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The Causal Relationship Between Trust And The Assessed Value Of Management By Objectives

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The causal direction between interpersonal trust and assessed value of an MBO program is investigated in a large mass-transit organization. Three measures of trust were collected that indicated the respondents' trust of their superiors, top management, and the MBO consultant. The results indicated that trust in superior and trust in top management affect the assessed value of MBO. The relationship between trust in the MBO consultant and the assessment value of MBO suggests that an interaction effect occurred.

Theoretical statements and empirical research indicate that interpersonal trust and the assessment of a Management by Objectives (MBO) program's success are positively related (Hollmann, 1976; Patten, 1972; Ford, 1972). The direction of the relationship, however, has not been determined. In fact, the literature yields three competing hypotheses: 1) trust is necessary for an MBO installation to be successful; 2) the trust level in an organization will increase with a successful MBO installation; and 3) trust levels and a successful MBO installation will exhibit an interaction effect. Because of these competing hypotheses, basic recommendations concerning the appropriateness of MBO to a given situation cannot be made. For example, if low trust levels exist in the organization, we are uncertain whether the installation of an MBO program should be postponed until trust levels can be increased, or whether the MBO program should be installed immediately to increase trust in the organization. The purpose of this study is to determine the causal direction between trust and the value/success attributed to MBO.

Although variation in the definition of trust exists, Griffin's (1967) definition is succinct and captures the essence of trust.

It is the reliance upon the characteristics of an object, or

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the occurrence of an event, or the behavior of a person in order to achieve a desired but uncertain objective in a risky situation (p. 105).

Trust, then, can be characterized as a positive force from which cooperation is derived, whereas mistrust is characterized as the unwillingness of individuals to take cooperative action that increases their vulnerability. Individuals who are mistrustful are reluctant to sacrifice their opinions, ideas, and efforts because of perceived possible negative outcomes (Gibb, 1965).

Interpersonal trust has been found to have a powerful influence on human behavior (Rogers, 1961; Rotter, 1971). Extensive research in education, psychology, counseling, criminology, and communications identifies interpersonal trust as a stable predisposition and as the key ingredient of cooperative relationships. In a management context, trust is a necessary element for open, accurate communications (Read, 1962; Mellinger, 1956). Trust influences the effectiveness of group problem-solving and decision-making (Hollon & Gemmill, 1977; Zand, 1972; Gamson, 1968); it influences people's attitudes and feelings about the organizations and their jobs (Driscoll, 1978); and it determines the methods management will use to control employee behavior (Gibb, 1965). Furthermore, the formation of high trust levels is often the focus of organizational development efforts because high levels of trust are seen as linked with efficient work-group functioning, long-term organizational effectiveness, and the willingness of people to make adaptations to environmental change (Kegan, 1971; Friedlander, 1970). Trust also affects one's willingness to share meaningful information, one's commitment to take action, and the satisfaction one experiences in relationships with other persons (Gibb, 1965).

MBO is characterized as a results-oriented managerial approach. With the express purpose of clarifying the confusion surrounding the MBO construct, McConkie (1979) examined the works of authors judged to be MBO experts or authorities. He found nearly universal agreement that goals and objectives should be specific, that they should be defined in terms of measurable results, and that individual and organizational goals should be linked to each other. He also found substantial agreement on the following points: subordinates should participate in the goal-setting process; goals should be reviewed periodically; the time period for goal accomplishment should be specified; indicators of results should be quantifiable whenever possible; and flexibility should be maintained so that objectives can be changed as conditions warrant. McConkie concluded that there are design consistencies among MBO constructs and that most cited differences are merely semantic.

Selected Research

Influence of Trust on MBO Success

According to McGregor (1960), the MBO process could be facilitated by

creating internal organizational conditions consistent with the values and assumptions inherent in MBO. Since then, organizational climate has been identified by numerous writers as a critical variable in the successful implementation of MBO (Jamieson, 1973; Patten, 1972; Owens, 1974; Carroll & Tosi, 1970). In fact, Owens (1974), and Patten (1972) argued that a "supportive climate" must be established prior to the MBO installation. Trust is implicit in these definitions of supportive and non-supportive climates. Moreover, trust is inherent in the actual goal-setting process.

