables under investigation, beginning with the theories that form the framework for autonomous work groups. Group dynamics, sociotechnical systems, employee involvement, and the job characteristics model are some of the antecedents for current organizational teams. Pursuant to these models was a review of team or group effectiveness, emphasizing quality improvement, enhanced performance, and attitudinal changes, such as job satisfaction.
The last section of this literature review concerned the pertinent work on job satisfaction. Three different theoretical approaches have influenced the research on job satisfaction. These include need-satisfaction models, individual differences, and situational approaches. To conclude this review, job satisfaction studies relating to performance and locus of control were explored.
CHAPTER 3

METHODOLOGY

The purpose of this chapter is to review the proposed research procedure and methodology used in this study. The research sample is described, followed by an examination of the measurement instruments. A description of the methods of data collection and statistical analysis completes the research procedures and methodology.

Research Sample

The target population for this study was represented by individuals working within an autonomous work group context, with and without the benefit of performance-based incentives. The research sample for this study consisted of upper-level undergraduate and graduate students from the business and education colleges at a large university in the southwestern United States. The determination to use business and education students was based on the fact that teams are being implemented in both industry and education throughout the United States.

As previously noted, this research was conducted in a laboratory setting. Locke (1986) silenced much of the criticism surrounding the use of undergraduate students for laboratory research when his meta-analysis determined that principles originating in laboratory experimentation using
undergraduates would generalize to workers in field settings. In part, his meta-analysis reviewed research in the areas of motivation, job satisfaction, incentives, and decision making, which are all pertinent to this research.

On the grounds of limited external validity, the use of laboratory experimentation has often been criticized by field researchers, but Dobbins, Lane, and Steiner (1988) felt that this criticism was not justified:

A well-conducted and meaningful laboratory study allows an investigator to make stronger statements concerning cause and effect relationships between theoretical constructs than usually can be made in field research. It is this increased understanding, if anything, which generalizes across settings, behaviors, and subjects. The control, and a necessary by-product of control, artificiality, allow us to test and refine theories and thus predict behavior in other settings. (p. 282)

Berkowitz and Donnerstein (1982) have also supported the use of laboratory experiments and their generalizability:

The meaning subjects assign to the situation they are in and the behavior they are carrying out plays a greater part in determining the generalizability of an experiment's outcome than does the sample's demographic representativeness or the setting's surface realism. (p. 249)

More often, laboratory experiments are an attempt to test causal hypotheses and not to test the likelihood that an event will occur in a targeted population (Berkowitz & Donnerstein, 1982). Kruglanski (1975) has contended that this type of research is universalistic or theoretically oriented research:

The hypothesis tested concerns the causal relations among general constructs... of which the specific manipulations and measures constitute arbitrary operational definitions, and the subject sample is
an arbitrary group from the general universe (e.g., the class of all humans) to which the hypothesis is assumed to apply. (p. 105)

The purpose of laboratory research is not to replicate an organizational setting, but rather to increase our understanding of behavior under certain conditions. In a laboratory setting many of these conditions can be controlled.

For the purposes of this study the unit of measurement was the team or group. The sample consisted of 115 such groups, with approximately 3 to 4 participants per group. The research hypotheses are directional and were tested with an a priori alpha level set at 0.05.

The predetermined group size was based on extensive research in the area of group decision-making tasks (L. Cummings, Huber, & Arendt, 1974; W. Watson, Michaelsen, & Sharp, 1991; Yetton & Bottger, 1983). Groups consisting of four, five, or six members demonstrate no significant difference in decision quality (Wanous & Youtz, 1986). Libby and Blashfield (1978) reported no performance increase for group size above three members. Smaller groups tend to have a positive effect on group satisfaction and participation (Hill, 1982; Levine & Moreland, 1990). Process losses occur as group size increases due to the complexity of coordination of the group effort (Steiner, 1972).

Demographic data were collected on age, gender, and years of education to describe group characteristics. Differences in general ability were controlled by the random assignment of participants to groups. Those
subjects who have previously participated in this exercise were asked to excuse themselves from the study. To accommodate the sample size, several sections of undergraduate and graduate level business and education classes were asked to participate. Sections from the College of Business were limited to the management department, whereas the education classes came from several departments within the college of education. The exact number of classes depended on enrollment. These class sections acted as intact groups for the purposes of this research and were randomly assigned to the two treatment levels (incentive or no incentive). Subjects were then randomly assigned to groups within their class, based on their locus of control. The criteria for this determination are clarified in the measurement section. Both random assignment of intact classes to treatment levels (incentive or no incentive) and the random assignment to teams were accomplished through use of a table of random numbers.

Measures

To conduct this research three measures were used. Rotter's (1966) Internal-External Locus of Control Scale determined the locus of control of each subject, and participants were randomly assigned to a team, based on this score. The Minnesota Satisfaction Questionnaire (Short Form) provided a general job satisfaction score for the dependent variable measured in this study. Finally, a group decision-making task that could be
objectively scored measured the performance of each team, based on decision quality.

Locus of Control Scale

Rotter's Internal-External Locus of Control Scale was the measurement instrument used in this study to measure individual locus of control. Locus of control is the independent variable upon which the structure of the autonomous work groups is based. This scale is not a context-specific measure of locus of control and was selected for this reason, because the participants in this study come from varied work contexts rather than one specific sector (Hodgkinson, 1992). This forced-choice scale consists of 29 items with 6 filler items that are included to make the purpose of the test ambiguous (Rotter, 1966). It is a unidimensional test used to measure the degree of externality. One point is given for every external response; the points are combined to produce the total score. The highest possible score is 23, and the lowest score is zero. Scores ranging from 1 to 11 are considered low scores and would be assigned as indicating an internal locus of control. Conversely, scores ranging from 12 to 23 are high scores and are considered to indicate an external locus of control.

