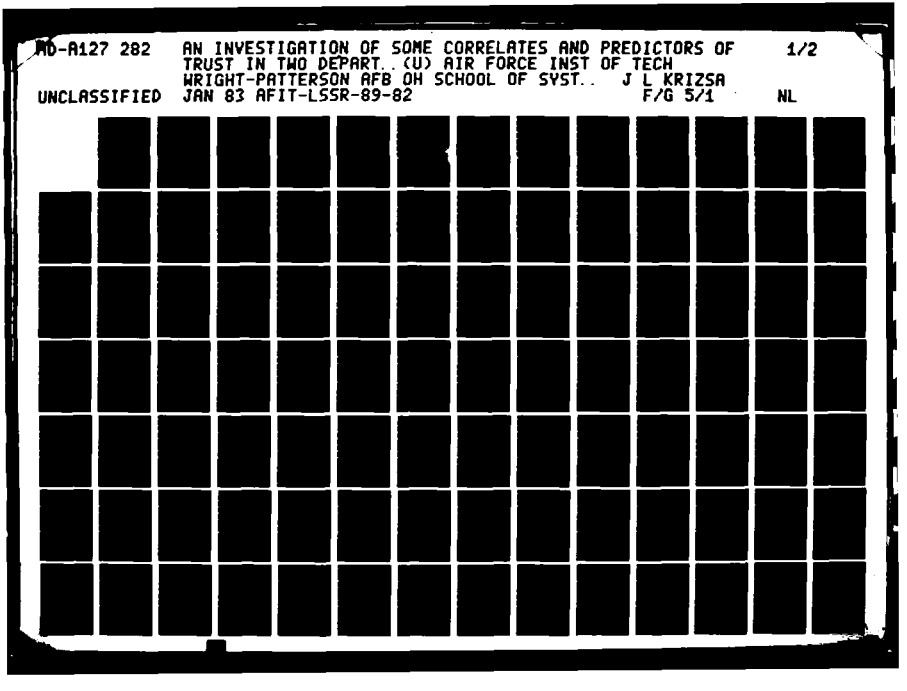
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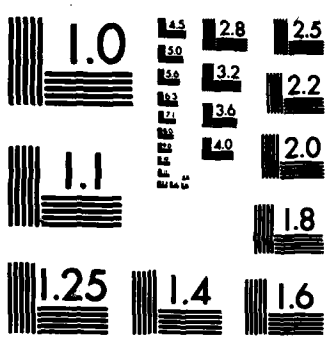

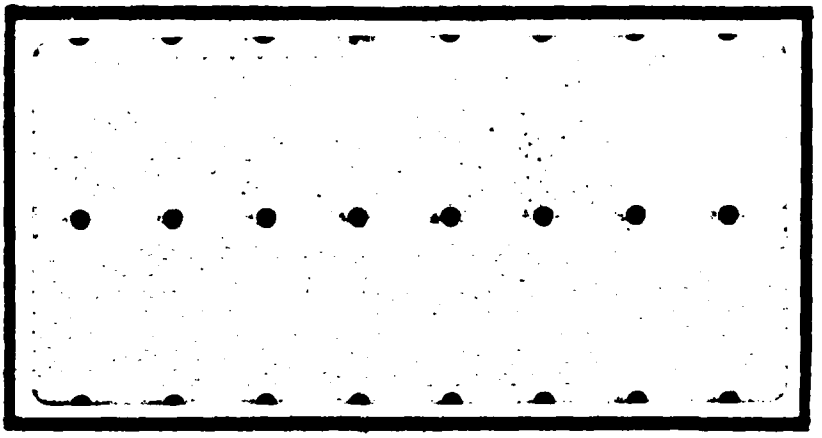

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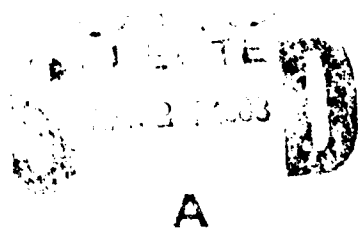
AN INVESTIGATION OF SOME CORRELATES AND PREDICTORS OF TRUST IN TWO DEPARTMENT OF DEFENSE ORGANIZATIONS

Joseph Louis Krizsa

LSSR 89-82



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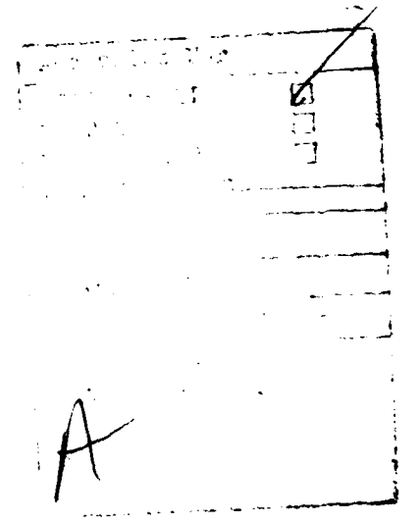

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This thesis analyzes the relationship between interpersonal trust and other relevant attitudinal variables identified in the management literature. A survey research instrument was administered to 284 people from Wilford Hall Hospital in San Antonio, Texas and 299 people from Tyndall Air Force Base, Florida. Pearson's coefficient of correlation was used to measure the relationship between trust and group cohesion, job satisfaction, organizational commitment, communications, the perceived supervisor's job performance and job stress. As predicted, trust emerged as being positively related to all of these except for job stress, for which a negative relationship was correctly predicted. Multiple regression analysis was used to determine the importance of the independent variables of participation, organizational commitment, communications, cohesiveness and the six interaction variables of participation/organizational commitment, participation/communications, participation/cohesiveness, communications/organizational commitment and cohesiveness/communications as predictors of the dependent variable of trust. Results here were inconclusive as only one independent variable, across both samples, emerged as a significant predictor of trust. More investigation is needed in this area, with emphasis on more sophisticated analytical techniques and larger and more diverse samples.

LSSR 89-82

AN INVESTIGATION OF SOME CORRELATES AND PREDICTORS OF TRUST IN TWO DEPARTMENT OF DEFENSE ORGANIZATIONS

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

By

Joseph Louis Krizsa
GS-12

January 1983

This thesis, written by

Joseph Louis Krizsa

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT

DATE: 28 January 1983

COMMITTEE CHAIRMAN

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CHAPTER I

Introduction

From 1945 to the present, the Japanese have emerged from the rubble and devastation of their homeland to become one of the premier industrial nations of the world. They are now the world's largest producer of automobiles ("Auto Recession...," 1982), motorcycles ("Hotline," 1982), and quality photo and electronic consumer items ("Japanese Diversified Industry," 1982). In addition to this tremendous proliferation of mass produced consumer items, the Japanese have also been on the forefront of advances in production techniques and quality control (Pascale & Athos, 1981). Examples include the increasing use of robotics (Nicholson & Willenson, 1981), and quality control circles, a popular human resources development technique (Cole, 1980).

The Japanese currently have the fourth largest economy in the world. Per capita income is about $7,500. Productivity is increasing at about 4-5% annually, while the current rate of inflation is under 5% ("Information Please Almanac...," 1981).

This economic success has been accompanied by the appearance of numerous articles and books, both in the popular media and the scholarly journals, concerning the reasons for this success. This material falls into two main categories: one which deals with the "harder" aspects of econo-

mic performance such as international rates of exchange, inflation, capital investment, supply shocks, etc. (Beigie, 1979; Dunn, 1980; Mendelsohn, 1980; Miles, 1978), and another which deals with the "softer" aspects such as managerial style and industrial relations policies (Cole, 1971, 1979, 1980; Ouchi, 1981; Pascale & Athos, 1981; Hatvany & Pucik, 1981).

A recurring theme throughout this second type of material concerns the whole area of intra-firm, interpersonal relations. Key ideas which emerge from this literature emphasize such things as concern for the employee, open communications, consensual decision-making and personal development. Hatvany and Pucik (1981) state that "Japanese management is characterized by a focus on the maximum utilization of human resources" (p. 469). One of the main concepts underlying this approach is a company philosophy that expresses concern for the employee's needs and emphasizes cooperation and teamwork (Pascale & Athos, 1981; Ouchi, 1981; Cole, 1980). Hatvany and Pucik (1981) provide a very concise description of Japanese industrial relations when they state:

> Work is structured so that it can be carried out by groups operating with a great deal of autonomy. Open communication is encouraged.... Information about pending decisions is circulated widely before the decision is actually made. Active, observable concern for each and every employee is expressed by supervisory

personnel. (p. 471)

Integral to these three basic ideas of communication, consensual decision-making, and concern is the concept of trust. Trust may be conceptualized as having two different aspects: the institutional relationship between the firm and individual employees, and the specific relationships between superiors and subordinates within the firm.

A primary manifestation of this first aspect of trust is the lifetime employment "contract" between the company and the individual that exists within the largest of Japanese companies.

> In return for the employee's contribution toward the company's growth and well being, the profitable firm will provide him with a stable work environment and protect his welfare even during a period of economic slowdown. (Hatvany & Pucik, 1981, p. 474)

An elaboration of the second aspect of trust is provided by Cole (1978), who refers to a "reciprocal relationship" where the "supervisor is expected to be dependable. . . workers are expected to respond with . . . loyalty and commitment" (p. 245). He also recounts a situation where a supervisor in an auto parts firm " . . . often paid money out of his pocket to help out in weddings and funerals of workers" (p. 177). In short, the subordinate ". . . can expect that his interests will be taken care of . . ." (Cole, 1971, p. 185). In turn, "Japanese managers believe in their work force. . . . They believe that, given the opportunity,

their labor force can, and wants to, contribute to organizational goals" (Cole, 1980, p. 25).

Japanese goods have achieved a world-wide reputation for quality. In Cole's (1980) suggestions to American business concerning the successful implementation of Japanese quality control techniques, he makes the following admonishments:

> Trust your employees. Accept that they will work to implement organizational goals if given a chance . . . recognize employee accomplishments. . . . Decentralize decision-making. . . . Work is a co-operative effort. . . . It implies some sort of consensual decision-making. (pp. 28-29)

Ouchi (1981) makes much the same point in his recent bestseller, Theory Z. He attributes the recent Japanese commercial success to their emphasis on the organizational and behavioral aspects of industrial management. He views Japanese management techniques as being a function of the mores of Japanese society, with its emphasis on close social relationships and the intimacy, support and disciplined unselfishness that this closeness generates. Ouchi contrasts this situation in Japanese society with contemporary American society in which he perceives a loss of closeness accompanied by the undesirable consequences of such a loss.

He asserts that these characteristics of Japanese society are readily transferred to the Japanese firm where their presence acts to generate a higher sense of trust and

to facilitate communications among members of the firm. Allied to this is a consensual type of problem solving and decision-making which tends to engender a greater sense of commitment to the organization and also of involvement in the affairs of the organization. This, finally, results in greater productivity and job satisfaction among members of the firm.

Ouchi refers to this "Japanese" style of management as "Theory Z" and recommends its adoption throughout American industry. He states specifically, "The first lesson of Theory Z is trust. Productivity and trust go hand-in-hand.., involved workers are the key to productivity" (pp. 4-5).

The situation in Japan concerning the primacy of trust as a facilitator of group accomplishment contrasts strongly with the practice in much of industrial America where an adversary relation between management and its employees is typically the norm.

> Most U.S. motivational schemes assume that workers know how to raise productivity and improve quality, but they are holding back for no justifiable reason. Operator indifference or even sabotage are assumed to be the normal problems management must combat. (Cole, 1980, p. 26)

Given this mutual lack of trust, management's frequent recourse is the application of more and more intense supervision with all that implies for future management-employee relations within that company.

CHAPTER II

Literature Review

Background

The management literature has seen a large amount of work done in the area of trust. Although no consensus exists concerning a specific definition of the term, there appears to be generalized agreement regarding the basic parameters of the disagreements and also the importance of trust to organizational function.

Deutsch (1958) draws upon his experience in game theory to posit a definition of trust. He states:

> An individual may be said to have trust in the occurrence of an event if he expects its occurrence, and his expectation leads to behavior which he perceives to have greater negative motivational consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed. (p. 266)

For Deutsch, trust has three bases: motivational relevance, predictability, and the notion that unrequited trust will engender unpleasant consequences for the trusting individual. Inherent in this approach is the idea that the placing of trust by an individual is a form of risk-taking.

Deutsch bases his concepts on a series of experiments involving two-person, zero-sum games. This is a game in

which the payoff (gains or losses) incurred by each person is a function of the choices made by one's partner as well as by oneself.

The essential behavioral or "psychological" factor of this game is that "no possibility for 'rational' behavior exists without the existence of mutual trust" (Deutsch, 1958, p. 270). The games were of either one or ten trials. All participants were college students who were thoroughly briefed beforehand of the vagaries of this type of game. All participants purported to understand these conditions.

The games were operated under three types of motivational orientation:

1. co-operative - each player was led to pursue both his own welfare and that of the other person.

2. individualistic - each player was led to maximize his own gains.

3. competitive - each player was led to believe that his primary intent was to do better than the other player.

In addition, these games occurred under four different experimental conditions:

1. no communication - both players make their choices in secret and at the same time.

2. communication - both players are allowed to communicate with each other via notes before making their choices.

3. reversibility - same as communication, except that after both choices had been made, either or both players could change their choices.

4. non-simultaneity - one player made the first choice. This was then announced to the other player. Each player could make a change after the announcement was made. There was no limit to these changes. No other communication was permitted.

Results were determined solely on the basis of the percentage of co-operative choices made by the two players. This is the choice that would result in the maximum possible payoff for both players, and hence, a choice that would manifest the presence of "trust" between the two players.

The results indicate that a co-operative orientation leads the players to make a co-operative choice which results in a mutual gain under all four experimental conditions. A competitive orientation leads to non-cooperative choices and results in a mutual loss under all experimental conditions. An individualistic orientation falls between co-operative and competitive orientation in all experimental conditions. Under the conditions of non-simultaneity, the results of the individual and competitive orientation were very similar. Under the communication and reversibility conditions, the individual and co-operative orientation were similar.

Deutsch concludes: 1) that it is possible to capture and to study the phenomenon of trust in the laboratory; 2) that mutual trust is more likely to occur when two people are positively oriented toward each other's welfare; and 3) that the development of trust can be facilitated by the

opportunity for each person to know what the other person will do before he irrevocably commits himself to a trusting choice.

Deutsch's approach is based on his prior experience in n-person, zero-sum game theory. The interposition of the values, structure and methods of game theory to the examination of interpersonal trust tends to pose difficulties.