MBO demands a cooperative relationship between superiors and subordinates because these individuals must be willing to share meaningful information concerning their objectives and to make commitments to obtain those objectives under uncertain future conditions. The introduction of an MBO system also represents a substantial change to the organization, and trust is an important aspect of an individual's willingness to accept change. Organization development techniques are recommended for increasing trust before an MBO installation is attempted (Patten, 1972).

Hollmann (1976) provided a partial empirical test of the relationship between trust and MBO. Using multiple regression analysis, he found a significant positive relationship between a supportive organizational climate (including a trust scale) and the assessment of MBO effectiveness. Recognizing that causality could not be determined with his methodology, Hollman (1976) still suggested that organizations having difficulties with their MBO programs should examine the climate of work groups using MBO. Furthermore, organizations should postpone introducing MBO where non-supportive climates are identified.

Although not directly related to the trust-MBO causality question, Shirley (1973) found a significant positive relationship between employee trust in top management and attitudes about management decisions to merge with another organization. To facilitate organization change, management must be trusted by employees. Shirley (1973) went on to suggest the replacement of top managers whom employees believed to be resistant to change. Unfortunately, this was also a correlational study so the direction of the causal relationship can only be assumed.

Influence of MBO on Trust

Patten (1977) has reformulated his theory concerning the relationship between trust and MBO. He hypothesized that the installation of an MBO program can facilitate the development of trust within an organization. First, the MBO process would enhance and make explicit the cooperative relationship between superiors and subordinates. Second, the installation of MBO could be regarded as a "good faith" effort by management to be more responsive to employee input. Furthermore, MBO could be interpreted as an open-participation form of management that Gibb (1965) predicts will increase trust in management.

Indirect empirical support of this causal relationship was offered by Keller (1978). He noted a non-significant decrease in trust and attributed it to the unsuccessful installation of a managerial-grid program implemented

while he was monitoring trust. Although trust measures were collected at three different times, the research design did not allow for conclusions to be drawn about the direction of causality.

Interaction Between Trust and MBO

Ford (1972) explicitly states that trust will affect the willingness of individuals to commit themselves to objectives, and to have meaningful dialogue concerning those objectives. He also insists that trust can be developed by the opportunity for relevant interaction between superior and subordinates and the perception of supervisor control at the next managerial level. Although MBO was not specifically mentioned by Ford (1972), interaction would increase trust by creating the conditions that were very similar to MBO. This interpretation of the causal order was consistent with Gibb's (1965) observations that the initial levels of trust are transformed into trusting or mistrusting behavior through communication of information, by the ways in which attempts are made to influence people, and by the methods used to control individual behavior. It is predicted that these behaviors will enhance initial trust or mistrust.

Again, only indirect empirical support is available for this hypothesized relationship. Zand (1972) manipulated trust in a problem-solving situation under experimental conditions. To establish a theoretical rationale for the methods used to induce different levels of trust, he developed a spiral reinforcement model for the dynamics of trust. This model postulated that initial levels of trust would be accentuated because of the resulting behavioral patterns. He did not test this hypothesis directly, but the very high or very low trust levels in the experimental group seem to indicate that this might have occurred. In the debriefing interviews participants said that during the experiment their levels of trust varied in response to the behavior of others in the group.

To sum up, the theoretical positions and empirical evidence strongly suggest that trust is positively linked with MBO. However, the direction of the causal relationship has not been established. Theorists argue that trust will determine the success of MBO, a successful MBO program will increase trust, and that an interaction effect occurs between trust and MBO. Although empirical evidence was used to support these different theoretical positions, the research designs only confirm the fact that a positive relationship exists; but not the causal direction. Thus, the purpose of this study was to determine the causal direction between trust and the value/success attributed to MBO.