As a part of the original work, Rotter (1966) reported test-retest reliabilities ranging from .49 to .85. Using the Kuder-Richardson 20, internal consistency analysis produced reliabilities for both males and
females equal to .70. The Rotter Internal-External Scale has been shown to have superior construct validity. Factor analyses during the development phase of the instrument found that most of the variance was accounted for by one factor (Rotter, 1966). Many of the subsequent locus of control scales have used the Rotter to assess their own construct validity (Hodgkinson, 1992; Spector, 1988).

It is important to note that there has been some criticism regarding the discriminant validity of the Rotter scale, which has been shown to have a significant relationship to social desirability (Nowicki & Duke, 1974). Unlike the Likert format, the forced-choice design of the I-E scale reduces correlations with the Marlowe-Crowne Social Desirability Scale, and only tests items having a low correlation with social desirability were included in the measure (Rotter, 1975). Rotter (1990) reaffirmed the test's validity by noting that a zero correlation with social desirability is not essential unless required by theory. In support of the scale, Brady (1988) found solid evidence of discriminant validity for the Rotter scale, as shown by low correlations (-.16 to -.41) between internal-external locus of control and social desirability.

**Minnesota Satisfaction Questionnaire (Short Form)(MSQ)**

The Minnesota Satisfaction Questionnaire (Short Form) was the instrument used in the present study to measure the dependent variable, job satisfaction. The Minnesota Satisfaction Questionnaire short form is a
subset of the longer version, which was developed from the research on satisfaction for the Minnesota Studies in Vocational Rehabilitation. The short form of the MSQ consists of 20 Likert format items, which comprise three scales: Intrinsic Satisfaction, Extrinsic Satisfaction, and General Satisfaction. Five response choices exist for each item. These range from 1 (very dissatisfied) to 5 (very satisfied). The specific test items that measure each of the three scales are identified in Table 3.

Table 3

Test Items Measured by Each Minnesota Satisfaction Scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic satisfaction</td>
<td>1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16, 20</td>
</tr>
<tr>
<td>Extrinsic satisfaction</td>
<td>5, 6, 12, 13, 14, 19</td>
</tr>
<tr>
<td>General satisfaction</td>
<td>1-20</td>
</tr>
</tbody>
</table>

This version takes approximately 5 minutes to administer (Weiss et al., 1967). The inclusion of a general satisfaction score is appropriate for laboratory research in this area because participants come from a variety of work backgrounds.

Weiss et al. (1967) noted that the MSQ was used to test several predictions from the theory of work adjustment, thus confirming its construct validity. The validity of the MSQ was also inferred when the test
was able to discriminate among seven occupational groups of varying social status levels, including both the disabled and the nondisabled.

Each of the three scales has maintained consistently high reliability coefficients. The Intrinsic Satisfaction scale has coefficients ranging from .84 to .91. The Extrinsic Satisfaction scale coefficients varied from .77 to .82, whereas the General Satisfaction scale demonstrated reliability coefficients from .87 to .92 (Weiss et al., 1967). A measurement of general or global job satisfaction is appropriate for subjects coming from diverse work experiences. Albright’s (1972) review in the *Seventh Mental Measurements Yearbook* found the reliability of the MSQ to be satisfactory even after students and employees were retested at 1-year internals.

**Group Decision Quality Measure**

The group decision-making task employed in this research project was a consensus task. It was used to objectively assess decision quality, which was used to measure group performance or effectiveness. As teams are called on to make more decisions, the quality of those decisions is important to the effectiveness and efficiency of the organization. Maier (1963) noted that a consensus task results in a higher quality decision due to the need for more participation from all members.

This consensus task may be thought of as a simulation or game. By definition, a simulation or game actually "involves one or more players who are given background information to study, rules and conditions to follow,"
and roles to play" (Thornton & Cleveland, 1990, p. 190). The most important aspect of a game is the interactive process of the participants and the system (Jones, 1972). Game/simulations are useful for research purposes, because they provide a way to control and manipulate a situation in a compressed time frame while providing a way to test theories. Crucial features of an activity are duplicated in a simulation, whereas reality itself may not be depicted.

From a psychometric standpoint, games and simulations are assessment instruments that demonstrate content validity and reliability. Well-designed simulations are constructed to represent either a specific task-related skill or complex behavior in a standardized format. Complexity is not always necessary in a game/simulation, because it is often helpful to isolate a behavior in order to focus assessment on the desired outcome (Thornton & Cleveland, 1990).

Reliability in game/simulation tasks is increased by all subjects participating in the same situation under standardized procedures. Thornton and Cleveland (1990) reported that "simulations are more standardized than observations and evaluations occurring in the real organization" (p. 195).

**NASA Moon Survival Problem**

The decision-making task selected for this research was the NASA Moon Survival Problem (Hall & Watson, 1970). It has been utilized widely
in studies since the 1970s for the purpose of making objective evaluations about decision quality (Bettencourt, Brewer, Croak, & Miller, 1992; Bottger & Yetton, 1987; Burleson, Levine, & Samter, 1984). The premise of the exercise is to rank 15 items in descending order of importance to survival if stranded on the moon.

This task provides an objective measure of decision quality by using the best solution provided by experts as the basis for accuracy. Scores are derived by adding the absolute values of the differences in an individual's ranking and the rankings of the expert on all of the items. This eliminates the need for subjective opinion. Therefore, a low score is desirable.

Research has noted several advantages to using this particular group task. It is unfamiliar and intellectually stimulating to most of the participants. These strengths, combined with the fact that there are few multiple solutions, make it an excellent decision-quality task (Burleson et al., 1984).

To strengthen the external validity of the study the NASA task has been shown to incorporate some of the same uncertainties that organizations encounter when making decisions. For example, Bottger and Yetton (1987) have noted that in both organizational settings and this group decision-making task, members vary in their expertise, and the extent of their skills is not always known by the other team members. The NASA task is seen as comparable to the decisions that teams must make every day in their allocation of resources (Faden, 1995). Wanous and Youtz (1986)
noted that work groups often must make decisions based on more than one option.