The underlying basis of game theory is the idea of "rationality" defined as the pursuit of the payoff structure as detailed in a specific game, by the individual players or participants in that game. In Deutsch's study, the payoffs were all of a monetary nature. He ignores any other payoffs of a less concrete, but nonetheless important nature, such as pride, prestige or revenge. The point here is that the most valid payoffs are those which are meaningful, in equal units of utility, to each player in the game.

Allied to this is the concept of "perfect information." The participants in Deutsch's study were provided all of the information they required to conduct the experiment. In real-life situation, things typically are not so concise. In reality, an individual's payoffs, however they may be defined, are not so clearly connected to specific actions or choices. This is due to the complexity of society and also to the dichotomy between near-term and long-term payoffs.

Finally, Deutsch seems to treat trust and suspicion as being polar opposites lying along the same conceptual continuum. Trust appears to carry a very obvious positive con-

notation, while suspicion is viewed as being disruptive and dysfunctional. Deutsch (1958) states that his findings support ". . . commonly held assumptions that trusting people are 'nicer' than suspicious people" (p. 278). Although he briefly mentions what he refers to as the "pathology of trust, a compulsive, incorrigible tendency to act in a trusting manner. . . gullible . . . dupe" (p. 279), and admits its potentially dysfunctional effects, he does not acknowledge the idea that the presence of a small bit of suspicion, "a kind of alert, but not distracting guardedness . . ." (Kee & Knox, 1971, p. 362), may be facilitative.

Gibb (1964) describes trust as a "perceived supportive climate" (p. 288). This definition proceeds directly from his work with t-groups, in which he dealt with various aspects of group effectiveness.

A t(training)-group is a small, unstructured group of people, in which the participants, through ". . . open and authentic communication with each other can become more self-aware and more interpersonally competent" (Albanese, 1981, p. 626). In such a situation, the primary emphasis is to learn by and from each other.

These experiments extended from 1937 to 1956 and encompassed 114 separate t-groups. The participants included college students and people from both government and industry. These groups met in sessions ranging from 20 to 240 hours. Most lasted about 30 hours.

Gibb (1964) identified four aspects of successful group effort: acceptance, data flow, goal formation and control. Measurement consisted of data obtained from audio tapes of the training sessions and also from coded observations taken by observers of the sessions. Observations were made twice - shortly after the beginning and right before the end of each t-group session. In most cases, the observers were the training instructors. Data from these sessions were compared based on the four aspects of acceptance, data flow, goal formation and control. This comparison indicated that group development is contingent upon the formation of trust by the group's members. Especially important here are the effects of trust on data flow, and of data flow on consequent group effectiveness. A free flow of data is possible only with an a priori diminution of the level of mistrust among the members of the group. High levels of fear and mistrust prevent the proper processing of data beyond the limits of the group trust.

Gibb's study appears to be one of the first that shows the relationship between interpersonal trust, intra-group communications, and the level of group development. Apparently, the ability of members of the group to function together is based on the quality of their communications with each other. This, in turn, is based on the levels of interpersonal trust which exists between them.

Friedlander (1970) focused directly on Gibb's prior work concerning the nature of trust and its role as a faci-

litator of further group accomplishment. His subjects consisted of twelve work groups from an industrial setting. Four of these groups were selected for training, while the remaining eight groups were not. The training was a typical t-group effort. Its purpose was to identify problems facing the groups on the job, determine the causes of these problems, develop solutions for them and plan the implementation of these solutions within the corporate culture.

The measuring instrument consisted of a series of open-ended interviews followed by a questionnaire developed from the interviews. By conducting interviews with all group members prior to training, the researchers were able to obtain an extensive array of material dealing with the problems and issues the work group members perceived to exist in their work situations. The comments from these interviews were then re-phrased and integrated into items on a questionnaire. These questions were accompanied by other items from the management literature dealing with group descriptive dimensions, issues and hypotheses. These latter questions were intended to evaluate the adequacy of the work group and its meetings.

A factor analysis was performed on the data from the questionnaire. Four salient factors emerged: trust and three measures of group accomplishment, consisting of group effectiveness, leader approachability, and worth of meetings. Trust, here, is contrasted to competitiveness and emphasizes the ability of the members of the group to work together.

Group effectiveness refers to the ability of the group to solve problems and develop policies through creative teamwork. Leader approachability refers to the respondent's ability to approach the leader and maintain a comfortable relationship with him. Worth of meetings refers to the respondent's perceptions regarding the value of work group meetings.

Friedlander named his questionnaire the "Group Behavior Inventory." It was administered twice to each of the twelve groups. All received it prior to the start of the t-group training sessions. The four training groups received the questionnaire again six months after the completion of the training. The other eight groups took the questionnaire the second time exactly six months after the first administration.

Because of the structure of Friedlander's experiment, syntax must be devised to differentiate between the two administrations of the questionnaire. "Early trust" refers to the measurement of trust obtained from the first administration of the survey, while "later trust" refers to the trust measurement obtained from the second survey. These same descriptions, "early" and "later", are also applicable to the other variables measured by Friedlander, such as group effectiveness, etc.

Friedlander had two purposes in this research:

1. to determine to what extent initial group trust acts as a predictor of future group accomplishment.

2. to determine the relationship between trust and the other variables both before and after training.

Intercorrelations of the data from both surveys were calculated. The results indicated that early group trust predicts later group effectiveness better than any other variable (r = .60); and early group trust is the best predictor for later worth of meetings (r = .55). In addition, a convergence among variables occurred as a direct result of the training. The relationship between group trust and worth of meetings increased from r = .218 to r = .78. The relationship between group trust and perceived group effectiveness increased from r = .41 to r = .60. The relationship between group trust and leader approachability increased from r = .28 to r = .38.

Friedlander's work is important in that it appears to validate the prior work of Gibb in showing the extreme importance of group trust to the successful accomplishment of group objectives. It also seems to point to the beneficial effects of training on the development of trust within the work group.

Rotter (1967) defines trust as an "expectation held by an individual or group that the word of another individual can be relied on" (p. 651). Rotter is the developer of the Rotter Interpersonal Trust Scale, which remains the most widely referenced instrument used to measure trust.

The initial form of this questionnaire contained 40 items; 25 were used to measure trust and 15 were filler

items. It was based on a 5-point Likert Scale format, with possible responses ranging from (1) "strongly disagree" to (5) "strongly agree."

Rotter is one of the principal exponents of the concept of the "situational" basis of interpersonal trust. This perspective is that the willingness of an individual to extend trust to some entity (person, social institution) is a function of the perceived "trustability" of that entity by the individual. Thus, Rotter attempts to draw upon a wide range of trust objects (persons and institutions) which the respondent is requested to react to in terms of trust. These trust objects include such things as parents, teachers, the media, politicians, and classmates. In addition, a number of items were included to measure a general sense of optimism regarding society.

The Interpersonal Trust Scale was first administered to a group of 547 students (248 males and 299 females) of introductory psychology. Each respondent also completed a basic demographic worksheet which dealt with age, family, religion, etc.

The results indicate that there is a positive relationship between levels of trust and both socio-economic level and religious preference. In the latter case, students who endorse a specific religion tend to be more trusting than those who do not. Also, students whose parents practice the same religion manifested higher trust levels than those whose parents do not.

This study by Rotter is important in that it marks one of the first attempts to analyze and measure trust via survey research methods.

Zand (1972) uses the term "trusting behavior." He defines this as an action which:

> (a) increases one's vulnerability, (b) to another whose behavior is not under one's control, (c) in a situation in which the penalty one suffers if the other abuses that vulnerability is greater than the benefit one gains if the other does not abuse that vulnerability. (p. 230)

This definition is similar to that espoused by Deutsch (1958) in that both equate trust with a sense of risk. Zand's methodology, though, is vastly different from that of Deutsch.

He conducted his research during a series of four-week, off-site programs on management development. The subjects were all upper mid-level management personnel from a large, international electronic company. Personnel were divided, equally, into two main functional groups--participants and observers. The participants numbered 64 people. This arrangement consisted of 16 problem-solving groups of four people each. The observers numbered only 59 as five of the observer groups lacked one person each.

The problem-solving groups were presented with a fabricated, business "problem", the ostensible purpose being to permit them to demonstrate their competence in decision-

making in a group environment. All subjects (participants and observers) were given the same problem input, which detailed the difficulties of the firm in the areas of marketing, finance and personnel. In addition, the problem-solvers were randomly assigned to one of two group conditions in which a mind set was manipulated toward either high or low trust.

In the presence of the observers, the problem-solvers were to conduct a meeting which lasted 30 minutes. The specific task was to make the necessary management decisions to deal with the situation outlined in the fabricated business "problem." The observers were given no prior information concerning the differing mind sets.

At the end of 30 minutes, the group meetings were stopped. All problem-solvers and observers were given a questionnaire with eight items. They were asked to rate the items on the questionnaire used only the phrases "much" or "little." The properties to be rated included trust, openness of meetings, clarification of the group's basic problems and goals, the search for alternate courses of action, mutual insistence on outcomes, satisfaction with the meeting, motivation to implement decisions, and closeness as a management team as a result of the meeting. The eight items in this survey represent desirable, positive characteristics. They are intended to be facilitative in nature. Consequently, there should be a positive correlation between the frequency with which the respondents apply the term "much"

to these items and the perceived ability of these groups to successfully resolve management-type problems in business.

Results showed that for all eight items, the high trust groups manifested significantly higher levels of facilitative behavior than did the low trust groups. This was true across both sets of raters, problem-solvers and observers.

Zand's study would appear to buttress the prior findings of Gibb (1964) and Friedlander (1970) concerning the importance of trust as a necessary ingredient in the effective performance of groups. Zand, though, broadened the focus by examining the effect of experimentally induced disparity in trust levels on groups working on the same problem. Apparently when people work together in a group there are two concerns. The first is the problem itself (a content issue), while the second is the way members of the group interact as they attempt to grapple with the "real" problem (process issues). In groups with low trust, it appears that interpersonal relationships tend to interfere with and distort the group perception of the "real" problem.

Kegan and Rubinstein (1973) define trust as a "preconscious attitude permitting one to enter into a situation with minimal concern or worry" (p. 499). They dealt with the relationship between trust within the group and self-actualization.

Self-actualization was accepted as an indicator of individual effectiveness. It is "present when organizational members believe their occupational role demands permit rela-

tively full expression of the individual potential, as well as opportunities to expand their potential" (Kegan & Rubinstein, 1973, p. 504).

Subjects numbered 2,500 and were drawn from three Fortune 300 industrial companies. All worked in high technology research or in staff support positions at their respective companies. All work for the experiment was conducted in-house.

The subjects completed three separate questionnaires which included items measuring basic demographic variables, self-actualization, and aspects of group climate focusing on trust and openness of communications. The measurement of self-actualization was based on Banjean and Vance's (1968) short-form measure of self-actualization. This is based on 13, four-point scales which measure how much a person is obtaining what he consciously desires from his work. Trust is measured by the Rosenberg Faith-in-People Scale (Rosenberg, 1956).

The results indicated a positive correlation between intra-group trust and self-actualization (rho = .35, N = 72, $p < .01$).

Kegan and Rubinstein deal with three variables here: trust, self-actualization and effectiveness. Their data appear to support the contention that trust relates to self-actualization. However, their earlier statement concerning "self-actualization . . . as an indicator of individual effort" (p. 504) was made without any supporting documenta-

tion. The authors, in effect, defined it to be the case. The inclusion of this opinion in this manner tends to weaken their study.

Roberts and O'Reilly (1974) attempted to determine the relationship in an organization between upward communications and the three variables of: trust in the superior, the perceived influence of the supervisor over the subordinate's chances for promotion, and the mobility aspirations of the subordinate.

The subjects were drawn from four diverse organizations, including a mental health facility (MHF), an Air Force unit dealing in high technology (AF), a hospital emergency room (HER), and a string of six branch offices of a finance company (FC). Subjects numbered 439.

The measuring instrument consisted of a series of 20 questions which were included as part of a larger survey of employee attitudes. These 20 items consisted of three items which dealt with trust, two items which dealt with the supervisor's influence over promotion, two which measured the subordinate's desired upward mobility, and the remaining 13 which measured different aspects of upward communications. The items dealing with trust, influence and mobility were grouped into three separate indices. Correlations were computed which related each of these three indices to the 13 communications variables. This was done for all four of the work organizations.

The results indicate that a significant relationship exists in all four organizations between trust in the supervisor and the subject's perceptions of the accuracy of information received from the supervisor (r = .36, p < .001, MHF; r = .25, p < .05, AF; r = .28, p < .05 FC; r = .28, p < .05, HER); and also between trust in the supervisor and the subject's perceptions of the supervisor's influence over his career (r = .50, p < .001, MHF; r = .26, p < .05, AF; r = .32, p < .05, HER; r = .39, p < .001, FC).

In addition, trust in the supervisor was significantly related in three of the organizations to subordinate's desire for interaction with the supervisor (r = .36, p < .001, AF; r = .56, p < .001, HER; r = .38, p < .001, FC) and satisfaction with communications (r = .39, p < .001, MHF; r = .43, p < .01, HER; r = .41, p < .001, FC).

The results of this study would appear to point to the notion that trust in one's superior is directly related to openness of communications within the organization. In addition, trust would appear to be a facilitator of open and accurate upward communication.

Yaeger (1978) attempted to replicate part of the study by Roberts and O'Reilly (1974). He felt that there had not been sufficient replication on experiments in this area and also wanted to test these concepts over a larger sample than that used by Roberts and O'Reilly.

His subjects consisted of 2,700 employees of a large U.S. soft-goods firm. He used the same seven items used pre-

viously by Roberts and O'Reilly to measure trust, supervisor's influence and the respondent's desired upward mobility, respectively. However, he did not use the 13 communications variables used by Roberts and O'Reilly. Yaeger's items were included as part of a larger, overall survey dealing with the general quality of working life.

Intercorrelations were calculated from the survey data. The results showed a consistent and positive association between the subject's trust in the supervisor and the subject's perceptions of the supervisor's influence over his career ($\underline{r}$ = .54, $\underline{p}$ < .01). Thus, this part of Roberts and O'Reilly's prior study was supported.

Klimoski and Karol (1976) attempted to determine the effects of low levels of group trust on the free flow of ideas within the group, and also on group creativity. Subjects consisted of 116 female undergraduate students. They were divided into six cells, each of which contained five four-person groups. Due to equipment failure, the final cell only contained four four-person groups for the total of 116 subjects. The data for the missing fifth group were obtained by estimates based on the means of the other four groups.