Methodology

Sample

Data for this study were collected from the transportation department of a major city. Although the department is responsible for all public transportation within the city, its primary focus is on the bus system. The system has 800 buses that travel approximately 100,000 miles a day. This

department operates one of the largest city bus systems in the United States. The department has approximately 2,200 employees and 160 are classified as managers, professionals, and supervisors. The bus drivers and mechanics in this operation are unionized. Promotion "from within" has been the traditional policy except for the positions of director and assistant director, which are appointed by the mayor. The organization is racially mixed (55% black and 45% white) through all levels of management. Although there are both men and women in the organization, very few women hold positions other than clerical ones.

Faced with serious productivity problems and a managerial staff with little formal education or management training, the director decided to install a comprehensive MBO system. Because no one in the organization or in the city possessed the expertise to develop and install MBO, the work was contracted to an outside consultant who had considerable experience with MBO. The consultant devised a five-phase plan to install MBO: 1) situation analysis, 2) data analysis and system development, 3) three sets of formal MBO training, 4) development of mission statements and objectives with management, and 5) follow-up. This installation closely approximated the MBO construct developed by McConkie (1979) except that at the time of the last data collection, an individual performance review had not yet occurred. The only indication of program success at the third data point was positive feedback from top management. However, in the two years since the MBO program was implemented, the program has been maintained and dramatic improvements in each of the department's performance indicators have taken place, i.e., reduced rider complaints, reduced employee absenteeism, an improved operating schedule, and reduced mechanical problems with the buses.

Managers, supervisors, and professionals were selected to participate in the study because they received the MBO training and were expected to participate in the goal-setting process. The work associated with these positions is characterized by autonomy for the job holder and considerable feedback, which is inherent in a transportation system. Supervisors and managers are responsible for having buses on the roads that arrive on schedule (not early or late). Maintenance of route schedules, bus breakdowns, number of buses in operation, rider poor-service complaints, and operation costs provide daily feedback concerning the operation of the department. Furthermore, absenteeism, tardiness, and grievances are monitored daily, which provides an indication of employee morale. The professionals in the department are a small proportion of the total employees and work for the most part on specific problems concerning traffic flow. These traffic-flow problems are highly visible and their solution may involve other city employees. The professional staff work on a project-by-project basis which is particularly amenable to MBO. The numerous performance measures however, act to limit the discretion of bus drivers and mechanics which make up the bulk of the work force. These employees were excluded because their jobs were restricted to such a degree by strict performance standards that individual or joint goal-setting discretion was

not possible. For example, bus drivers have routes that must be covered under a very tight time schedule.

The study was conducted for six months. Trust data were collected prior to the installation of the MBO program (Time 1). Then trust and the MBO assessment measures were collected at Time 2 and Time 3. The data collection (see Figure 1) was timed to coincide with major steps in the MBO process. Although 90 percent of the respondents completed questionnaires for any one time period, only 42 percent of the respondents provided usable questionnaires for all three points in time. The shrinkage was caused by changes in personnel holding supervisory, management, and professional positions, the inability of the investigator to induce participants to return all the questionnaires, and incomplete data for matching the questionnaires.

FIGURE 1
Longitudinal Data Collection

Data Collection	Time Elapsed	Events Occurring Prior to Collection	Measures Administered
Time 1	0 months	- Training Needs Assessment - MBO Materials Were Designed	Trust in Supervisor Trust in Management
Time 2	3 months	- MBO Training - Director's Mission Statements Were Distributed - Each Participant Was Asked to Develop Objectives With Subordinates for a Four-Month Planning Session.	Trust in Supervisor Trust in Management Trust in MBO Consultants MBO Assessment for Job MBO Assessment for Organization MBO Assessment for Organization
Time 3	6 months	- Additional MBO Training - Director and Division Managers Developed MBO Objectives For Next Fiscal Year - MBO Consultants Provide Individual Assistance in Objective Setting. - Full-Time Staff Person Took Responsibility for Coordinating MBO System.	Trust in Supervisor Trust in Management Trust in MBO Consultants MBO Assessment for Job MBO Assessment for Organization

When only 42 percent of a potential population is selected for an analysis by non-random means, questions may arise concerning the representativeness of the information. To determine if trust difference existed between those individuals used in the analysis and those who could not be used, trust levels between the two groups were compared at each point in time. No significant differences were found in the trust levels of respondents used in analysis and those not used. Furthermore, these two groups did not differ significantly from the total population in average age (46 years) or in the racial composition.