Procedure

Portions of three class sessions were needed to complete the data collection portion of this research. To begin the project, a brief explanation was given, and all subjects completed a short demographic survey, which was subjected to descriptive statistical analysis. In the first class session the subjects completed the Rotter's Internal-External Locus of Control Scale. Scoring of the scale and assignment of participants to teams required that the decision-making task be administered at a second class session. Within each class two categories of teams were formed: internal locus of control and external locus of control. All members within each team had the same locus of control.

Intact class sections were randomly assigned to treatment levels (incentive and no incentive) through the use of a table of random numbers. Those classes that were being rewarded with a monetary incentive for their performance on the NASA decision-making task were told that the winning group would receive $5. In case of a tie, a drawing made the decision. Those classes that represent the control groups were not given an incentive and were simply told that they were to work on a decision-making task as a group.
At the beginning of the second class session, the group assignments were made, based on locus of control. Written, standardized instructions for the NASA Moon Survival Problem were given to each class to insure treatment fidelity. In this phase of the experiment, the previously arranged groups had 16 minutes to complete the NASA task, using the standardized consensus rules provided to each group. Previous research allowed 16 minutes for this task (Hall & Watson, 1970). A group summary sheet was provided to record the groups' final rankings. Soon after completing this group task, the subjects was completed individually the Minnesota Satisfaction Questionnaire, which required 5 minutes.

At the third and final class session, feedback was provided. The correct rankings and rationale for the decisions on the NASA task were not presented immediately upon completion of the task to avoid experimental treatment diffusion (Borg & Gall, 1989). Those groups working under the incentive conditions also received their compensation at this time. Final clarification of the research and its purposes was provided.

Data Analysis

The proposed data analysis can be divided into three phases. Phase 1 consists of information from the demographic survey, which was subjected to descriptive statistical analysis in order to describe the study population.

In Phase 2 the primary analysis used to test hypotheses 1 through 4 was the two-way analysis of variance. The dependent variable in this phase
of the analysis was decision quality as measured by the NASA task, while the independent variables were locus of control and incentive. Performance-based incentives provided the treatment for the experimental group, while the group not receiving an incentive acted as the control group.

The objective for Phase 2 was to determine whether or not a statistically significant difference in group performance, as measured by decision quality, could be found between teams receiving a performance-based incentive and those not receiving an incentive when locus of control was taken into account. An interaction was assumed between locus of control and incentive. Prior research has found support for such interaction when individuals were the unit of analysis (Kren, 1992).

Hypotheses 1 through 4 were a test of simple effects within the two-way analysis of variance. Each hypothesis was a one-tailed test with an a priori alpha level of .05. The two-way analysis of variance made the following comparisons for Hypotheses 1 through 4:

1. Hypothesis 1 compared the group performance of participants with an internal locus of control who were receiving an incentive versus groups of internals receiving no incentive.

2. Hypothesis 2 compared the group performance of participants with an external locus of control who were receiving an incentive versus groups of externals receiving no incentive.
3. Hypothesis 3 compared the group performance of participants having an internal locus of control to that of groups of externals when both groups received an incentive.

4. Hypothesis 4 compared the group performance of participants having an internal locus of control to that of groups of externals when no group received an incentive.

In Phase 3 the primary analysis used to test Hypotheses 5 through 8 was the two-way analysis of variance. The dependent variable used to test Hypotheses 5 through 8 was be general job satisfaction. Data on job satisfaction were collected at the completion of the team decision-making task. The independent variables were locus of control and job satisfaction. Once again, performance-based incentives provided the treatment for the experimental group, and the group not receiving an incentive acted as the control group.

The objective for Phase 3 was to determine whether or not a statistically significant difference could be found on a measure of job satisfaction between teams receiving a performance-based incentive and those not receiving an incentive when locus of control was the basis for group composition. An interaction was assumed between locus of control and incentive. Research supported the relationship between locus of control and job satisfaction (Mitchell et al., 1975; Spector, 1986), but little is known about the added influence of incentives.
Hypotheses 5 through 8 were a test of simple effects within the two-way analysis of variance. Each hypothesis was a one-tail tested with an a priori alpha level of .05.

1. Hypothesis 5 compared the general job satisfaction of groups of participants with an internal locus of control who received a performance-based incentive versus groups of internals receiving no incentive.

2. Hypothesis 6 compared the general job satisfaction of groups of participants with an external locus of control who received a performance-based incentive versus groups of externals receiving no incentive.

3. Hypothesis 7 compared the general job satisfaction of groups of participants with an internal locus of control versus groups of externals when all received a performance-based incentive.

4. Hypothesis 8 compared the general job satisfaction of groups of participants with an internal locus of control versus groups of externals when no group received a performance-based incentive.

As noted earlier, the unit of observation for this study was the team or work group rather than the individual. The primary research intent of this study was to determine whether or not groups composed of all internals have significantly higher performance and greater levels of measured job satisfaction than do groups of externals. A secondary purpose sought to investigate whether or not the addition of a performance-based incentive would have an effect on the performance and measured satisfaction of the groups.
Summary

This research project evaluated team performance in a laboratory setting when group structure was locus of control. The dependent variables analyzed by a two-way analysis of variance were decision quality and job satisfaction. Treatment levels of incentive or no incentive were analyzed to determine any moderating effect.
The data analysis and findings of this study are presented in this chapter. Data collection took place from June 1998 through September 1998. Students in both management and education classes at the graduate and undergraduate level were among the participants. The data that were collected consisted of a demographic survey, the Rotter I-E Scale, the NASA Moon Survival Problem, and the Minnesota Satisfaction Questionnaire. Statistical Package for the Social Sciences (SPSS) 8.0 was used to enter the data and provided the statistical analysis.