As in the previous study by Zand (1972), the subjects were divided into two groups: those with an entering mindset experimentally induced towards either high or low trust, respectively. In addition to these two groups, the authors used a third group, a control group whose members had received no experimental manipulation concerning levels of

trust. The first two groups (high and low trust groups) each contained 40 people. The control group contained 36.

The subjects were given a series of three "creative" tasks to complete, each of which lasted ten minutes. These tasks were accomplished by all four subjects in each group as they sat together, each occupying one side of square card table.

Measurement consisted of several self-report scales, one final questionnaire, and an analysis of audio recordings of these problem-solving sessions. The self-report scales and the final survey were given to the subjects after the completion of the third "creative" task. The items on the self-report scale dealt with the efforts of the group, satisfaction and the physical attractiveness of the members of the group. The final questionnaire contained items which assessed the subject's perceptions of the group and its performance, and also a number of items from the Rotter Interpersonal Trust Scale which were used to measure the strength of the trust dynamic within the group. Audio recordings were made of the subjects as they participated in the problem-solving sessions. These were analyzed by the authors and also by a minimum of two "blind" observers who were unaware of the real purpose of the experiment.

Creativity was defined as the generation of ideas by each group during the execution of the three "creative" tasks. For all three tasks in this study, the high trust group was able to generate more ideas than either the low

trust group or the control group. In addition, for all three tasks, the low trust group produced fewer ideas than the control group.

Based on these results, trust appears to have consistent consequences in creative problem-solving groups. Low levels of trust tend to depress the flow of ideas, systematically reducing the productivity of the group. The level of trust would appear to be directly related to the free and open flow of ideas with direct impact on the ability of the group to accomplish goals.

These results are in consonance with those obtained by Gibb (1964), Friedlander (1970), and Zand (1972) in that all suggest that the level of trust within the group is directly related to the ability of the work group to communicate effectively and then to accomplish its goals.

Jones, James and Bruni (1974) investigated the effect of job involvement upon the relationship between perceived leader behavior and trust and confidence in the leader.

Subjects consisted of 123 civilian and military employees of the U.S. Army Corps of Engineers.

The measuring instrument consisted of a series of questions contained in a larger questionnaire designed to measure a total of 37 dimensions of organizational climate. The questions for this study were divided into three main groups. The first group consisted of 25 items which were, in turn, divided into six composites of leader behavior consisting of leader support, goal emphasis, work facilitation,

interaction facilitation, leadership effectiveness and upward interaction. The second group consisted of a composite measure of the subordinate's trust and confidence in the leader. The third group measured job involvement by using a 6-item subset of a 20-item questionnaire developed by Lodahl and Kejner (1965).

There were two specific hypotheses:

1. confidence and trust in the leader are positively related to subordinate perceived leader behavioral dimensions such as support, goal emphasis, etc.

2. the relationships posited in hypothesis #1 will be greater for high involvement people than for those manifesting low job involvement.

To test the first hypothesis, a correlation analysis was done for the complete sample. For the second hypothesis, the sample was divided into two groups based on the scores obtained from the 6-item response set from the Lodahl and Kejner (1965) study.

In the complete sample, the relationship between trust and confidence in the leader, and each of the six leadership composites was positive and moderately to highly significant with correlation values ranging from $\underline{r} = .28$ to $\underline{r} = .52$; $\underline{p} < .05$. The relationship between job involvement and each of the six leadership composites plus trust and confidence in the leader was insignificant, with values ranging from $\underline{r} = .00$ to $\underline{r} = -.09$. The correlation results for the high and low job involvement groups revealed a positive, moderate

relationship between trust and confidence in the leader and each of the six leadership composites. However, the correlation values for the low job involvement group were higher (r = .41 to r = .57) in each of the six cases than for the high job involvement group for which the correlation values ranged from insignificant up to r = .48.

Thus, based on the results of the correlation analysis, the first hypothesis is supported. Confidence and trust in the leader is positively associated with the leadership behaviors. The second hypothesis, which explicitly predicts a stronger relationship between high job involvement people and each of the six leadership composites than for low involvement people, was not supported.

The first hypothesis emphasizes again the importance of interpersonal trust to the proper functioning of the organization. The second hypothesis is also of interest. Possibly the reversal here is a function of the notion that persons with higher job involvement are more sensitized to the various nuances of leader behavior. Their higher levels of interest and involvement in the job possibly make them somewhat stricter judges of the personal behaviors they witness in the work place.

Driscoll (1978) defines trust as "the belief that the decision maker will produce outcomes favorable to the person's interest without any influence by that person" (p. 45). He investigated the relationship between participation in decision-making, job satisfaction, and trust.

The subjects consisted of 109 faculty members of a small liberal arts college in northern New York.

Satisfaction was measured by taking the average of six Likert-type items which dealt with the subject's expressed satisfaction with promotion, the overall job, job security, present co-workers, present salary, and the work itself. The measurement of participation was based on a 5-item scale which dealt with the faculty member's perceptions of his/her activities in making a range of organizational decisions which included new faculty appointments, faculty promotions, faculty salary increases, appointment of a new department head, and the allocation of the college budget.

Trust, here, has two dimensions: situational and global. Situational trust is measured by three, Likert-type items. These have identical wording, except for the specific trust object. These items describe the frequency with which the administrative decision-makers at three supervisory levels (department head, dean, president of college) can be trusted. The question states: "I can trust the _____ to make decisions which I consider appropriate." Global trust is measured by computing the average of two items taken from the Rosenberg Faith-in-People Scale (1956) which refer to a general faith in the helpfulness of people.

There were three main hypotheses:

1. people with more trust in outcomes under current decision-makers are expected to be satisfied with the organization as a whole. This is an example of situational trust.

2. people with greater trust, as a global tendency, should show more satisfaction with the organization.

3. trust, either situational or global, is a better predictor of satisfaction than is participation.

A correlation analysis was done of the data from this survey. Trust emerges as a predictor of satisfaction. As stated in the first hypothesis, organizational trust (a situational variable), which measures the perceived frequency with which decision-makers at various supervisory levels can be trusted, is strongly associated with overall satisfaction (r = .52, p < .001). Global trust, however, does not serve as a predictor of satisfaction (r = .12, p > .05). Hypothesis #1 is supported. Hypothesis #2 is not. In addition, the results showed that organizational trust is a significant predictor of overall satisfaction (r = .52, p < .001). This easily supersedes participation (r = .16, p > .05) as a predictor of satisfaction. Hypothesis #3 is supported.

This study deals with the impact of trust and participation on perceived job satisfaction. The results here -- that trust in decision-makers (organizational trust, a situational variable) is more important than actual participation as a predictor of satisfaction -- is interesting in that it would appear to be somewhat at variance with current emphasis on the desirability of participation in the work place (Hespe & Wall, 1976; Aiken & Hage, 1966; Pearlin, 1962).

Two things may be involved here. The first is the notion that the attribution of trust to the decision-makers by the employee reduces, and maybe obviates, the need for participation itself. Allied with this is the idea that the act of participating imposes specific and readily experienced costs on those who do participate. These costs may be viewed in terms of time, energy, money, and a type of opportunity cost based on the fact that additional participation in the work place may require lessened participation in other realms such as leisure, community activities, hobbies, etc. Thus, the level of participation may be based on two things, the employee's perceptions of the need to participate to protect his interests, and the willingness of the employee to assume other potential costs of participation.

Sgro, Wachel, Pence and Orban (1980) began with the contention that levels of interpersonal trust should not only affect a person's perceptions of others, but should also affect how a person behaves with respect to others. Hence, leaders who are high in interpersonal trust should be perceived by subordinates as exhibiting behavior that reflects their basic trust in human nature.

The subjects were drawn from two southern universities and consisted of 149 freshmen cadets and 41 cadet officers.

Three measuring instruments were used. The Ohio State Leader Behavior Description Questionnaire (LBDQ) (Stogdill, 1963) and the complete Job Description Index (JDI) (Smith, Kendall & Hulin, 1969) were administered to the freshmen

cadets. The 41 cadet officers received the Rotter Interpersonal Trust Scale (Rotter, 1967). The cadets evaluated their leader's behavior by completing five scales from Form XII of the LBDQ (Stogdill, 1963) which measured persuasion, initiating structure, tolerance of freedom, consideration and production emphasis, respectively. The cadet's satisfaction with their leaders was measured by the Supervisor Scale from the JDI (Smith et al, 1969). However, this scale was modified for this experiment. Instead of evaluating the supervisor on the job, the cadets evaluated their leaders on the 18-item adjective checklist. The Rotter Interpersonal Trust Scale has been previously described (see p.14).

The results showed that leader interpersonal trust was significantly correlated with the measures of consideration ($r = .33$, $p < .01$); tolerance of freedom ($r = .21$, $p < .05$); and satisfaction with the leader ($r = .25$, $p < .01$). Production emphasis did not correlate highly with leader interpersonal trust ($r = .06$, $p > .05$).

These results confirm the original contention that leader interpersonal trust can influence the manner in which subordinates perceive leader behavior. The notion that leader interpersonal trust would be positively associated with the subordinate's perception of the leadership characteristics of consideration, tolerance of freedom, persuasion, and initiating structure, and also with the subordinate's satisfaction with the leader was supported.

In this study, the authors used the LBDQ (Stogdill, 1963) to measure five specific leader behaviors. The four of these behaviors which correlated significantly with interpersonal trust (consideration, tolerance of freedom, persuasion and initiating structure) all reflect some aspect of personal communications by the leader (Albanese, 1981, pp. 396-397).

This would appear to lend further credence to the work done by Gibb (1964), Friedlander (1970), Zand (1972), Roberts and O'Reilly (1974), Klimoski and Karol (1976), and James, Jones and Bruni (1974). In common with these prior studies, this experiment points to the importance of interpersonal trust as a facilitator of communications within the organization.

The Dimensionality of the Trust Concept

These diverse approaches to the concept of trust lead to the question of whether "trust" is a uni- or multidimensional construct. Is there just one facet of "trust"? Or is it composed of different factor? Are there different types of "trust"? This question will be addressed in this section.

Rotter (1970) administered his Interpersonal Trust Scale to nine successive groups of college freshmen at the University of Connecticut over the six-year period from 1964 to 1969. The surveys were given at the beginning of each semester, typically in September and February of each year.

This technique of biannual investigation enabled Rotter to compare groups on an across-time basis.

An analysis of variance was computed for the mean test scores for all nine groups, both by gender and on a combined basis. The results indicated a general, but consistent, decline in trust scores over the six-year period. This decline appeared to apply to each gender and also to the combined scores. The analysis of variance for the combined scores shows that this decline was significant.

To determine the generality of the decrease in scores, Rotter used a series of t-tests ($p < .01$) to determine which items of his survey had manifested a significant fall in the six-year period of the study. The results indicated that eight items had shown such a decrease. The eight items dealt with things such as the "establishment", "politics", and "the media." Those items manifesting little or no change ranged over a variety of different areas, but typically centered on specific social agents such as parents, salesmen, experts, etc.

This study by Rotter is important in that it marks a further, necessary clarification of the trust concept. However, there are a number of flaws. Rotter did not pursue the notion of dimensionality which the results of his study would appear to connote. Although he makes a further attempt to analyze the specific items on his Trust Scale, the analysis was not carried far enough. For example, no factor analysis was done. This results in a certain ambivalence in

his article. Thus, Rotter (1970) can ask, "Are the changes generalized or specific to particular aspects or agents of our society?" And he can even reply that ". . . the decrease seems to fall into two general categories . . . that dealing with the 'establishment' and that dealing with . . . 'society.'" Yet his analysis leads him to the conclusion that the decrease ". . . seems to be somewhat generalized and pertains to a variety of social agents and institutions" (Rotter, 1970, p. 211). In addition, Rotter does not provide the results for all of the statistical tests that he did on his data from the surveys. He makes reference to these tests, but shows no data.

Fortunately, Rotter's work has generated a number of studies which provide much of the additional analysis needed to better understand the factoral structure of this concept.

Kaplan (1973) administered the Rotter Trust Scale to 97 students at two California universities. The Scale was modified by the inclusion of 20 filler items, for a total of 45 items. A correlation analysis, along with a factor analysis was accomplished on the data from the survey. The three factors which emerged with the largest eigenvalues are institutional trust, sincerity and caution. The institutional factor refers to trust as extended to the major agents in society, such as politicians and the mass media. Sincerity focused on the perceived sincerity of others, while the caution factor dealt with the fears people have that they will be taken advantage of by others.

Approximately 75% of the items for which Rotter had shown a decrease in mean score had a negative correlation of at least .40 or greater with the institutional factor. Among those items for which Rotter had shown little or no change, only one had a correlation of -.30 or greater with the institutional factor.

Kaplan's results seemingly point to the notion that trust is not a one-dimensional concept. It would appear that Rotter's subjects became less trusting of large societal institutions, but had changed very little regarding personal sincerity and caution. In this respect, Kaplan's results tend to agree with Rotter's insofar as Rotter had defined the results of his study in this vein.

This study by Kaplan represents a logical progression from Rotter's earlier work. Unfortunately, his article is much too brief -- less than two pages. This brevity permits Kaplan to mention only seven of Rotter's 25 items. He uses the seven items as examples for his three factors, yet he does not state how many of Rotter's items pertain to these factors, nor does he enumerate these specific items.

Kaplan's three factors represent those factors which emerged with the highest eigenvalues from his factor analysis. He provides no data on the other factors and does not explain why he chose only the first three. In addition, he provides no data for the item intercorrelation analysis. Finally, his sample is of inadequate size for factor analysis.

These omissions severely limit the ability of the researcher to conduct a detailed, comparative analysis of these two studies, and of other studies which may follow.

Chun and Campbell (1974) continued this line of research using a methodology similar to than of Kaplan (1973). The Rotter Interpersonal Trust Scale was given to 187 undergraduate students as part of a larger survey. Only the 25 basic items were used.

The data from the survey were subjected to cluster analysis and to factor analysis. The cluster analysis identified four specific clusters which contained four, eight, four and three items, respectively. These four clusters were compared to the 10 orthogonal and 10 oblique factors identified by the factor analysis. This comparison revealed that four of the orthogonal factors matched the four clusters. These four orthogonal factors ranked first, second, third and seventh in relative proportion of variance accounted for and totalled 47% of the common variance. In addition, three of the oblique factors matched clusters I, II and III. These factors ranked first, second, and fourth in relative variance accounted for, totalling 39% of the common variance.