In addition, the research site provided some natural controls that act to prevent this form of contamination. First, the organization moderates the individual income factor. Blacks and whites are employed at all levels of the organization, and they have been employed at these levels for a considerable

time (at least 10 years), hence average pay levels are the same. Furthermore, all employees are urban dwellers because, to be employed by the department, they must live within the city.

Trust Measures

In this study, what could be termed self-report situational measures of trust were used. Typically, trust has been measured either by the trusting behaviors exhibited or by self-report questionnaires. The latter approach was chosen because of the difficulties in obtaining behavioral measures in the field. The other basic distinction that can be made is in the focus of the measure. Rotter (Interpersonal Trust Scale) and Wrightsman (Philosophies of Human Nature Scale) measure trust in terms of the individual's feelings of trust toward significant but unspecified others; i.e., teachers, parents, politicians, the press, etc. These items are added to produce what could be termed a generalized measure of trust. The other approach focuses on the situation in which trust is of interest. For example, if employee trust in management is of interest, then the trust scale requests the respondent to answer questions about his trust in management. The situational trust approach was chosen because it was found to be a stronger predictor of behavior than the other approach (Schlenker, Helm, & Tedeschi, 1973).

The measures in this study examined the participant's perceptions of trust in his/her superior, trust in top management, and trust in the MBO consultant. Because previously designed scales did not provide trust measures of the persons of interest in the employment relationship, these trust scales were especially designed for this study. However, other trust questionnaires were examined so the items could be framed in the conventional terms used to measure trust (Likert, 1967; Roberts & O'Reilly, 1973; Friedlander, 1970; Griffin, 1967).

The trust items used in this study were selected from a larger bank of trust items and then tested in a pilot study. Although the statistical factor loading was considered, content of the item was also a major determinant as to whether an item in a particular scale was retained. The reduction in the number of items from 25 to 13 reduced the alpha coefficients by less than .3% on any one scale. The revised trust questionnaire is shown in Figure 2.

FIGURE 2
Measures of Trust

Here are some statements which describe how employees might feel about supervision and work. Please indicate your agreement or disagreement. For each statement please circle the number to indicate whether you:

- 1--Strongly Agree
- 2--Agree
- 3--Neutral
- 4--Disagree
- 5--Strongly Disagree

Circle one and only one answer for each statement. There are no right or wrong answers to these questions. Just give your opinion.

continued

FIGURE 2 (continued)
Measures of Trust

This set of questions refers to your *Immediate Supervisor*. This is the person to whom you directly report and are currently responsible to. Be sure to think of a particular person when answering the following questions.

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
SUPERVISOR	I feel free to discuss work problems with my immediate supervisor without fear of having it used against me later.	1	2	3	4	5
	I have complete trust that my immediate supervisor will treat me fairly.	1	2	3	4	5
	If I make a mistake my supervisor is willing to "forgive and forget."	1	2	3	4	5
	My supervisor is friendly and approachable.	1	2	3	4	5
	I can count on my immediate supervisor for help if I have difficulties with my job.	1	2	3	4	5

This set of questions refers to the *Management* of D.O.T. These are the people who make policies, rules and major decisions for D.O.T.

MANAGEMENT	Management has <i>little regard</i> for the well being of people who work for this organization.	1	2	3	4	5
	At DOT management <i>cannot</i> be trusted.	1	2	3	4	5
	When management must make decisions which seem to be against the best interests of the employee, I believe that management's decisions are justified by other considerations.	1	2	3	4	5
	Management <i>seldom</i> follows through with what they say they are going to do.	1	2	3	4	5

This set of questions refers to the MBO (Management-By-Objectives) *Consultants* who are helping to establish this program.