Descriptive statistics were used to determine the group demographics of the research sample. In this study eight hypothesized relationships were tested in two phases. Each phase examined two types of comparisons. These were within- and between-group comparisons. Within-group referred to comparisons made between teams that had the same locus of control, while between-group referred to comparisons made between teams that had a different locus of control.

In the second and third phase a two-way analysis of variance was used to measure the specific dependent variable. Hypotheses 1 through 4
measured the first dependent variable, team performance. This dependent variable was objectively assessed by way of a decision-making task which evaluated decision quality. Hypotheses 5 through 8 measured the second dependent variable, which was general job satisfaction. Although the assessment for job satisfaction was taken individually, the scores were averaged to determine the team score. This chapter first presents a review of the descriptive data and then the results of the statistical analysis as related to the hypotheses.

Phase 1 of Data Analysis

This phase of the data analysis consisted of descriptive statistics which were included in this study to provide a better understanding of the research sample by determining the frequency or average of such variables as gender, age, education level, employment, and teamwork experience. The research sample consisted of students taking university levels courses both at the graduate and undergraduate levels.

In the total population of 443 participants the average age fell in the range of 20 to 29 years of age, with 67% females and 33% males. Fifty-five percent of the research sample had completed high school, while 45% had either a college or graduate degree. With regard to teamwork experience, 18% of the population indicated 1 year or less of experience, while 40% had 2 to 5 years, and 35% had 5 years or more of experience. Approximately 6% had no team experience of any kind. The breakdown of the current
employment status of the subjects was 17% in managerial positions, 57% in nonmanagerial positions, and 26% unemployed. In general, this research sample ranged from 20 to 29 years of age and were predominately female. Almost half had either a college or graduate degree with 2 to 5 years teamwork experience. The majority were currently employed in nonmanagerial positions. These percentages are illustrated in Tables 4 through 8.

Table 4

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>146</td>
<td>33</td>
</tr>
<tr>
<td>Female</td>
<td>297</td>
<td>67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>443</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 to 29</td>
<td>318</td>
<td>72</td>
</tr>
<tr>
<td>30 to 39</td>
<td>71</td>
<td>16</td>
</tr>
<tr>
<td>40 to 49</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>50 to 59</td>
<td>19</td>
<td>4</td>
</tr>
</tbody>
</table>
Table 6
Level of Education Completed of Study Population

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>245</td>
<td>55</td>
</tr>
<tr>
<td>College</td>
<td>153</td>
<td>35</td>
</tr>
<tr>
<td>Graduate degree</td>
<td>44</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 7
Current Employment Position of Study Population

<table>
<thead>
<tr>
<th>Position</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managerial</td>
<td>73</td>
<td>17</td>
</tr>
<tr>
<td>Nonmanagerial</td>
<td>254</td>
<td>57</td>
</tr>
<tr>
<td>Unemployed</td>
<td>116</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 8
Team Work Experience of Study Population

<table>
<thead>
<tr>
<th>Team experience</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year or less</td>
<td>83</td>
<td>18</td>
</tr>
<tr>
<td>2 to 5 years</td>
<td>176</td>
<td>40</td>
</tr>
<tr>
<td>Over 5 years</td>
<td>154</td>
<td>35</td>
</tr>
<tr>
<td>None</td>
<td>30</td>
<td>7</td>
</tr>
</tbody>
</table>
Phase 2 of Data Analysis

In this phase of the data analysis the first four hypotheses were tested using a two-way analysis of variance to analyze the expected relationship between the team's performance and the two independent variables, locus of control and performance-based incentive. These hypotheses examined two types of comparisons. Hypotheses 1 and 2 compared teams whose compositions were made up of the same locus of control and were referred to as within-group comparisons. Hypotheses 3 and 4 compared teams comprised of only internals to teams comprised of only externals. Hypotheses 1 and 2 were interested in the effect that incentive would have on team performance when locus of control was held constant. Hypotheses 3 and 4 postulated that group structure based on locus of control would impact the dependent variable and that there would be an interaction between locus of control and performance-based incentive.

Hypotheses 1 through 4

Hypothesis 1: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task when receiving a performance-based incentive than will similar groups not receiving an incentive.

Hypothesis 2: Autonomous work groups comprised of participants with an external locus of control will perform
significantly better on the decision-quality task when receiving a performance-based incentive than will similar groups not receiving an incentive.

Hypothesis 3: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task than will autonomous work groups comprised of participants with an external locus of control when all groups receive a performance-based incentive.

Hypothesis 4: Autonomous work groups comprised of participants with an internal locus of control will perform significantly better on the decision-quality task than will autonomous work groups comprised of participants with an external locus of control when no groups receive an incentive.

For each of these hypotheses the statistical analysis using a two-way analysis of variance indicated no significant difference between the mean scores on performance for the comparison groups. There was no interaction between locus of control and performance-based incentive. Multiple regression was also used to analyze the data as it is often preferable when there are disproportionate cell frequencies. This multiple regression analysis using the general linear model produced the same results. The implications of these findings are discussed in chapter 5. Table 9 contains the two-way analysis of variance for the dependent variable of team performance.
Table 9

Analysis of Variance for Team Performance

<table>
<thead>
<tr>
<th>Source</th>
<th>Degree of freedom</th>
<th>Sum of squares</th>
<th>Mean Squares</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus of control</td>
<td>1</td>
<td>.4240000</td>
<td>.4240000</td>
<td>2.538</td>
<td>.114</td>
</tr>
<tr>
<td>Incentive</td>
<td>1</td>
<td>.0323500</td>
<td>.0323500</td>
<td>.194</td>
<td>.661</td>
</tr>
<tr>
<td>2-way interaction</td>
<td>1</td>
<td>.0001371</td>
<td>.0001371</td>
<td>.001</td>
<td>.977</td>
</tr>
<tr>
<td>Error</td>
<td>111</td>
<td>18.5270000</td>
<td>.1670000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>114</td>
<td>18.9910000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. p < .05.