These results suggested two things to the authors: the Rotter Trust Scale contains four separate dimensions or factors; these dimensions or factors are best identified by a core of three marker items. These four dimensions are political cynicism, interpersonal exploitation, societal hypocrisy, and reliable role performance. Political cynicism

focuses on skepticism and cynicism about politics and political bodies, with cynicism being the underlying theme. Interpersonal exploitation deals with self-protection, or caution based on a perspective of others as potential exploiters. Societal hypocrisy concerns the incidence of perceived hypocrisy in society and the failure of impersonal social referents to meet commonly held expectations. Reliable role performance deals with the perceived failure to meet expected role requirements. However, in contrast to the factor of societal hypocrisy, here the referents are specific personal agents or roles, such as parents, salesmen and repairmen.

Finally, the authors do an item-by-item comparison of their four dimensions with the data from Rotter's six-year study. This data details the changes in mean score for all 25 of his items throughout the time period of the study. All six items in Dimension I (political cynicism) and Dimension III (societal hypocrisy) showed significant change in Rotter's study. However, no items from Dimensions II (interpersonal exploitation) and IV (reliable role performance) manifested significant change.

Unfortunately, Chun and Campbell do not deal with Kaplan's study, even though it is included in their bibliography. It would appear that the two methodologies are rather similar, and the respective results reflect this. For example, both emphasize the idea of trust as a multidimensional concept; and both attribute the decline in trust

observed by Rotter to be a product of a specific area or dimension. For Kaplan, it is his "Institutional Trust." For Chun and Campbell, it is their "Political Cynicism" and "Societal Hypocrisy." Interestingly, all three of the items in Kaplan's "Institutional Trust" are contained in Chun and Campbell's dimensions of "Political Cynicism" and "Societal Hypocrisy." In addition, both studies state that the other, remaining dimensions changed very little in Rotter's sample. For Kaplan, this is "Sincerity" and "Caution." For Chun and Campbell, it is their "Interpersonal Exploitation" and "Reliable Role Performance." Again, there is some commonality between those items detailed by Kaplan and those detailed by Chun and Campbell. Unfortunately, as Kaplan only mentions seven of Rotter's items, the ability to compare these two studies further is limited.

Wright and Tedscki (1975) administered the Rotter Trust Scale to 3,633 beginning psychology students at two separate universities during the time-frame from 1969 to 1974.

A separate factor analysis was performed for each sample which, in turn, identified a total of four specific factors. Three of these factors (political trust, paternal trust and trust of strangers) cross-validated over all samples. Political trust questions the credibility of target groups involved with politics, the mass media, and national athletic activities. Paternal trust refers to parents, salesmen, etc. These tend to be considered as benign authority figures. They are typically perceived neither as peers,

nor as members of the "establishment" in that they possess "power." Trust of strangers measures the subject's perceptions concerning the expected role behavior of anonymous individuals with whom we must interact frequently as individuals living in society. The basic theme here is that people are selfish and, therefore, one must be cautious so as not to be taken advantage of.

As before, there exists agreement among the various studies about the dimensionality of trust and also the content of the specific response sets which define and measure these factors or dimensions. Table 1 details the results of the specific studies and, where possible, shows the specific items of Rotter's Scale which apply.

TABLE 1

Comparison of Interpersonal Trust Scale Items

Rotter	Kaplan	Chun&Campbell	Wright&Tedescki
establishment and society 1,2,3,4,5,6, 7,8	institutional trust 2,5,6	political cynicism 2,5,7	political trust 2,5,6,7,8
social agents 12,18,21,23	sincerity 20,25	societal hypocrisy 1,6,8,16	paternal trust 12,17,18,20,21, 23
	caution 10,19	reliable role 12,21,23	trust of strangers 10,14,19,22
		interpersonal exploitation 10,14,19	

This chart displays the startling similarities in the results of these four different studies. The possibility for even more commonality is lessened by differing methodologies, and differing and incomplete data. However, some generalizations are possible. The overall concept of trust appears to be composed of a number of different dimensions. One of these dimensions refers to the large, macro, "establishment"-type of agents in our society such as politics, the media, etc. It is this aspect that manifested the vast preponderance of the decrease in mean scores for Rotter in his six-year study (1970). Another dimension refers to the norms of society as a whole. Special references are to the general levels of trust or hypocrisy perceived to exist in society. No reference is made to specific agents. The final dimension refers to those specific individuals with whom we must interact as we go about our rounds in life. These include parents, salesmen, classmates, etc.

All of these studies agree that the decrease in trust as described by Rotter (1970) occurred in a specific area -- that of the political arena, with its emphasis on office-holders, the media and international politics. A consensus also exists concerning those areas which did not change during the time-frames of Rotter's study. These include the more specific interpersonal areas or situations which deal with personal interaction within society.

Rotter has entitled his survey the "Rotter Interpersonal Trust Scale." Yet, a significant portion of his

instruments deals not with trust between individuals, but rather with trust, as it is extended from individuals to the great institutions of society. Ironically, it is this non-interpersonal segment of his survey which showed the greatest decrease in trust over the length of his study.

More investigation is needed in this area, with specific emphasis on the dimensionality or the factoral structure of the trust concept. Along with the three basic factors detailed here, items are needed which will permit us to deal with more specific segments of society such as the medical establishment, the legal establishment, the military, labor unions, and American corporate hierarchy, etc. The inclusion of these additional items will permit the researcher to focus his efforts on specific societal phenomena and, thus, avoid the confusion and misdirection which characterizes Rotter's six-year study. It will also permit comparisons to be made between these different dimensions or factors as they are perceived by the respondent at the time the survey is administered.

The Situational-Attitudinal Dichotomy of Trust

The management literature identifies two bases of trust: the attitudinal and the situational.

Kee and Knox (1971) and Rotter (1967, 1970) propose a situational model of interpersonal trust. Reactions, here are a function of the trust placed by individuals in different, specific trust objects. This suggests that overall trust ratings by individuals are subject to influence by the

specific trust object, or situation confronting that individual. Hence, these trust ratings are not broad based, but rather represent a "one-shot" type reaction to a specific trust object.

Rosenberg (1956), Deutsch (1958) and Giffin (1966) have argued, however, that trust is an attitudinal variable. This refers to a specific character or personality trait which affects the individual's ability to extend trust. This suggests that variations in interpersonal trust can be explained by variations across raters. These variations are attributable to the exigencies of the individual's socialization process and, hence, are broad based and stable across various trust objects.

Driscoll (1978) attempted to deal with this dichotomy between the situational and attitudinal bases of trust. This study has been described above. He investigated the interrelation between participation in decision-making, job satisfaction, and trust. His survey contained items dealing with both organizational trust (a situational variable) and attitudinal or global trust.

His study showed that organizational (situational) trust is strongly associated with both overall satisfaction ($\underline{r}$ = .52, $\underline{p}$ < .001) and with participation in decision-making ($\underline{r}$ = .27, $\underline{p}$ < .001). Attitudinal (global) trust, a personality trait, is not significantly related to either of these ($\underline{r}$ = .12 and $\underline{r}$ = -.08, respectively).

Apparently, a person who exhibits high levels of interpersonal trust can also possess a low level of trust vis-a-vis a specific organization based on perceptions of the organization as a trust object being a "trustworthy" entity. A person who feels that they have not been treated fairly by the organization will tend to have to lower level of trust in that organization regardless of their own level of global or attitudinal trust.

In 1980, Scott addressed this situation concerning the two bases of trust. His purpose was to examine interpersonal trust as a dependent variable, determine which of the two bases of trust (situational and attitudinal) were more appropriate, and if both -- determine which of the two acted as the greater contributor toward the fostering of interpersonal trust.

His specific hypotheses were:

1. There will be a significant across-rater variance in interpersonal trust scores (attitudinal).

2. There will be a significant within-rater variance in interpersonal trust scores (situational).

3. Within-rater (situational) variance will be significantly greater than across-rater (attitudinal) variance in interpersonal trust scores.

Scott's sample consisted of 44 business students. To determine their levels of interpersonal trust, they were given the Trust Differential Scale (Giffin, 1968). This is a semantic differential scale with seven intervals (Osgood,

Suci & Tannenbaum, 1957). Hypotheses 1 and 2 were analyzed using a two-way analysis of variance of the interpersonal trust scores from the survey. Hypothesis 3 was analyzed using an F-test ratio of variance.

His results appear to support the notion that a significant amount of variance in interpersonal trust scores is attributable to both differences across raters (attitudinal), $F(5,36) = 11.95$, $p < .01$; and to differences within raters (situational), $F(5,36) = 40.09$, $p < .001$). The ratio of F-values would appear to indicate that the situational factor is somewhat more significant, $F(5,36) = 3.459$, $p < .01$ versus $F(5,36) = 3.355$, $p < .01$.

Although Driscoll (1978) states that situational trust is a better predictor of job satisfaction than global trust, he makes no statement concerning the relative importance of attitudinal or situational factors as predictors of interpersonal trust.

Scott (1980) attempted to analyze this situation, yet the similarity of his results for each of the two factors, combined with the size and diversity of his sample, invite questions concerning the primacy of one over the other. Additional research needs to be done in this are using response sets for both factors with larger and more diverse populations.

In summarizing the research available, it would appear that:

1. the presence of trust among members of an organization permits a much freer flow of information which has been shown to be related to enhanced group effectiveness (Gibb, 1964; Zand, 1972; Klimoski & Karol, 1976; Roberts & O'Reilly, 1974).

2. there is a significant relation between trust among members of the group and self-actualization (Kegan & Rubinstein, 1973).

3. there is a significant relation between a subordinate's trust in the leader and various leader behavioral traits such as goal emphasis, support and leader effectiveness (Jones, James & Bruni, 1974).

4. trust is a good predictor of job satisfaction (Driscoll, 1980).

5. trust in the leader is significantly related to a subordinate's satisfaction with that leader (Sgro, Wachel, Pence & Orban, 1980).

6. trust is a multi-dimensional concept. Three dimensions emerge which refer, respectively, to the large, "establishment" type of agents within society, such as the media and politics, to the overall ambience of society with emphasis on such widespread phenomena as hypocrisy and honesty, and to the specific individual actors in society with whom we must frequently interact, such as parents and classmates (Rotter, 1970; Kaplan, 1973; Chun & Campbell, 1974; Wright & Tedescki, 1975).

7. trust has two bases: the situational and the attitudinal. The situational refers to the perceived "trustability" of each trust object as determined by various raters (Rotter, 1967, 1970; Kee & Knox, 1971; Driscoll, 1978); while the attitudinal refers to those facets of an individual's personality which determine their ability to extend trust (Rosenberg, 1956; Deutsch, 1958; Giffin, 1966). Scott (1980) investigated this dichotomy. Using specific response sets to measure each of these two factors, he determined that both are significant components of interpersonal trust.

CHAPTER III

Research Objectives

Problem Statement

The Japanese economic performance from 1945 to the present has been virtually without parallel. The argument has been advanced that part of the reason behind the emergence of Japan as a leading economic power is the style of management prevalent in many Japanese companies. The idea of trust would appear to play a key role in the Japanese approach to corporate management.

My purpose in this thesis, then, is twofold:

1. to explore the relationship of trust to other attitudinal variables with relevance to the workplace, as identified in the management literature.

2. to explore the relationship between trust as a dependent variable and a series of independent, predictor variables.

Research Hypotheses

Based on the preceding literature review, the following hypotheses were tested:

Hypothesis 1: There is a positive correlation between interpersonal trust and the respondent's perceptions of his supervisor's job performance and effectiveness. Jones, James and Bruni (1974) analyzed the relationship between the respondent's trust and confidence in the leader, and his per-

ceptions of the leader's effectiveness. Leader effectiveness here refers to the "degree to which a leader is able to plan and coordinate activities to maximize performance" (p. 147). It was measured as part of a 25-item response set which was grouped into six composites of leader behavior. The results indicated a strong relationship between these two variables (r = .52, p < .001).

Hypothesis 2: There is a positive relationship between interpersonal trust and organizational and interpersonal communications. In his long-term study of t-groups (1964), Gibb observed a strong relationship between the level of trust among members of the group and the quantity and quality of the flow of communications within that group.

Hypothesis 3: There is a positive relationship between the level of interpersonal trust among members of the work group and the cohesiveness, or teamwork, of that group. Zand (1972) and Klimoski and Karol (1976) studied the relationship between intra-group trust and the problem-solving ability of that work group. They used fabricated "problems" to test the problem-solving capacity of groups of individuals who had been previously predisposed to either high or low levels of interpersonal trust. The results in each case indicated that the level of trust among members of the group was directly related to the ability of the members of the group to work together to solve the "problems" with which they had been presented in the experiment.

Hypothesis 4: There is a positive correlation between trust and job satisfaction. In Driscoll's study (1980) of faculty attitudes at a small, New England liberal arts college, he discovered a strong relationship between organizational trust, which is a situational variable, and overall satisfaction (r = .52, p < .001).

Hypothesis 5: There is a negative correlation between trust and perceived job stress. Brief, Schuler and Von Sell (1981) detail the sources of on-the-job stress. One major source concerns interpersonal relationships and the role that trust plays in these relationships both among workplace peers (horizontal relationships) and between superiors and subordinates (vertical relationships).

Hypothesis 6: There is a positive relationship between trust and the commitment of the respondent to the organization. Both Ouchi (1981) and Cole (1980) stress the importance of the extension of trust by management to the employees as a necessary prerequisite to the development of commitment by the employee to both the workplace and to the organization.

I also considered trust as a dependent variable. The presence and level of interpersonal trust was viewed as being the end-product of a series of independent variables; specifically, participation, organizational commitment, communications and teamwork, or cohesiveness. Various studies have dealt with the relationship of these variables to interpersonal trust.

Driscoll (1980) analyzed the relationship between trust, participation and job satisfaction. He did a correlation analysis of all the data collected in his questionnaire for these three variables. Participation emerged as being moderately related to trust (r = .27, p < .01).

The relationship between trust and organizational commitment as suggested by Ouchi (1981) and Cole (1980) has been described in Hypothesis 6, above.

The relationship between trust and communications has been noted above. In addition, Hatvany and Pucik (1981), in their review of literature dealing with Japanese industrial relations policies, pointed out the importance of vertical communications within the organization as a progenitor of trust.