CONSULTANT	I feel free to discuss work problems with the MBO consultants without fear of having it used against me later.	1	2	3	4	5
	In most cases, the MBO consultants are concerned about employee welfare.	1	2	3	4	5
	It is best not to confide in consultants because the information you share is likely to be used against you.	1	2	3	4	5
	The consultants who are implementing the MBO program can be trusted.	1	2	3	4	5

Finally, as predicted in the literature, the trust in superior and trust in management scales were found to have a positive significant ($p < .001$) relationship to participation in decision-making (Rosen & Jerdee, 1977; Zand, 1972; Hollman, 1976) and job satisfaction (Driscoll, 1978). Significant differences between male and female trust were also found with the instrument in another sample (Scott, 1981). These findings provide support for the predictive validity of the trust measures.

Measures of MBO Success/Value

The success/value of the MBO installation was assessed by participants in terms of the specific benefits of MBO suggested by the conceptual and empirical literature. Although the MBO measures suffer from the limitations inherent in self-report data, objective measures of individual performance for managerial and professional employees could not economically be developed. This study, however, focuses primarily on individual perceptions and that, in part, justifies using perceptual measures of MBO success.

The instrument focused on two dimensions: (1) the effect of MBO on the participant's job, and (2) the effect of the MBO program on the organization as a whole. The items for Dimension 1 were taken directly from an instrument designed by Hollmann (1976). These items specifically addressed planning and organization of work, objective appraisal of work performance, motivation for the best job performance, coordination of individual and work group objectives, superior-subordinate communication, superior-subordinate cooperation, and overall satisfaction with MBO (see Figure 3, Items 1-7). Hollmann (1976) found correlation-coefficients which ranged from .41 to .69 and were significant at the .001 level ($N = 112$). However, he did not perform a scale reliability analysis because each item was analyzed separately.

The items that assessed the value/success of MBO for the organization (Dimension 2) were a modified version of a set of questions used by Carroll and Tosi (1970). These items focused upon cooperation between divisions, solution of organization problems, effect on the organization, improvement of communications, and coordination of efforts (see Figure 3, Items 8-12). Statistical analyses of both MBO scales are provided in the results section.

The MBO measures used in this study focus on the value of MBO to the individual participant and the participants' evaluation of the program's organizational value. Sims and Slusher (1977) have also developed a questionnaire to evaluate MBO. Although this questionnaire focuses more on the quantitative elements of an MBO program and is much longer, the evidence of construct validity and reliabilities lends support for utilizing perceptual measures of MBO.

Race, Sex and Age

In the trust literature, certain individual differences have been found to influence a person's dimension of trust. Trust differences exist between men

FIGURE 3
MBO Measures

Here are some statements which describe how employees might feel about the MBO (management-by-objectives) form of management. Please indicate your agreement or disagreement. For each statement please circle the appropriate number to indicate whether you:

- 1--STRONGLY AGREE
2--AGREE
3--NEUTRAL
4--DISAGREE
5--STRONGLY DISAGREE

Circle one and only one answer for each statement. There are no right or wrong answers to these questions. Just give your opinion.

	Strongly Agree 1	Agree 2	Neutral 3	Disagree 4	Strongly Disagree 5
1. MBO is an effective way of planning and organizing the work for which I am responsible.					
2. MBO provides an effective way of evaluating my work performance.	1	2	3	4	5
3. MBO motivates me to do the very best on my job.	1	2	3	4	5
4. MBO is an effective way of coordinating my work with that of other members of my immediate workgroup.	1	2	3	4	5
5. MBO results in good communication between me and my immediate supervisor.	1	2	3	4	5
6. MBO results in regular cooperation between me and my immediate supervisor.	1	2	3	4	5
7. All things considered, I am satisfied with MBO as it relates to my job.	1	2	3	4	5
8. The MBO program has <i>reduced</i> cooperation between divisions of DOT.	1	2	3	4	5
9. The MBO program has helped DOT solve some of its serious problems.	1	2	3	4	5
10. The MBO program has had <i>little effect</i> on DOT.	1	2	3	4	5
11. The MBO program has improved communications at DOT.	1	2	3	4	5
12. The MBO program has improved the coordination of efforts between divisions.	1	2	3	4	5