Table 10 contains the descriptive statistics for the dependent variable of performance. The research implications of these findings are discussed in chapter 5.

Phase 3 of Data Analysis

In this phase of the data analysis, hypotheses 5 through 8 were tested using a two-way analysis of variance to analyze the expected relationship between team job satisfaction and the two independent variables, locus of control and performance-based incentive. Once again these four hypotheses examined two types of comparisons. Hypotheses 5 and 6 compared teams whose compositions were comprised of the same locus of control and were
Table 10

Descriptive for Dependent Variable Performance

<table>
<thead>
<tr>
<th>Locus of control</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonincentive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>1.7317</td>
<td>.4486</td>
<td>41</td>
</tr>
<tr>
<td>External</td>
<td>1.8571</td>
<td>.3586</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>1.7741</td>
<td>.4215</td>
<td>62</td>
</tr>
<tr>
<td>Incentive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>1.7647</td>
<td>.4306</td>
<td>34</td>
</tr>
<tr>
<td>External</td>
<td>1.8947</td>
<td>.3153</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>1.8113</td>
<td>.3950</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>1.7467</td>
<td>.4378</td>
<td>75</td>
</tr>
<tr>
<td>External</td>
<td>1.8750</td>
<td>.3349</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>1.7913</td>
<td>.4082</td>
<td>115</td>
</tr>
</tbody>
</table>

referred to as within-group comparisons, while hypotheses 7 and 8
compared teams comprised of only internals with teams comprised of only externals. Hypotheses 5 and 6 were interested in the effect that incentive
would have on team job satisfaction when locus of control was held
constant. Hypotheses 7 and 8 postulated that group structure based on
locus of control would impact the dependent variable and that there would
be an interaction between locus of control and performance-based incentive.

Hypothesis 5: Autonomous work groups comprised of participants
with an internal locus of control will score significantly higher on the job-
satisfaction measure when receiving a performance-based incentive than will
similar groups not receiving an incentive.

Hypothesis 6: Autonomous work groups comprised of participants
with an external locus of control will score
significantly higher on the job-satisfaction measure when receiving a
performance-based incentive than will similar groups not receiving an
incentive.

Hypothesis 7: Autonomous work groups comprised of participants
with an internal locus of control will score significantly higher on the job-
satisfaction measure than will autonomous work groups comprised of
participants with an external locus of control when all groups are given a
performance-based incentive.

Hypothesis 8: Autonomous work groups comprised of participants
with an internal locus of control will score significantly higher on the job-
satisfaction measure than will autonomous work groups comprised of
participants with an external locus of control when no groups receive a performance-based incentive.

In the statistical analysis of hypotheses 5 through 8 a significant difference was found for team job satisfaction and the main effects of locus of control in the two-way analysis of variance. Table 11 contains the

Table 11

Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>Degree of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locus of control</td>
<td>1</td>
<td>2,853.299</td>
<td>2,853.299</td>
<td>6.861</td>
<td>.010*</td>
</tr>
<tr>
<td>Incentive</td>
<td>1</td>
<td>267.553</td>
<td>267.553</td>
<td>.643</td>
<td>.424</td>
</tr>
<tr>
<td>2-way interaction</td>
<td>1</td>
<td>259.592</td>
<td>259.592</td>
<td>.624</td>
<td>.431</td>
</tr>
<tr>
<td>Error</td>
<td>111</td>
<td>46,158.876</td>
<td>415.846</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>114</td>
<td>49,620.547</td>
<td>435.268</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. *p < .05

two-way analysis of variance for the dependent variable of team job satisfaction. No statistically significant difference was found in team job satisfaction for incentive or interaction between incentive and locus of control. A multiple regression analysis using the general linear model
produced the same results. A t-test of independent means revealed that, in hypotheses 7 and 8, internals scored significantly higher on the job satisfaction measurement than externals. Table 12 contains the two-way

Table 12

Descriptive Statistics for the Dependent Variable of Job Satisfaction

<table>
<thead>
<tr>
<th>Locus of control</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonincentive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>47.8780</td>
<td>19.6474</td>
<td>41</td>
</tr>
<tr>
<td>External</td>
<td>40.5571</td>
<td>24.1025</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>45.3984</td>
<td>21.3495</td>
<td>62</td>
</tr>
<tr>
<td>Incentive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>54.2500</td>
<td>20.0084</td>
<td>34</td>
</tr>
<tr>
<td>External</td>
<td>40.6053</td>
<td>18.0867</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>49.3585</td>
<td>20.2716</td>
<td>53</td>
</tr>
<tr>
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<tr>
<td>External</td>
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<td>21.1871</td>
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</tr>
<tr>
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analysis of variance for the dependent variable of team job satisfaction. The implications of these findings are will be discussed in chapter 5.

Summary

The two dependent variables were treated to statistical analysis by way of a two-way analysis of variance. For further confirmation of results, the data were subjected to statistical analysis using multiple regression. There was no significant difference in the team performance of internals and externals as measured by the decision-quality task. The addition of a performance-based incentive did not have an effect on the performance scores. The two-way analysis of variance revealed a statistically significant difference in team job satisfaction scores between internals and externals, but the addition of an incentive proved to be insignificant.
CHAPTER 5

DISCUSSION OF RESULTS AND RECOMMENDATIONS

The purpose of this study was to assess the impact of locus of control and performance-based incentives on team performance and general job satisfaction. This chapter reviews each hypothesis based upon the findings presented in chapter 4. The implications and significance of the results of each hypothesis are discussed. The chapter concludes with recommendations for future research.