Zand (1972) and Klimoski and Karol (1976) have studied the relationship between interpersonal trust and the ability of the group to function as a problem-solving entity (Hypothesis 3). Other recent literature on the Japanese industrial experience has also dealt with this. Both Hatvany and Pucik (1981) and Ouchi (1981) have stressed the importance of trust as a recommended antecedent to the effective functioning of the individual within the group and also of the group within the overall organization.

Based on this brief review of material, an attempt was made in a multiple regression analysis to determine how these four independent variables of participation, organizational commitment, communications and group cohesiveness

combine to affect trust. In addition to these four variables, I included six interactive variables in this analysis. These included interactions between participation and organizational commitment (partmnv), participation and communication (partcom), participation and teamwork (parteam), communications and organizational commitment (commnt), teamwork and organizational commitment (teamnt), and teamwork and communications (teamcom).

Frequently in regression analysis, it is assumed that the effects of the independent variables are additive. "This . . . implies that the relationship between the dependent variable and any given independent variable is the same over all values of the remaining independent variable" (Nie et al, 1981, p. 372). However, for many applications in the social sciences, this assumption is not tenable because the relationship between the dependent variable and one independent variable depends on the value of the second independent variable. This is known as interaction.

"The interaction effect is a statistical measure of the differential influence of the factors upon each other" (Meyer, 1976, p. 202).

> It is a new predictor variable created by multiplying scores of one predictor by corresponding scores of one or more others . . . the multiplicative term represents the "joint effect" of X_1 and X_2 over and above the sum of X_1 and X_2. (Nie et al, 1981, p. 373)

The inclusion of the interactive variables in the regression process here permits an analysis to be made of the effects that one independent variable, for example participation, has on the level of the dependent variable (trust) based on the value of the other independent variable (communications, teamwork, etc.).

These interactive variables were computed using the COMPUTE command in SPSS (Nie et al, 1981, p. 373) to multiply together the scores of two specific independent variables to create a third variable, which was the interactive term.

CHAPTER IV

Methodology

Introduction

The research in this thesis is based on data obtained through the completion of a survey research instrument administered to two groups of personnel from the United States Air Force (USAF). This survey was given to these two specific groups as a result of contacts that had been made earlier during a short-term course in Quality Control Circles which was conducted at the Air Force Institute of Technology (AFIT), Wright-Patterson Air Force Base (WPAFB), Dayton, Ohio.

This chapter includes a description of the sample used in this experiment, details the specifics of the measurement instrument to include a description of the measurement variables and their accompanying response sets, and describes the statistical methods used in this thesis to analyze the data from the questionnaire.

Research Sample

Respondents were drawn from two separate USAF organizations. Organization One (HOSP) is a full-service medical facility located in the West. Subjects numbered 284 people who were employed in various technical and clerical jobs at the hospital, including nurses, dental technicians,

material supply personnel and records clerks. Organization Two (TAC) is an operational base of the Tactical Air Command located in the East. The respondents numbered 299 people and were from the occupational areas of aircraft maintenance, base supply and base civil engineering.

The questionnaires were completed by all subjects at the end of their respective work shifts. This occurred both during normal duty hours, and in some instances, when the respondents were on their own time. The questionnaire was sanctioned by the commanders and directors of the various organizations involved.

In each sample, the majority of the respondents were between the ages of 20 and 30 (HOSP-50%; TAC-62%). The next most populous age group was 31-40 (HOSP-18%; TAC-13%). Hence, approximately 73% of each sample was between the ages of 20-40. For Organization One, 38% of the respondents were civilian, while 63% were male. For Organization Two, these figures were 32% and 83%, respectively.

The Measuring Instrument

The instrument used here consists of an attitudinal survey of 132 items. This survey was developed by researchers from AFIT, WPAFB, Ohio. It was developed as part of a larger research effort at AFIT. A copy of the questionnaire is contained in Appendix A.

The survey contains a total of 132 items; 12 deal with demographic factors such as age, educational level, gender,

etc; while the remaining 120 items measure different aspects of occupational life such as job satisfaction, stress, job involvement, etc. Not all of the variables contained in the survey were used in this thesis. Those variables that were used include job satisfaction, participation, stress, trust, teamwork, communications, organizational commitment and the respondent's perceptions regarding the job effectiveness of his supervisor. These are described in the following paragraphs.

Job Satisfaction. This overall variable is measured by 20 items in the AFIT survey (1-20) using a 5-point Likert scale with possible responses ranging from 1 ("very dissatisfied") to 5 ("very satisfied"). These items were taken from the short form of the Minnesota Satisfaction Questionnaire (MSQ) (Weiss, Dawis, England & Lofquist, 1967). The complete MSQ was originally developed to measure the respondent's satisfaction with various aspects of work and the work environment. The short form of the MSQ measures three types of job satisfaction: intrinsic, extrinsic and general. In this thesis only extrinsic satisfaction was used. This response set includes six items (5,6,12,13,14,19).

Extrinsic satisfaction refers to those elements which comprise the environment furnished by the organization for which the job is performed. Items here include such things as "The way my boss handles his men," "The way company policies are put into practice," and "The praise I get for doing a good job." This is contrasted to intrinsic satisfaction,

which refers to specific aspects of the job which flow from the very nature of the job activity itself. These aspects include such things as the ability to work alone or in groups, and the variety or repetitiousness of the job tasks. For example, working in a coal mine or a law office imposes specific constraints on employees solely as a function of the nature of the work. However, within these parameters, management has the discretionary power, through the formulation and application of personnel policies, to forge a specific organizational ethos, or ambience. According to Ouchi (1981), this management generated environment is a significant determinant of the eventual success of the organization. Because of this, it is believed that extrinsic satisfaction, as used in this thesis, is more closely attuned to the notion of trust than is intrinsic satisfaction. Consequently, only extrinsic satisfaction was used here.

The internal reliability estimates of the short-form MSQ were determined in a study of 1,460 employees from six different occupational groups. These estimates for the six-item response set used to measure extrinsic satisfaction are: engineers, .82; office clerks, .79; salesmen, .81; janitors/maintenance men, .79; machinists, .82; and assemblers, .78 (Weiss et al, 1967).

Participation. This is measured by three items (68,69,91). Although item 91 ostensibly deals with communications, it also has relevance to the area of work group

participation and, consequently, is included in this response set.

"Within my work group, the people most affected by decisions frequently participate in making the decisions."

"In my work group, there is a great deal of opportunity to be involved in resolving problems which affect the group."

"My supervisor asks members of my work group for our ideas on task improvements."

All three items are measured on a 7-point Likert scale, with possible choices ranging from 1 ("strongly disagree") to 7 ("strongly agree"). These items were developed by the researchers based on a review of existing material in the area.

Stress. This is measured by one item (75), using a 7-point Likert scale, with choices ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Although the complete response set contains two items, the second item, which deals with stress away from the job has little relevance to this thesis. The single item used states: "My work (job) causes me a great deal of stress and anxiety."

Trust. This response consists of three items (77-79) which were measured on a 7-point Likert scale, with responses ranging from 1 ("strongly disagree") to 7 ("strongly agree"). These items are a measure of global, not situational, trust, and are very similar to those used by

Rosenberg (1956) to measure global trust. These three items include:

"In general, people tell the truth, even when they could benefit by lying."

"Generally speaking, most people are inclined to look out for themselves, rather than helping others."

"If given the chance, most people will try to take advantage of others rather than trying to be fair."

Teamwork. Also known as cohesiveness, this variable is measured by three items (80-82) using a 7-point Likert scale. These three items include:

"There is a high spirit of teamwork among my co-workers."

"Members of my work group take a personal interest in one another."

"If I had a change to do the same kind of work for the same pay in another work group, I would still stay here in this work group."

These items were developed by AFIT researchers based on a review of current material on this area.

Communications. This variable is measured by three items (89-91) using a 7-point Likert scale. Specific items include the following:

"My organization provides all the necessary information for me to do my job effectively."

"My work group is usually aware of important events and situations."

"My supervisor asks members of my work group for our ideas on task improvements."

These items were developed by AFIT personnel based on a review of current literature.

Organizational Commitment. The response set for this variable consists of 15 items (98-112), which are measured on a 7-point Likert scale. These items originally appeared in a study by Porter, Mowday and Steers (1974). Respondents in the Porter et al study numbered 60 people. All were employed as psychiatric trainees at a West Coast hospital. The questionnaire was designed to measure the degree to which respondents feel a commitment to the organization for which they work. The survey was included as part of a longitudinal study and was administered to the respondents over a 10-month period. The internal reliability estimates computed for this variable over the 10-month period of the study ranged from .82 to .93. Examples of items in this response set include:

"I am proud to tell others that I am part of this organization."

"This organization really inspires the very best in me in the way of job performance."

"I really care about the fate of this organization."

Respondent's Perceptions of His Supervisor's Job Effectiveness. This variable is measured by three items using a 7-point Likert scale (86-88). These items include:

"My supervisor represents the group at all times."

"My supervisor performs well under pressure."

"My supervisor is a good planner."

These items were developed by AFIT researchers based on a review of the relevant literature.

Analysis of Data

The primary objectives of this thesis were two-fold:

1. to determine the relationship between interpersonal trust and six other relevant variables identified in the management literature. This was accomplished via the computation of Pearson Product Moment Correlations for each pair of variables.

2. to determine the relative importance of a series of independent variables as predictors of the dependent variable of trust. This was done via multiple regression analysis.

Computational techniques were those detailed in various texts dealing with the Statistical Package for the Social Sciences (SPSS) (Cleary & Amsden, 1980; Nie & Hull, 1981; Nie et al, 1975).

Reliability. According to the psychometric theory of test reliability, every measurement (x) is composed of two parts: the true score (t) and the measurement error (e). The observed score is solely the result of measurement. The true score is that which would result if we had a perfect (error free) measure of the attribute in question. Statistically, reliability is defined as the ratio of true score variance to observed score variance ($r = t_2/x_2$). "It is the degree to

which a specific measurement is free of error" (Stone, 1978, p. 41).

In this thesis, Cronbach's alpha was used as the measurement of reliability. This method measures the internal consistency or homogeneity of the measure or test by measuring the intercorrelations of the items which comprise that measure or test. "Internal consistency or homogeneity is the extent that all of the items in a given test measure the same behavior" (Meyer, 1976, p. 314). This method

> should be employed when the researcher wishes to assess the degree to which the items in a measure are homogeneous (i.e., indices of a common construct). . . likely candidates for reliability analysis via the internal consistency method are multiple-item measures purporting to be measures of a single dimension. Most paper-and-pencil type measures of job satisfaction, job involvement. . . etc., should . . . be subjected to an assessment of their internal consistency reliability. (Stone, 1978, p. 49)

Potential values for this coefficient range from 0 to 1. If the variance in observed scores is due totally to errors of measurement, then the value of alpha is zero. If no measurement error exists, then the value of alpha is 1. Reliability estimates were computed using the RELIABILITY program of SPSS (Nie & Hull, 1981, pp. 248-256).

Pearson Product Moment Correlation. "A coefficient of correlation is an index of the magnitude and direction of a

relationship" (Kerlinger & Pedhazur, 1977, pp. 11-12). Pearson's correlation coefficient (r) is a bivariate statistic which serves as a measure of association indicating the strength of the linear relationship between two variables. It indicates the degree to which variation in one variable is related to variation in the second variable. Potential values of r range from 0, when the two variables have no linear relationship, to 1, when each variable is perfectly predicted by the other. The sign of the correlation coefficient denotes the direction of the relationship. A positive sign indicates a tendency for high values of one variable to occur with high values of the other. A negative sign indicates a tendency for high values of one variable to be associated with low values of the other (Cohen & Cohen, 1975, pp. 33-34). These coefficients were computed using the PEARSON CORR subprogram of SPSS (Nie et al, 1975, pp. 280-284).

Multiple Regression Analysis. Multiple regression analysis is used "to determine the relationship between a criterion variable and a set of predictor variables" (Nie et al, 1975, p. 321). It functions as a descriptive tool by which the linear dependence of one variable on a set of other independent variables is summarized. Consequently, it permits the researcher to control for other confounding factors in order to evaluate the contribution of a specific variable or set of variables to the dependent variable. Typically, multiple regression analysis focuses on the pre-

diction of the dependent variable based on its overall dependence on a set of independent variables. However, in this thesis multiple regression analysis is used to permit ". . . the examination of the relationship between the dependent variable and a particular independent variable" (Nie et al, 1975, p. 321). This is done using a specific form of multiple regression analysis to determine if each independent variable adds significantly to the explanation of that portion of the variance of the dependent variable already explained by the other independent variables.

There are three aspects to this type of multiple regression analysis. The first is to determine the proportion of the variance of the dependent variable that is accounted for by the presence of all the independent variables in the regression process. The statistic used for this is the multiple coefficient of determination (R^2). The second aspect is to determine the relative contribution of each independent variable to the explanation of the variation of the dependent variable. This is accomplished by a comparison of R^2 values. The third aspect is to determine the statistical significance of each independent variable as a predictor of the dependent variable. For this third aspect, a form of the F-test is used which permits us to determine the significance of the contribution of a particular independent variable to the explanation of the variation of the dependent variable above that variance already explained by the

presence of other independent variables in the regression process.

The multiple coefficient of determination ($\underline{R}^2$) is the statistic used to measure the efficiency of the regression line. It is, in effect, a measure of the "goodness of fit" of the data to the regression line generated by a specific multiple regression equation. It indicates that portion of the variance of the dependent variable that is due to the independent variables acting in concert. It estimates the proportion of the variance of the dependent variable accounted for by the independent variables and is an index of the ability of the various independent variables to predict or explain values of the dependent variable. It is defined as the ratio of the explained variation of $\underline{Y}$ (the dependent variable) to the total variation in $\underline{Y}$. Potential values for $\underline{R}^2$ range from 0 to 1. An $\underline{R}^2$ value of 0 implies a complete lack of fit of the data to the regression line, while and $\underline{R}^2$ value of 1 implies a perfect fit the model passing through every data point.

A series of 11 equations was computed for the one dependent variable (trust) for each of the two samples. This consisted of one equation which contained <u>all</u> of the independent (predictor) variables, and 10 other equations in which one independent variable was withheld, in succession, from the regression process. By subtracting the $\underline{R}^2$ value calculated for each of the 10 equations missing one independent variable from the $\underline{R}^2$ value for that equation which

contains all of the independent variables, the researcher can determine the relative contribution of each withheld independent variable to the prediction of the dependent variable free of the effects of the other independent variables. Finally, an F-test was used to determine the statistical significance of each independent variable as a predictor of the dependent variable. The following hypothesis test was used for each of the 10 variables tested in both samples:

H_0: the independent variable withheld from the regression process does not add significantly to the variation of the dependent variable already explained by the presence of the other independent variables in the regression equation.