Discussion of Hypotheses

Hypotheses 1, 2, 5, and 6 consist of comparisons made between groups comprised solely of individuals with either an internal locus of control or an external locus of control. This means that groups of internals were compared only to other groups of internals, while groups of externals were compared only to other groups of externals. These within-group comparisons control for the individual difference, locus of control, holding it constant within each hypothesis while varying the presence of the treatment, which is a performance-based incentive.
Hypotheses 3, 4, 7, and 8 consist of comparisons made between groups consisting of either internals or externals. This means that groups of internals are compared to groups of externals. In hypotheses 3 and 7 the treatment of a performance-based incentive was present for all groups, while in hypotheses 4 and 8 no treatment was used. The use of performance-based incentives as the treatment for hypotheses 1 through 4 was based on Vroom's (1964) expectancy theory, which proposes that effort will lead to good job performance and that this performance will result in rewards. The use of performance-based incentives as the treatment for hypotheses 5 through 8 was based on research by Podsakoff and Williams (1986), which noted that more positive relationships existed between performance and job satisfaction when reward contingencies were present than when they were not.

**Hypothesis 1**

The first hypothesis compared the group performance of participants with an internal locus of control who received an incentive to the group performance of participants with an internal locus of control who received no incentive. It was hypothesized that the groups of internals receiving the incentive would score significantly higher on a decision-quality task than the groups of internals not receiving an incentive.
The findings of this study indicated no significant difference in team performance when comparing groups of internals receiving a performance-based incentive and groups of internals receiving no incentive. Spector (1982) noted that the job performance exhibited by internals is sustained only if they perceive that their efforts will lead to rewards that are meaningful to them. The determination of relevance is difficult when research is conducted within a laboratory setting. Porter and Lawler's (1965) study also found that intrinsic rewards were more closely related to performance than were extrinsic rewards. Monetary incentives are examples of extrinsic rewards (Weiss, Davis, England, & Lofquist, 1967). Most prior research on the locus of control-performance-rewards relationship has focused on the individual as the unit of measurement. Within the team context, Garson (1995/1996) noted that internals may not be influenced by rewards when their efforts are pooled with the efforts of others in the team.

**Hypothesis 2**

The second hypothesis compared the group performance of participants with an external locus of control who received an incentive to the group performance of participants with an external locus of control who received no incentive. It was hypothesized that the groups of externals receiving the incentive would score significantly higher on a decision-quality task than would the groups of externals not receiving an incentive.
The findings of this study indicated no significant difference in team performance when comparing groups of externals receiving a performance-based incentive and groups of externals receiving no incentive. These results are supported by Rotter's (1966) definition of external locus of control. Individuals with an external locus of control view a reinforcement or outcome as outside their control and are less likely to expect that their effort will affect the attainment of the reward. This would limit the motivating effect of performance-based incentives. The research of Kimmons and Greenhaus (1976) noted that externals do not make a strong connection between performance and pay.

**Hypothesis 3**

The third hypothesis compared the group performance of participants with an internal locus of control to the group performance of participants with an external locus of control when all groups received a performance-based incentive. It was hypothesized that the groups of internals would score significantly higher on a decision-quality task than would the groups of externals. The literature is replete with research which reports that internals exert greater effort on the job and perform better because of their perceptions that their efforts will affect the outcome (Andrasani & Nestel, 1976; Heisler, 1974; Valecha, 1972).
This study found that, when the performance-based incentive was applied to all groups, there was no significant difference in team performance when comparing groups of internals to groups of externals. These results are inconsistent with most research concerning locus of control and performance. Phares (1976) studied the differential behavior exhibited by internals and externals and found that internals seem to perform better in complex problem-solving situations, which has led to the prediction of higher performance by internals. Garson (1995/1996) found that the lack of perceived complexity in the instrument used to measure team performance may contribute to the lack of differential behavior exhibited by internals. In this study the NASA Moon Survival Problem may have lacked the necessary complexity needed to motivate internals.

Hypothesis 4

The fourth hypothesis compared the group performance of participants with an internal locus of control to the group performance of participants with an external locus of control when no groups received a performance-based incentive. It was hypothesized that, when incentives were not a factor, internals would score higher on the decision-quality task due to their perception of control, which is that their actions would affect the outcome.
When no performance-based incentive was applied, the findings of this study revealed no significant difference in the group performance of internals and that of externals. Kren's (1992) research found that, when incentives were not involved, the performance of internals is less than that of externals. Several studies have yielded a positive relationship between internal locus of control and expectancies (Broedling, 1975; Mitchell, Smyser, & Weed, 1975; Szilagyi & Sims, 1975). Lawler (1971) proposed that this expectancy tendency on the part of internals made them the better candidates for pay incentives. This may help explain these results.

Hypothesis 5

The fifth hypothesis compared the job satisfaction for groups of participants with an internal locus of control who received an incentive to groups of internals receiving no incentive. It was hypothesized that the groups of internals receiving the incentive would score significantly higher on the Minnesota Satisfaction Questionnaire than would the groups of internals not receiving an incentive. The research on the use of incentives to enhance job satisfaction is conflicting. Herzberg, Mausner, & Snyderman (1959) theorized that pay may not in itself be motivating, but that the lack of it may be very dissatisfying.

The results of this study found no significant difference in the satisfaction scores for groups of internals receiving an incentive and groups
of internals receiving no incentive. An explanation for this outcome may be that pay is associated with extrinsic job satisfaction (Weiss et al., 1967) and general satisfaction was the measurement used for this study. Garson (1995/1996) explained that satisfaction for internals often comes from intrinsic factors rather than extrinsic ones.

**Hypothesis 6**

The sixth hypothesis compared the general job satisfaction scores for groups of participants with an external locus of control who received an incentive to groups of externals receiving no incentive. It was hypothesized that the groups of externals receiving the incentive would score significantly higher on the Minnesota Satisfaction Questionnaire than would the groups of externals not receiving an incentive. Research has indicated that externals are less satisfied with their jobs than internals; therefore, this research sought to determine whether or not the addition of an incentive could positively impact this attitude differential (Spector, 1982).