H_A: the independent variable withheld from regression does add significantly to this explanation.

The following F-test was used. Based on the R^2 values computed as stated above, it permits the researcher to determine the statistical significance of the contribution of a specific subset of independent variables to the explained variation of the dependent variable:

$$F = \frac{(R^2 \text{ total} - R^2 \text{ subset})/M}{1 - R^2 \text{ total}/(n-k-1)}$$

where k is the total number of independent variables; M is the number of independent variables in the subset for which the significance test is being made; n is the number of subjects in each sample; R^2 (total) is the multiple coefficient of determination for the regression equation which contains all of the independent variables; R^2(subset) is the same statistic, but for those equations in which one independent variable has been withheld from the regression process. Degrees of freedom for the F-ratio test are M and $(n-k-1)$, respectively. The test of significance in this thesis was done at both the .05 and .01 levels. To state that a specific equation is significant at the .05 level means that there is at least a 95% chance that the relationship between the dependent variable and the independent variables is not due to sampling fluctuation and measurement error.

By comparing the computed F-ratio value to the F-ratio value determined by the rejection region based on the level of significance chosen by the researcher, we can determine the significance of the specific independent variable as a predictor of the dependent variable.

All multiple regression equations were computed as detailed in SPSS (Nie et al, 1981, pp. 328-345).

CHAPTER V

Results

Introduction

In this chapter, the results of the three different statistical analyses done on the data from the survey instrument will be presented. These include the reliability estimates, the Pearson coefficient of correlation results, and the results of the multiple regression analysis. In the latter two areas, the relationship of the results to their specific hypotheses will also be discussed.

Reliability

Table 2 contains the internal consistency reliability estimates for each of the variables from the survey instrument used in this thesis. They are provided for both samples.

TABLE 2

Coefficient Alpha Reliability Estimates for Organization One (HOSP) and Organization Two (TAC) Samples

Variable	HOSP (n=284)	TAC (n=299)
Interpersonal trust	.59	.63
Supervisor's perceived job performance	.82	.86
Communications	.68	.68
Teamwork	.68	.73
Extrinsic Satisfaction	.78	.72
Organizational Commitment	.90	.90
Participation	.64	.63

Reliability estimates range from a high of .90 for organizational commitment for both samples to a low of .59 for trust for the Organization One sample. Across samples there appears to be little difference in the resspective reliability estimates. In general, the results suggest that the internal consistency reliabilities of the various scales are satisfactory.

Pearson Product Moment Correlations

The Pearson correlation matrix for each of the two samples are contained in Tables 3 and 4.

TABLE 3

Correlations Among Interpersonal Trust, Supervisor's Perceived Job Performance, Communications, Teamwork, Extrinsic Satisfaction and Organizational Commitment for the Organization One Sample (n=284)

Variables	1	2	3	4	5	6	7
1. Interpersonal Trust	1.00						
2. Supervisor's Performance	.23	1.00					
3. Communications	.24	.65	1.00				
4. Teamwork	.38	.38	.58	1.00			
5. Extrinsic Satisfacion	.31	.54	.53	.45	1.00		
6. Job Stress	-.14	-.16	-.22	-.22	-.28	1.00	
7. Organizational Commitment	.32	.30	.38	.51	.45	-.27	1.00

$p < .001$ for all correlations

TABLE 4

Correlations Among Interpersonal Trust, Supervisor's Perceived Job Performance, Communications, Teamwork, Extrinsic Satisfaction and Organizational Commitment for the Organization Two Sample (n=299)

Variables	1	2	3	4	5	6	7
1. Interpersonal Trust	1.00						
2. Supervisor's Performance	.31	1.00					
3. Communications	.29	.61	1.00				
4. Teamwork	.36	.42	.52	1.00			
5. Extrinsic Satisfaction	.25	.60	.52	.35	1.00		
6. Job Stress	-.21	-.07*	-.05*	-.07*	-.16*	1.00	
7. Organizational Commitment	.24	.40	.54	.40	.38	-.27*	1.00

$p < .001$ for all correlations except as indicated
* insignificant at the $p < .05$ level

The initial six hypotheses predicted a positive relationship between interpersonal trust and the other variables analyzed here except for stress, for which a negative relationship was predicted. These hypotheses were supported by the data.

Hypothesis 1: A positive association was found between interpersonal trust and the respondent's perception of his supervisor's job performance (HOSP, $r = .23$, $p < .001$; TAC, $r = .31$, $p < .001$). Thus, Hypothesis 1 is supported.

Hypothesis 2: The results here show a positive relationship between interpersonal trust and the flow of communications within the organization (HOSP, r = .24, p < .001; TAC, r = .29, p < .001). Hypothesis 2 is supported.

Hypothesis 3: The relationship between trust and the cohesiveness or teamwork of the group here is positive (HOSP, r = .38, p < .001; TAC, r = .36, p < .001). Thus, Hypothesis 3 is supported.

Hypothesis 4: The correlation results show a positive relationship between interpersonal trust and the variable of extrinsic satisfaction (HOSP, r = .31, p < .001; TAC, r = .25, p < .001). Hypothesis 4 is supported.

Hypothesis 5: As predicted, there is a negative association between interpersonal trust and perceived job stress (HOSP, r = -.14, p < .001; TAC, r = -.21, p < .001). Hypothesis 5 is supported.

Hypothesis 6: The results indicate a positive relationship between trust and organizational commitment (HOSP, r = .32, p < .001; TAC, r = .24, p < .001). Hypothesis 6 is supported

Multiple Regression

The results of the multiple regression analysis for each sample are contained in Tables 5 and 6. The tables are structured to show the effect of each independent variable as a predictor of the dependent variable. Displayed below is an example of the manual calculations needed to determine the predictive significance of each independent variable.

These calculations begin with the computation of the various $\underline{R}^2$ values by SPSS and terminate with the completion of the F-ratio tests of significance for each independent variable. The independent variable used in this example is partcom -- the interactive combination of participation and communications. Calculations for the other dependent variables are similar to this example. Any differences in the numerical values are due to the characteristics of each independent variable.

Formula: $$\frac{(R^2 \text{ total}) - (R^2 \text{ subset})/M}{(1-R^2 \text{ total})/(N-k-1)}$$

Values: $\underline{R}^2$ total = .22119. This represents the $\underline{R}^2$ value for the multiple regression equation which contains all of the independent variables.

$\underline{R}^2$ subset - .19856. This represents the $\underline{R}^2$ value for the multiple regression equation which contains all of the independent variables except partcom

$\underline{M}$ = 2. This represents the number of independent variables in the predictor being tested. In this example that predictor is an interactive variable and, hence, has two independent variables. For the single term independent variables, the value of M would be 1.

$\underline{N}$ = 284. This represents the size of the Organization One sample. For the Organization Two sample, this number would be 299.

$\underline{k}$ = 10. This represents the total number of independent variables. This is a constant.

Equation: $$\frac{(.22119 - .19856)/2}{(1 - .22119)/(284 - 10 - 1)} = \frac{(.02263/2)}{(.77881)/(273)}$$

$$= \frac{.02263/2}{.77881/273} = \frac{.011315}{.0028528} = 3.970$$

Rejection Region: $F > F_{.05,M,(N-k-1)}$

$$F > F_{.05,2,273} = 3.00$$

Result: The effect of the interaction between participation and communications accounts for a unique increment in trust variance.

$$F(2,272) = 3.97, \underline{p} < .05$$

TABLE 5

Multiple Regression Results Using Trust as the Dependent Variable -- Organization One Sample (n=284)

R^2	Independent Variable Withheld	Change in R^2	Computed F-Ratio Value	Significant Predictor
.22119	All variables included	--	--	Yes
.21629	Participation	.00490	1.719	No
.21601	Organizational Commitment	.00518	1.817	No
.21982	Communications	.00137	.480	No
.21758	Teamwork	.00361	1.266	No
	Interactions			
.22007	Participation/ Organizational Commitment	.00112	.196	No
.19856	Participation/ Communications	.02263	3.970	Yes $p<.05$
.22117	Participation/ Teamwork	.00002	.004	No
.22116	Communications/ Organizational Commitment	.00003	.005	No
.21992	Teamwork/ Organizational Commitment	.00127	.223	No
.22056	Teamwork/ Communications	.00063	.111	No

TABLE 6

Multiple Regression Results Using Trust as the Dependent Variable -- Organization Two Sample (n=299)

R^2	Independent Variable Withheld	Change in R^2	Computed F-Ratio Value	Significant Predictor
.24123	All variables included	--	--	Yes
.23698	Participation	.00425	1.616	No
.23524	Organizational Commitment	.00599	2.277	No
.23976	Communications	.00147	.559	No
.23984	Teamwork Interactions	.00139	.529	No
.23961	Participation/ Organizational Commitment	.00162	.308	No
.23978	Participation/ Communications	.00145	.276	No
.24036	Participation/ Teamwork	.00087	.165	No
.23991	Communications/ Organizational Commitment	.00132	.251	No
.23881	Teamwork/ Organizational Commitment	.00232	.441	No
.24036	Teamwork/ Communications	.00087	.165	No

Only one independent variable used in the regression analysis here emerged as a significant predictor of trust. This is the interactive variable partcom (participation/ communications) for the Organization One sample ($F = 3.970$, $p < .05$). The participation and communications variables for both samples emerged as somewhat important, although not significant predictors of the dependent variable. The remaining independent variables manifested little potential effect on the dependent variable (trust).

CHAPTER VI

Discussion

The research in this study was based on the initial assumption that interpersonal trust is an important element in the successful functioning of organizations. Emphasis was placed on the positive effects that intra-organizational trust has had in the success of the Japanese firm. Hypotheses were drawn from both the management literature and also from more "popular" material dealing with Japanese industrial relations practices.

In this study, trust manifested predicted relationships with a series of other variables relevant to organizational performance. Unfortunately, the type of trust measured here was global or attitudinal trust, and not situational trust. This makes it difficult to compare the results with those obtained from studies in which situational trust was the measured variable.

Both Driscoll (1978) and Scott (1980) attempted to analyze this dichotomy, albeit with inconclusive results. Driscoll (1978) demonstrated that situational trust is strongly associated with overall job satisfaction, while global trust is not (r = .52, p < .001 versus r = .12, p < .05). However, he makes no attempt to determine the contribution that each of these factors makes to overall levels of interpersonal trust. In addition, Driscoll's sample, which

consisted of 109 college faculty members, is of inadequate size and diversity.

Scott (1980) showed that, while both the situational and global factors are significant predictors of the level of trust, the situational factor is more significant. However, due to the similarity of his statistical results, $F(5,36) = 3.355$, $p < .01$ versus $F(5,36) = 3.459$, $p < .01$, and the small size of his sample (44 college business students), it is difficult to make definitive generalizations in this area. More invvestigation is needed.

It is recommended that future versions of this survey be modified to include tests for both global and situational trust. The response set for the latter should contain items relevant to the respondents in their specific occupational situation. A model here might be Driscoll's (1978) response set for organizational (situational) trust, which addresses the perceived trustability of specific individuals within the administrative hierarchy of the college, such as dean, chairman and president. In a medical service environment such as Organization One, potential items might include references to various levels of the hospital administration, lab personnel, physicians in general, the chief resident, etc. This would permit a better analysis to be made of the trust dynamic extent in the occupational environment of the respondent and also permit more relevant analysis to be done concerning the comparative and inter-relational aspects of these two factors.

Hypothesis 1, which was supported, predicted a positive association between interpersonal trust and the respondent's perceptions of the leader's job effectiveness (HOSP, r = .23, $p < .001$; TAC, r = .31, $p < .001$).

These results are understandable in that, typically, there seems to be a positive correlation between the emphasis a leader places on job performance and accomplishment and the "rightness" of his dealings with his subordinates. The leader who makes work-related decisions based on accepted norms of job performance is viewed, correctly I believe, as dealing more "objectively" and "fairly" with his subordinates with a consequent lessening of such things as hidden agendas, favoritism and other dysfunctional behavior. This might tend to result in both greater job productivity and heightened levels of trust among subordinates.

These correlation values are much lower than those obtained by Jones, James and Bruni (1974) when they analyzed the same basic variables (r = .52, $p < .001$). This difference may be due to the effects of the situational/global dichotomy. Jones, James and Bruni (1974) measured the respondent's "trust and confidence in the leader" (p. 147). This is a situational variable and much more focused than the measure of global trust used in this thesis.

Hypothesis 2, which was supported, predicted a positive association between interpersonal trust and organizational communications (HOSP, r = .23, $p < .001$; TAC, r = .31, $p < .001$). This notion has tremendous intuitive appeal. Indeed, it appears to be the basis for much of human behavior. We,

as human beings, tend to actively communicate with those whom we trust. Any successful attempt by management to raise levels of trust within the organization might tend to result, in short order, in increased communications flow within that organization. These results are somewhat similar to those obtained by Roberts and O'Reilly (1974) in their study which investigated the relationship between trust in the supervisor and various aspects of upward communications. Testing across four different work organizations, Roberts and O'Reilly reported a positive association between trust in the supervisor and: the perceived accuracy of information received from the supervisor; the desire for communications with the supervisor; and satisfaction with communications (r = .25, p < .05 to r = .56, p < .001). As with the Jones, James and Bruni (1974) study from the previous hypothesis, Roberts and O'Reilly measured the respondent's trust in the leader, which is a situational variable.

Hypothesis 3 successfully predicted a positive relationship between trust and teamwork (HOSP, r = .38, p < .001; TAC, r = .29, p < .001). To my mind, this flows from the relationship described in the previous hypothesis (2). The ability of people or groups of people to work successfully together is based on their ability to communicate with each other. This, in turn, is a direct function of the levels of trust which exist between them. Ouchi (1981) summed it up best when he stated, "Productivity and trust go hand-in-hand. . ." (p. 4).

These results are in consonance with those obtained by Zand (1972) and Klimoski and Karol (1976). Unlike this study, those researchers used a measurable type of "work" activity to determine job effectiveness and then to compare different levels of trust with group effectiveness. This method of using contrived group "problem-solving" sessions to measure group accomplishments is generally not feasible in the Air Force environment. However, another method exists with which to determine both individual and organizational (group) performance. The USAF has a wide variety of measurement systems and rating mechanisms used to determine numerous aspects of individual and organizational performance. With adequate reliability and validity, these could be used to compare levels of job accomplishment across different USAF organizations performing the same function, with measured levels of interpersonal trust and other relevant variables. For example, this thesis dealt with a USAF Hospital located in the West. How would these results compare with those obtained from the base hospital here at WPAFB? How do the two hospitals, themselves, compare in those official measures used to gauge organizational effectiveness?

Hypothesis 4 correctly predicted a positive association between interpersonal trust and job satisfaction (HOSP, $\underline{r}$ = .31, $\underline{p}$ < .001; TAC, $\underline{r}$ = .25, $\underline{p}$ < .001). These results are concordant with those obtained by Driscoll (1978) for a somewhat similar study.

In this thesis, measures of global trust and extrinsic satisfaction were used. Driscoll used measures of both global and situational trust, but correlated them with a satisfaction variable he called "overall satisfaction." The latter is a composite measure which contains items from both the satisfaction variables (extrinsic and intrinsic) described in this thesis. The correlation results obtained here were much higher than those obtained by Driscoll based on his measures of global trust and "overall satisfaction" (r = .12, $p < .05$) and much lower than those obtained by Driscoll for situational trust and his "overall satisfaction" (r = .52, $p < .001$). These differences may be due to the differences in samples and also to the different measures used in the two samples. I feel that more research is needed in this area, with special emphasis on the use of measures of greater reliability and validity. At this juncture, I see no inherent connection between levels of global trust and extrinsic job satisfaction. Driscoll's results would tend to lend some credence to my comments. On the other hand, I see a strong potential relationship between situational trust and extrinsic job satisfaction provided that the response set for the situational trust measure is relevant to the specific job situation studied.

Hypothesis 5, which was supported, predicted a negative relationship between trust and perceived job stress (HOSP, r = -.14, $p < .001$; TAC, r = -.21, $p < .001$). Intuitively, these results seem valid. Any stress which may exist in a

given job situation can be somewhat ameliorated by the beneficial effects that interpersonal trust has on organizational communications and enhanced group effectiveness. However, I feel that more research is needed in this area with emphasis on specific types, or sources of stress. One posisible starting point could be the dichotomy involving intrinsic and extrinsic satisfaction. Are these sources of stress inherent in the job activity itself, or are they something over which management has control?

Hypothesis 6, which was supported, predicted a positive association between trust and organizational commitment (HOSP, $\underline{r}$ = .32, $\underline{p}$ < .001; TAC, $\underline{r}$ = .24, $\underline{p}$ < .001). The inclusion of this hypothesis was occasioned by the tremendous importance given this relationship in the literature dealing with personnel policies of Japanese firms. This emphasis on the role of interpersonal trust as a main progenitor of commitment to the organization by the employee with the beneficial effects this commitment has on employee productivity, is central to the practice of labor relations within Japanese industry. This stands in vivid contradistinction to the almost automatic adversarial relationship between management and the employee which typifies industrial relations in this country.

Unfortunately, I was unable to discover any empirical studies dealing with this area. Research is vitally needed.

In this study, trust emerged with the lowest reliability estimates of all variables tested, across both

samples. This may be attributed to two things: the number of items in the response set and the type of items used.

Generally a test can be made more reliable by increasing its length. In this study, there was a general relation between the length of a response set and its reliability estimates. The response set for the trust variable contained three items, among the smallest used here. In addition, since these items are a measure of global trust, they are very broad and wide-ranging, with emphasis on "people" and such notions as "taking advantage" and "helping." Possibly a larger response set with a more focused approach to a specific situation would generate higher item intercorrelations and reliability estimates.

Driscoll (1978) computed reliability estimates for the main variables analyzed in his study of global and attitudinal trust, participation and job satisfaction. His situational trust factor contained a response set of three items and produced a very low reliability estimate of .37. This result may be explained by the type of items used by Driscoll. His intent was to measure faculty trust in school administrators at three different levels: department head, head of school and president of the college. The item reads: "I can trust ___ to make decisions. . . ." In reality, Driscoll's response set is a series of one-shot "mini-response sets" which measure three distinct trust objects which have little inherent relationship to each other. His results are understandable.

Driscoll also measured global trust using a two-item response set taken from Rosenberg (1956), which dealt with the respondent's faith in the helpfulness of other people. This reliability estimate was .86. This is much higher than the results obtained in this study even though Driscoll's response set was smaller, and content-wise, varied little from the response set used in this thesis.

In addition to trust, reliability estimates for extrinsic satisfaction and organizational commitment were available from the literature review. In both cases, the response used here was identical to that used in the cited article. The results tend to reflect this similarity. In the MSQ (Weiss et al, 1967), reliability estimates for extrinsic satisfaction ranged from .78 to .82. This compares with estimates obtained here of .78 and .72 for Organizations One and Two, respectively. In their article on organizational commitment, Porter et al (1974) obtained reliability estimates ranging from .82 to .94. This compares with the results here of .90 and .90 for the two samples.

In the multiple regression analysis, only one independent variable emerged as a significant predictor of interpersonal trust. This was the interactive variable, partcom ($F = 3.970$, $p < .05$) for the Organization One sample. Compounding this reversal was the rather weak performance of most of the other independent variables tested. To reject the null hypothesis at the .05 level required a computed F-value of 3.84 and 3.00, respectively, for single-term and

interactive variables. Besides the one significant predictor variable, the highest F-values obtained were for the variables of participation and organizational commitment for both samples. These ranged from F = 1.616 to F = 2.277. All other computed F-values were very small. Out of a total of 10 independent variables tested across two samples, only one independent variable emerged as a significant predictor of trust; and that emergence only occurred in one sample. Given the pervasiveness of this reversal, it would appear that the emergence of the sole predictor variable was due to chance.

This situation may be due to the weak measure of trust used in the study. With reliability estimates of .59 and .63, we are faced with the fact that approximately 40% of the variance in the trust measure is a function of measurement error.

Allied to this is the situational/global trust phenomenon. In this thesis, we are, in effect, attempting to make generalizations about the specifics of the respondent's work place environment based on the measure of global trust, which emphasizes such things as the honesty and helpfulness of people, in general.

Finally, as stated previously, some of the variables measured in the complete AFIT survey were not used due to the necessity of limiting the scope of Master's thesis research. This includes such things as intrinsic satisfaction, perceived work group and self performance, job involvement, job autonomy, etc. Possibly the inclusion of

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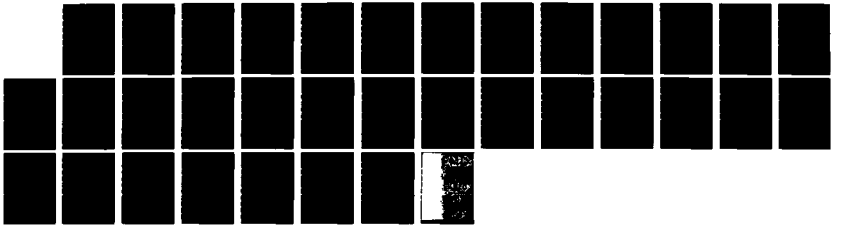

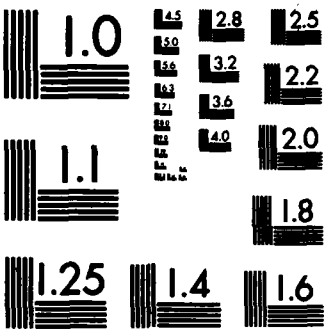

one or all of these other variables would have produced different results.

More investigation is needed in this area of interpersonal trust. This includes the situational/global dichotomy as analyzed by Driscoll (1978) and Scott (1980), and also the concept of dimensionality as studied by Rotter (1967), Kaplan (1973), Chun and Campbell (1974) and Wright and Tedescki (1975).

More sophisticated, quantitative, analytical techniques are also required. The Pearson coefficient of correlation appears to be the staple analytical tool used. None of the articles which appeared in this thesis, either in the literature review or as cited references within the body of the study, used multiple regression analysis.

In this study, trust was treated as an end, as a dependent variable, and analysis was done to determine those variables with the greatest effect on the presence and level of trust. Trust must also be considered as a means to an end, as an independent variable. As such, it typically interacts with other independent variables such as participation, job involvement, etc., to affect organizational function, specifically job satisfaction and job performance. What exactly does affect the bottom line? More analysis is needed in this area.

The Japanese have made great economic strides since 1945. Some of the credit for this performance must go to

their system of industrial relations with its emphasis on personal trust in interpersonal dealings.

We would do well to emulate them.

APPENDIX A

AFIT SURVEY OF WORK ATTITUDES

AFIT SURVEY OF WORK ATTITUDES

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY (ATC)
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright Patterson Air Force Base, Ohio

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PRIVACY ACT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and

(3) EO 9397, 22 Nov 43, Numbering System for Federal Accounts Relating to Individual Persons; and

(4) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and

(5) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and DOD.

c. Routine uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in a written master's thesis and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

GENERAL INFORMATION

The purpose of this questionnaire is to obtain information about you, your job, your work group and your organization. Specifically, this information is being collected in support of research assessing employee attitudes toward different aspects of their work environment.

Please be assured that all information you provide will be held in the strictest confidence. Your individual responses will NOT be provided to management or to any other agency. Feedback on the study's results will be presented to management only in terms of group averages describing what the "typical" employee would say. In addition, when the results of this study are published, readers will NOT be able to identify specific individuals or work groups.

A primary objective of this study is to track changes in worker attitudes over time. You will be asked to complete another survey at some later date. In order to detect any changes in worker attitudes, some means was needed to connect responses provided by an employee at different times. At the same time, the research team wishes to protect the anonymity of all participants. A procedure was developed to achieve both of these objectives. We ask your indulgence in complying with this procedure.

Questionnaire Tracking Procedure

On the computer scored response form you were provided you will find a five digit survey control number in the box labeled "identification number." Each employee has a different survey control number. An employee of the organization has agreed to serve as an intermediary in this procedure. When you complete your questionnaire this person will ask you for your survey control number and your social security number. That employee will retain this information on a master list. You will then turn your questionnaire in directly to a representative of the research team. This procedure will be followed for future administrations of the survey. The intermediary will have a key by which survey control numbers may be linked via social security numbers. He will not have access to any questionnaire responses. The research team will see completed questionnaires, but will only be told that one arbitrary survey control number should be paired with another. In this way, we feel we have provided for attainment of both aims of the study--employee anonymity and a means of tracking attitude changes.

Thank you for your cooperation in participating in this study. If you have any questions, please contact the researcher at the following address:

Major N. K. Ovalle, 2d, DBA
or
Robert P. Steel, PhD
AFIT/LSB
Wright-Patterson AFB OH 45433
AUTOVON 785-4529

KEYWORDS

The following are definitions of key words that recur throughout the questionnaire:

1. Supervisor: The person to whom you report directly.

2. Work Group: All persons who report to the same supervisor that you do. (If you are a supervisor, your work group is the group of employees that report directly to you).

3. Organization:

INSTRUCTIONS

This questionnaire contains 133 items (individual "questions") numbered "1" through "133." All 133 items must be answered by filling in the appropriate spaces on the machine-scored response sheets provided. If for any item you do not find a response that fits your situation exactly, use the one that is the closest to the way you feel.

Please use a "soft-lead" (No. 2) pencil, and observe the following:

1. Make heavy black marks that fill in the space (of the response you select).

2. Erase cleanly any responses you wish to change.

3. Make no stray markings of any kind on the response sheet.

4. Do not staple, fold or tear the response sheet.

5. Do not make any markings on the questionnaire booklet.

You have been provided with two response sheets. Do NOT fill in your name on either sheet so that your responses will be anonymous. Please note that both sheets have a survey control number ending with either "1" or "2." Please use the response sheet with the survey control number ending with the number "1" to respond to the first 80 items and then answer items 81 through 133 on the response sheet with the survey control number ending with the number "2", using the first 53 blocks.

Each response block has 10 spaces (numbered 1 through 10) or a 1-10 scale. The questionnaire items normally require a response from 1-7 only, therefore, you will rarely need to fill in a space numbered 8, 9, or 10. Questionnaire items are responded to by marking the appropriate space on the response sheet as in the following example:

SCALE:

1 = Strongly disagree
2 = Moderately disagree
3 = Slightly disagree
4 = Neither agree nor disagree
5 = Slightly agree
6 = Moderately agree
7 = Strongly agree

Sample item 1:

The guidance you receive in your job from your supervisor is frequently unclear.

(If you "moderately agree" with sample item #1, you would "blacken in" the corresponding number of that statement (moderately agree = 6) on the response sheet for item numbered "sample item 1".)

Sample response:

JOB SATISFACTION

How satisfied are you in your present job? Use the following rating scale to indicate your satisfaction.

1. Means you are very dissatisfied with this aspect of your job.
2. Means you are dissatisfied with this aspect.
3. Means you can't decide if you are satisfied or not with this aspect of your job.
4. Means you are satisfied with this aspect.
5. Means you are very satisfied with this aspect of your job.

1. Being able to keep busy all the time.
2. The chance to work along on the job.
3. The chance to do different things from time to time.
4. The chance to be "somebody" in the community.
5. The way my boss handles his men.
6. The competence of my supervisor when he makes decisions.
7. Being able to do things that didn't go against my conscience.
8. The way my job provides for steady employment.
9. The chance to do things for other people.
10. The chance to tell people what to do.
11. The chance to do something that makes use of my abilities.
12. The way company policies are put into practice.
13. My pay and the amount of work I do.
14. The chances for advancement on the job.
15. The freedom to use my own judgment.
16. The chance to try my own methods of doing the job.
17. The working conditions.
18. The way my wo-workers got along with one another.
19. The praise I get for doing a good job.
20. The feeling of accomplishment I got from the job.
21. Enjoying the work itself.

PERCEIVED WORK-GROUP PERFORMANCE

The following statements and questions deal with the performance of your work-group as you view it. Please think carefully of the things you and your work-group members produce by way of services and/or products as you respond to these questions.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree or disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

22. The quantity of output of your work-group members is very high.

23. The quality of output of your work-group members is very high.

24. Your work-group members always get maximum output from the available resources (e.g., money, materiel, personnel).

25. Your work-group members do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

26. When high priority work arises (e.g., "crash projects", and sudden schedule changes) your work-group members do an excellent job in handling and adapting to these situations.

PERCEIVED SELF-PERFORMANCE

The following statements and questions deal with your view of your own performance. Your frame of reference should be your performance over the past six months or so in light of what is expected of you. Please think carefully of the various things you produce (major responsibilities of your assigned job) in the way of services and or products as you respond to these questions or statements.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree or disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

27. The quantity of your output is very high.

28. The quality of your output is very high.

29. You always get maximum output from the available resources (e.g., money, materiel, personnel).

30. You do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

31. When high priority work arises (e.g., "crash projects" and sudden schedule changes) you do an excellent job in handling and adapting to these situations.