The results of this study found no significant difference in the satisfaction scores for groups of externals receiving an incentive and groups of externals receiving no incentive. These findings are consistent with Rotter's (1966) definition of externals, in that those individuals with an external locus of control believe that a reward or an outcome is beyond their control and will be more likely to be determined by circumstances. The
conclusion is that the introduction of a reward may not be enough to alter this perception.

**Hypothesis 7**

The seventh hypothesis seeks to compare the job-satisfaction scores on the Minnesota Satisfaction Questionnaire of groups of internals to the scores of groups of externals when all groups receive an incentive. It is hypothesized that internals will score higher than externals when performance-based incentives are applied equally. This is based on research which notes that internals are generally more satisfied with their work (Ferguson & Kennelly, 1974; Runyon, 1973; Spector, 1982). Spector (1982) observed that internals experience the benefit of rewards associated with good performance more than do externals, and they promote more quickly than do externals, which is satisfying.

The findings in this study revealed a significant difference in job-satisfaction scores between groups of internals and groups of externals, but the addition of a performance-based incentive did not affect the outcome. Internals scored significantly higher on the job-satisfaction scale than did externals. The results of this significant difference for the main effect of locus of control are attributed to the characteristics of team-work, which are appealing to internals.
Hypothesis 8

The eighth hypothesis compared the job-satisfaction scores for groups of participants with an internal locus of control to the job-satisfaction scores of participants with an external locus of control when no groups received a performance-based incentive. It was hypothesized that, when incentives were not a factor, internals would have higher job-satisfaction scores than externals. This hypothesis was based on a meta-analyses conducted by Spector (1986), which consistently found overall support for higher levels of satisfaction for internals.

A significant difference in job-satisfaction scores was found between groups of internals and groups of externals. Internals scored significantly higher on the job satisfaction scale than did externals. The results support the research which contends that internals score higher on job-satisfaction measures that do externals (Mitchell et al., 1975; Spector, 1986).

Conclusions and Recommendations

This study fulfills its twofold purpose stated in chapter 1. The primary research intent was to strengthen the existing body of knowledge concerning the effect of individual differences and incentives on team performance and job satisfaction. Although a statistically significant difference was found only for the main effect of locus of control, the conclusion can be drawn that individual differences do impact group
output. This study emphasizes the need for further investigation of the effects of individual differences on team behavior. There is also much room for additional research on the role that group incentives play in team performance and satisfaction, especially in the area of establishing relevant group outcomes or rewards. It is essential to conduct additional research and replication of existing research in these areas, both in laboratory and field settings. Longitudinal studies are recommended for tracking progression or changes on these attributes. The use of different research populations would expand external validity and contribute to the knowledge base concerning the impact of individual differences on team performance and job satisfaction.

The research population for this study came from diverse backgrounds and work experiences. For this reason, the Rotter I-E Scale, which provided a general measurement of locus of control, was useful and appropriate. For further study it is recommended that other locus of control scales be used which are more situation specific, such as the Strategic Locus of Control Scale developed by Hodgkinson (Boone & DeBrabander, 1993). Other researchers (Furnham & Steele, 1993) even recommend the use of attributional-style instruments rather than unidimensional scales such as Rotter's (1966).

For the purposes of this study and those similar to it, the recommendation is made that job satisfaction measures be used in which
participants can relate their team task experience to the satisfaction measure. One suggested measure is the Job Descriptive Index (Smith, Kendall, & Hulin, 1969). This job-satisfaction measure is job referent instead of self-referent, which makes it appropriate for measuring the job satisfaction of almost any task.

The practical intent of this research was to provide human resource practitioners and organizational managers, as well as school administrators, with information that can be utilized as they seek to implement and train teams. The identification of locus of control can provide practitioners with one more tool that can be used in the initial phase of team assignment. It may be preferable to have employees with an internal locus of control placed in positions that require some of the same characteristics that they possess. It may also be desirable to assign some internals to all teams, since they prefer this type of job design. The possibility of changing one's locus of control through training or direct instruction can have far-reaching benefits for the individual as well as the organization. It offers the individual the opportunity to experience greater control over situations previously believed to be unattainable. This possibility also provides an entirely new area within the training arena for the development, delivery, and evaluation of materials. Another practical application comes from the need to improve incentive plans for collective efforts, with an emphasis on group valence. These practical considerations can have a financial impact on organizations
through a more efficient and effective use of their human resources, as well as a compensation strategy appropriate for a group effort.

Summary of Recommendations

The following list summarizes the recommendations made for future research:

1. Replicate the present study, both in laboratory and field settings.
2. Conduct longitudinal research for tracking progression or changes in locus of control, group performance, and job satisfaction.
3. Utilize different research populations to strengthen external validity.
4. Replicate the research, using a variety of test instruments for measuring locus of control, job satisfaction, and team performance.

Chapter Summary

This chapter discussed the results of the statistical analysis of the data. It addressed the findings concerning each hypothesis and elaborated on the implications and research support for each postulate. Recommendations for future research concluded the chapter.
APPENDIX A

USE OF HUMAN SUBJECTS INFORMED CONSENT AND PERMISSION LETTERS
USE OF HUMAN SUBJECTS

INFORMED CONSENT

The purpose of this research is to investigate the impact of individual differences on job satisfaction and decision-making, within a group environment. It will be completed in three partial class sessions. All information collected is confidential, and my name will not be used at any time. The data will be aggregated for statistical purposes.

I understand that this study is being used as dissertation research for Betty Cooper, doctoral student in Applied Technology, Training and Development.

I agree to complete a demographic survey for descriptive statistics and to complete the Rotter I-E Scale and the Minnesota Satisfaction Questionnaire. I further agree to participate in a group decision-making task. I understand that my input may not be used to reach group consensus, but there is no serious risk to any participant.

I understand that the research is primarily designed to further organizational effectiveness, but may also extend my knowledge of the study variables. Should the need arise, I may withdraw from participation at any time without penalty.