JOB INFORMATION

Use the following rating scale for the 15 statements to express your own feelings about your present job or work.

1. Means you strongly disagree with the statement
2. Means you moderately disagree with the statement
3. Means you slightly disagree with the statement
4. Means you neither disagree nor agree with the statement.
5. Means you slightly agree with the statement.
6. Means you moderately agree with the statement.
7. Means you strongly agree with the statement.

32. I often have to use the skills I have learned for my job.

33. I often have a chance to try out my own ideas.

34. I often have a chance to do things my own way.

35. I often have a chance to do the kinds of things that I am best at.

36. I often feel at the end of the day that I've accomplished something.

37. The most important things that happen to me involve my work.

38. The most important things I do involve my work.

39. The major satisfaction in my life comes from my job.

40. The activities which give me the greatest pleasure and personal satistion involve my job.

41. I live, eat, and breathe my job.

42. I would rather get a job promotion than be a more important member of my club, church, or lodge.

43. How well I perform on my job is extremely important to me.

44. I feel badly if I don't perform well on my job.

45. I am very personally involved in my work.

46. I avoid taking on extra duties and responsibilities.

JOB CHARACTERISTICS

This part of the questionnaire asks you to describe your job, as objectively as you can.

Please do NOT use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and as objective as you possibly can.

A sample question is given below:

A. To what extent does your job require you to work with mechanical equipment?

1--------2--------3--------4--------5--------6--------7

Very little; the requires almost no contact with mechanical equipment of any kind.	Moderately	Very much; the job requires almost constant work with mechanical equipment.

Indicate on the answer sheet the number which is the most accurate description of your job. If, for example, your job requires you to work with mechanical equipment a good deal of the time, but also requires some paperwork, you might choose the number six, so you would blacken "6" in on the answered sheet.

If you do not understand these instructions, please ask for assistance. If you do understand them, turn the page and begin.

PLACE ALL ANSWERS ON ANSWER SHEET!

47. To what extent does your job require you to work closely with other people (either "clients," or people in related jobs in your own organization)?

1----------2----------3----------4----------5----------6----------7

Very little, dealing with other people is not at all necessary in doing the job.	Moderately, some dealing with others is necessary.	Very much; dealing with other people is an absolutely essential and crucial part of doing the job.

48. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

1----------2----------3----------4----------5----------6----------7

Very little; the job gives me almost no personal "say" about how and when the work is done.	Moderate autonomy; many things are standardized and not under my control, but I can make some decisions about the work.	Very much; the job gives almost complete responsibility for deciding how and when the work is done.

49. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? *Or is it only a small part of the overall* piece of work, which is finished by other people or by automatic machines?

1----------2----------3----------4----------5----------6----------7

My job is only a tiny part of the overall piece of work; the results of my activities cannot be seen in the final product or service.	My job is a moderate-sized "chunk" of the overall piece of work; my own contribution can be seen in the final outcome.	My job involves doing the whole piece of work; from start to finish; the results of my activities are easily seen in the final product or service.

50. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

1----------2----------3----------4----------5----------6----------7

Very little; the job requires me to do the same routine things over and over again.	Moderate variety.	Very much; the job requires me to do many different things, using a number of different skills and talents.

51. In general, how <u>significant or important</u> is your job? That is, are the results of your work likely to significantly affect the lives or well-being of other people?

1----------2----------3----------4----------5----------6----------7

Not very significant; the outcomes of my work are <u>not</u> likely to have important effects on other people	Moderately significant.	Highly significant; the outcomes of my work can affect other people in very important ways.

52. To what extent do <u>managers or co-workers</u> let you know how well you are doing on your job?

1----------2----------3----------4----------5----------6----------7

Very little; people almost never let me know now well I am doing.	Moderately; sometimes people may give me "feedback"; other times they may not.	Very much; managers or co-workers provide me with almost constant "feedback" about how well I am doing.

53. To what extent does <u>doing the job itself</u> provide you with information about your work performance? That is, does the actual <u>work itself</u> provide clues about how well you are doing--aside from any "feedback" co-workers or supervisors may provide?

1----------2----------3----------4----------5----------6----------7

Very little; the job itself is set up so I could work forever without finding out how well I am doing.	Moderately; sometimes doing the job provides "feedback" to me; sometimes it does not.	Very much; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

Section Two

Listed below are a number of statements which could be used to describe a job. You are to indicate whether each statement is an accurate or an inaccurate description of your job. Once again, please try to be as objective as you can in deciding how accurately each statement describes your job--regardless of whether you like or dislike your job.

How accurate is the statement in describing your job?

1	2	3	4	5	6	7
Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate

54. The job requires me to use a number of complex or high-level skills.

55. The job requires a lot of cooperative work with other people.

56. The job is arranged so that I do not have the chance to do an entire piece of work from beginning to end.

57. Just doing the work required by the job provides many chances for me to figure out how well I am doing.

58. The job is quite simple and repetitive.

59. The job can be done adequately by a person working alone--without talking or checking with other people.

60. The supervisors and co-workers on this job almost never give me any "feedback" about how well I am doing in my work.

61. This job is one where a lot of other people can be affected by how well the work gets done.

62. The job denies me any chance to use my personal initiative or judgment in carrying out the work.

63. Supervisors often let me know how well they think I am performing the job.

64. The job provides me the chance to completely finish the pieces of work I begin.

65. The job itself provides very few clues about whether or not I am performing well.

66. The job gives me considerable opportunity for independence and freedom in how I do the work.

67. The job itself is not very significant or important in the broader scheme of things.

WORK ROLE ATTITUDES

This section of the questionnaire contains a number of statements that relate to feelings about your work group, the demands of your job, and the supervision you receive. Use the following rating scale to indicate the extent to which you agree or disagree with the statements shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree nor disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

68. Within my work-group the people most affected by decisions frequently participate in making the decisions.

69. In my work-group there is a great deal of opportunity to be involved in resolving problems which affect the group.

70. My work-group is very effective in making decisions.

71. My work-group is very effective in the process of group problem solving (i.e., clearly defining/specifying the problem(s), developing and evaluating alternative solutions, and, selecting, implementing and evaluating a solution).

72. I don't have enough time to do everything that is expected of me on my job.

73. The amount of work I have to do interferes with how well it gets done.

74. I have work standards that cannot be met given my time constraints.

75. My work (job) causes me a great deal of stress and anxiety.

76. My life away from my work causes me a great deal of stress and anxiety.

77. In general, people tell the truth, even when they know they could benefit by lying.

78. Generally speaking, most people are inclined to look out for themselves rather than helping others.

79. If given the chance, most people will try to take advantage of others rather than trying to be fair.

80. There is a high spirit of teamwork among my co-workers.

81. Members of my work group take a personal interest in one another.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree nor disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

82. If I had a chance to do the same kind of work for the same pay in another work group, I would still stay here in this work group.

83. My supervisor lets me know when I am doing a poor job.

84. My supervisor lets me know when I am doing a good job.

85. I can determine for myself how well I am doing my job without feedback from anyone else.

86. My supervisor represents the group at all times.

87. My supervisor performs well under pressure.

88. My supervisor is a good planner.

89. My organization provides all the necessary information for me to do my job effectively.

90. My work group is usually aware of important events and situations.

91. My supervisor asks members of my work group for our ideas on task improvements.

WORK GOALS

The following three statements deal with your perceptions of the nature of goals and objectives that guide your work. Use the rating scale given below to indicate the extent to which your work goals have the characteristics described.

1 = not at all
2 = to a very little extent
3 = to a little extent
4 = to a moderate extent
5 = to a fairly large extent
6 = to a great extent
7 = to a very great extent

92. To what extent do you know exactly what is expected of you in performing your job?

93. To what extent are your job performance goals difficult to accomplish?

94. To what extent are your job performance goals realistic?

JOB EFFORT RATING

95. As fairly and objectively as you can, rate the typical amount of effort you normally put into doing your work.

1 = very little effort
2 = enough effort to get by
3 = moderate effort
4 = more effort than most
5 = very much effort

FUTURE WORK PLANS

Use the two rating scales given below to indicate your future work plans with respect to the Air Force.

96. Within the coming year, if I have my own way:

1 = I definitely intend to remain with the Air Force.
2 = I probably will remain with the Air Force.
3 = I have not decided whether I will remain with the Air Force.
4 = I probably will not remain with the Air Force.
5 = I definitely intent to separate from the Air Force.

97. All things considered, I really think that I will still be with the Air Force one year from now.

1 = strongly agree
2 = agree
3 = don't agree or disagree
4 = disagree
5 = strongly disagree

ORGANIZATIONAL INFORMATION

Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. Use the following rating scale to indicate your own feelings about the particular organization for which you are now working.

1 = means you strongly disagree with the statement.
2 = means you moderately disagree with the statement.
3 = means you slightly disagree with the statement.
4 = means you neither agree nor disagree with the statement.
5 = means you slightly agree with the statement.
6 = means you moderately agree with the statement.
7 = means you strongly agree with the statement.

98. I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.

1 = means you strongly disagree with the statement.
2 = means you moderately disagree with the statement.
3 = means you slightly disagree with the statement.
4 = means you neither agree nor disagree with the statement.
5 = means you slightly agree with the statement.
6 = means you moderately agree with the statement.
7 = means you strongly agree with the statement.

99. I talk up this organization to my friends as a great organization to work for.

100. I feel very little loyalty to this organization.

101. I would accept almost any type job assignment in order to keep working this organization.

102. I find that my values and the organization's values are very similar.

103. I am proud to tell others that I am part of this organization.

104. I could just as well be working for a different organization as long as the type of work was similar.

105. This organization really inspires the very best in me in the way of job performance.

106. It would take very little change in my present circumstances to cause me to leave this organization.

107. I am extremely glad that I chose this organization to work for, over others I was considering at the time I joined.

108. There's not too much to be gained by sticking with this organization indefinitely.

109. Often, I find it difficult to agree with this organization's policies on important matters relating to its employees.

110. I really care about the fate of this organization.

111. For me this is the best of all possible organizations for which to work.

112. Deciding to work for this organization was a definite mistake on my part.

SUPERVISOR'S ASSESSMENT OF YOUR PERFORMANCE

The following statements deal with feedback you receive from your supervisor concerning your performance. Your frame of reference should be your supervisor's evaluation of your performance in terms of formal feedback (i.e., periodic, written performance appraisals) and informal feedback (i.e., verbal communication on a day-to-day basis). Please think carefully about his/her evaluations of you over the past six months or so.

Use the following rating scale to indicate the extent to which you agree or disagree with the statements and questions shown below.

1 = strongly disagree
2 = moderately disagree
3 = slightly disagree
4 = neither agree nor disagree
5 = slightly agree
6 = moderately agree
7 = strongly agree

113. Your supervisor considers the quantity of your output to be very high.

114. Your supervisor considers the quality of your output to be very high.

115. Your supervisor believes you get maximum output from the available resources (e.g., money, materiel, personnel).

116. Your supervisor believes you do an excellent job anticipating problems that may come up and either preventing them from occurring or minimizing their effects.

117. Under situations when high priority work occurs (e.g., "crash projects" and sudden schedule changes) your supervisor believes you do an excellent job in handling and adapting to these events.

118. Your supervisor has a very accurate knowledge of your performance.

119. Your supervisor provides you with clear, specific feedback about your performance.

BACKGROUND INFORMATION

This section of the survey contains several items dealing with personal characteristics. This information will be used to obtain a picture of the background of the "typical employee."

120. Your age is:

1. Less than 20
2. 20 to 25
3. 26 to 30
4. 31 to 40
5. 41 to 50
6. 51 to 60
7. More than 60

121. Your highest educational level obtained was:

1. Non high school graduate
2. High school graduate or GED
3. Some college work
4. Associate degree or LPN
5. Bachelor's degree or RN
6. Some graduate work
7. Master's degree
8. Doctoral degree

122. Your sex is:

1. Male
2. Female

123. Which of the following "best" describes your marital status?

1. Not married
2. Married--spouse is a military member
3. Married--spouse is a civilian
4. Single parent

124. Which of the following best describes your present occupation?

1. Nursing (i.e., BSN, RN, LPN, LVN)
2. Medical Nursing Technician
3. Medical Administration-Supervisors/Managerial
4. Medical Administration-Technical/Clerical
5. Medical Lavoratory Technician
6. Dental Services Administration
7. Dental Technical/Laboratory Services
8. Volunteer Worker
9. Photographic Technician
10. Other

125. What is your usual work schedule?

1. Day shift, normally stable hours
2. Swing shift (about 1500-2300)
3. Night shift (about 2300-0700)
4. Rotating shift schedule
5. Day or shift work with irregular/unstable hours

126. Is your job presently:

1. Full-time regular employee
2. Part-time regular employee
3. Full-time volunteer employee
4. Part-time volunteer employee

127. Total months in this organization is:

1. Less than 1 month
2. More than 1 month, less than 6 months
3. More than 6 months, less than 12 months
4. More than 12 months, less than 18 months
5. More than 18 months, less than 24 months
6. More than 24 months, less than 36 months
7. More than 36 months.

128. Total months in present position:

1. Less than 1 month
2. More than 1 month, less than 6 months
3. More than 6 months, less than 12 months
4. More than 12 months, less than 18 months
5. More than 18 months, less than 24 months
6. More than 24 months, less than 36 months
7. More than 36 months.

129. Total months experience in your present occupation:

1. Less than 1 month
2. More than 1 month, less than 6 months
3. More than 6 months, less than 12 months
4. Between 1 and 2 years
5. Between 2 and 3 years
6. Between 3 and 4 years
7. More than 4 years.

130. How many people do you directly supervise (i.e., those for which you write performance reports)?

1. None
2. 1 to 2
3. 3 to 5
4. 6 to 8
5. 9 to 12
6. 13 to 20
7. 21 or more

131. You are a (an):

1. Officer
2. Airman
3. Civilian (GS)
4. Civilian (WG)
5. Non-appropriated Fund (NAF employee)
6. Other

132. Your grade level is:

1. 1-2
2. 3-4
3. 5-6
4. 7-8
5. 9-10
6. 11-12
7. 13-14
8. Senior Executive Service

133. Please fill in response choice Number 2 for this item.

THANK YOU FOR YOUR COOPERATION

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