Thank you for your participation,

Betty Cooper
201 Royal Oaks Court
Denton, TX 76205
940-565-1579

Name and Date

This project has been reviewed and approved by the University of North Texas Institutional Review Board for the Protection of Human Subjects in Research 940-565-3940.
March 6, 1998

Ms. Betty Cooper
201 Royal Oaks Court
Denton, TX 76205

Re: Human Subjects Application No. 98-028

Dear Ms. Cooper:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), I have conducted an expedited review of your proposed project titled "Impact of Individual Differences on Team Performance and Job Satisfaction." The risks inherent in this research are minimal, and the potential benefits to the subjects outweigh those risks. The submitted protocol and informed consent form are hereby approved for the use of human subjects on this project.

The UNT IRB must re-review this project prior to any modifications you make in the approved project. Please contact me if you wish to make such changes or need additional information.

If you have questions, please contact me.

Sincerely,

Walter Cr^&chanas, Jr., Ed.D.
Chair, Institutional Review Board

cc: IRB Members
June 16, 1998

Betty Cooper
201 Royal Oaks Ct
Denton, TX 76205

Dear Betty Cooper:

We are pleased to grant you permission to use the Minnesota Satisfaction Questionnaire short form 1977 for use in your research.

Vocational Psychology Research is currently in the process of revising the MSQ manual and it is very important that we receive copies of your research study results in order to construct new norm tables. Therefore, we would appreciate receiving a copy of your results including 1) demographic data of respondents, including age, education level, occupation and job tenure; and 2) response statistics including scale means, standard deviations, reliability coefficients, and standard errors of measurement. If your tests are scored by us, we will already have the information detailed in item #2.

Your providing this information will be an important and valuable contribution to the new MSQ manual. If you have any questions concerning this request, please feel free to call us at 612-625-1367.

Sincerely,

Dr. David J. Weiss, Director
Vocational Psychology Research
February 6, 1998

Betty Cooper
2206 Laurel St.
Denton, TX 76205

Dear Ms. Cooper:

You have my permission to reproduce and use the I-E Scale for your research, providing you consult with or are supervised by someone who is trained in the use and interpretation of personality tests.

Very truly yours,

Julian B. Rotter
Professor of Psychology
APPENDIX B

SURVEYS AND TESTS
Demographic Survey

Please check the appropriate box for each item below.

Note: All information to the following questions will be strictly confidential.

Name

Date

1. Gender
   □ Male
   □ Female

2. Age
   □ 20-29
   □ 30-39
   □ 40-49
   □ 50-59
   □ 60 and over

3. Level of education completed
   □ High school
   □ College
   □ Graduate degree

4. Current employment position
   □ Managerial
   □ Non-managerial
   □ Unemployed

5. Team work experience
   □ 0-1 year
   □ 2-5 years
   □ Over 5 years
   □ None
RESEARCH QUESTIONNAIRE

Part 1

Each item below consists of a pair of statements. Please clearly write your answer in the blank to indicate the statement which you more strongly believe to be the case in your opinion. There are no right or wrong answers. Do not spend too much time on any one item, but be sure to complete every item. Answer each item independently; do not let a previous answer influence your choice.

All answers will be kept confidential.

_____ 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 war 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 truly 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 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 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 feel 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.
Group Decision-Making Task

Instructions: You are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some 200 miles from the rendezvous point. During the crash landing, much of the equipment aboard was damaged and, since survival depends on reaching the mother ship, the most critical items available must be chosen for the 200 mile trip. Below are listed the 15 items left intact and undamaged after landing. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important and so on through 15, the least important (Hall & Watson, 1970, p. 316).

_____ Box of matches

_____ Food concentrate

_____ 50 feet of nylon rope

_____ Parachute silk

_____ Solar-powered portable heating unit

_____ Two .45 calibre pistols

_____ One case of dehydrated Pet milk

_____ Two 100-pound tanks of oxygen

_____ Stellar map of the moon’s constellation

_____ Self-inflating life raft

_____ Magnetic compass
5 gallons of water
Signal flares
First aid kit containing injection needles
Solar-powered FM receiver-transmitter
Decision-making Task Instructions

**Group Instructions**

This is a group decision-making task, called the NASA Moon Survival Problem. If you have previously completed this exercise, recently enough to remember the correct answers, please do not participate. Each person will be assigned to a team. At the end of these instructions you will hear your name called at which time relocate yourself with your other team members.

This task involves ranking 15 items needed to survive on the moon after a crash-landing. The complete scenario is detailed at the top of the ranking form. Though each person has the scenario and a ranking form for reference, select one group member to record the answers for the group. The recorder will also write the team member names at the top of the one form.

The teams will use the attached consensus rules in reaching each of its 15 ranking decisions. Consensus does not mean unanimity or complete approval, but rather each member must at least partially agree to each ranking based on logic not preference. Please refer to the consensus guidelines (Hall & Watson, 1970).

I encourage you to read the task carefully as the details will help you to make your rankings. You will have 16 minutes to complete the task. You may not confer with other teams. You may not ask any questions after the task begins, so are there any questions at this time?

**Directions for Treatment Groups**

The highest scoring team in this class section will be working for a performance-based incentive that will be a monetary reward given at the next class meeting. In the case of a tie a drawing will determine the winning team.
Consensus Rules

1. Do not argue for your own rankings. Use logic.

2. This is not a win-lose situation. You may have to look for the next best alternative.

3. Do not agree only to avoid conflict. Make sure there is a sound reason for agreement.

4. Avoid conflict-reducing techniques such as majority vote, averaging, or coin tossing.

5. View differences of opinion as valuable input, including everyone in the decision.

6. Examine an initial agreement to determine if the underlying reasons are basically the same.
REFERENCES


80th Annual Convention of the American Psychological Association, 80, 455-456.