and women (Wrightsmann, 1974), between blacks and whites (Wrightsmann, 1974), and between fathers and sons (Katz and Rotter, 1969). Based on these findings, sex, age, and race were identified as factors that could affect the participants' trust in supervision, management, and the consultant. However, Bartol, Evans, and Smith (1978) recognized that in an employment relationship an interaction effect occurs between supervisors and subordinates. In other words, there could be differences in relationships if both were black or white, if the supervisor were black and subordinate were white, or the supervisor were white and the subordinate were black. Thus, identifying the employee's race and age was not enough; the object of the employee's trust was also important.

Because data for the subordinates only were available in this study, the

data controls were not used for the trust-in-supervisor analysis. An individual's supervisor could be black or white, and older or younger than the respondent. Top level managers, however, were predominantly black and older (50-60 years), and the consultants were younger (mid-30's) and white. Therefore, age and race could be used as control factors congruent with the theoretical position of Bartol, et al. (1978).

Although sex is recognized as having an important influence on trust, the few (3) women in managerial or professional positions in this organization made it impossible to examine the effect. As a result, they were dropped from the analysis. These women did not have men reporting to them so the data were not contaminated by having participants respond to women supervisors.

Data Analysis

The analytic procedures employed to test the hypotheses were the cross-lagged panel-correlation technique and dynamic correlational analysis (Campbell and Stanley, 1963; Kenny, 1975 and Vroom, 1966). With these tests causality can be inferred from data collected at two points in time when it is not possible to randomly assign subjects to treatment and control conditions. Cross-lagged methodology will not be discussed here because numerous articles have explained the basic assumptions and procedures of this technique (Kenny, 1975; Ivancevich, 1978; and Clegg, Jackson, and Wall, 1977).

That this study did not test for directionality has been pointed out as a difficulty in the interpretation of cross-lagged analysis. Kenny clarifies this issue:

Finding $P_{x_1, y_2} > P_{x_2, y_1}$ is consistent with both X causing an increase in Y and Y causing a decrease in X.
 Finding $P_{x_1, y_2} < P_{x_2, y_1}$ is consistent with both Y causing an increase in X and X causing a decrease in Y
 (1975, p. 892).

To determine which effect is creating the significant score, Kenny (1975) suggested that the sign of synchronous correlation be considered and that a frequency-of-change-in-product-moment technique be used (Yee and Gage, 1968). This, however, is a moot point for this study because theory and empirical evidence indicate that directionality is not an issue. Considering the substantial correlational research reported earlier, one would not expect that decreases in the success of MBO would cause increases in trust or decreases in trust would cause the success of MBO. As a result, the particular set of competing hypotheses being tested in this study does not require that this "directionality" issue be determined.

Results

Initially, questionnaire items were designed to measure a theoretical dimension and were thus assigned to particular scales based on content. The intercorrelation between scales is shown in Table 1. The coefficient alphas

were greater than .80 and the interscale correlations are substantially less than the coefficient alphas. Thus, discriminant validity exists for the scales used in this research (Nunnally, 1967). The results of the factor analysis (orthogonal rotation: varimax), which appear in Table 2, are for the most part consistent with theoretical assignment of items to scales. As the factor analytic results indicate, five factors emerge with an eigenvalue of 1.0 or greater. These factors explain 91 percent of the variance. Factors II, III and V, which represent the measures of trust in supervision, management, and the MBO consultant, have factor loadings which are all quite high, ranging

TABLE 1
Trust-MBO Assessment Intercorrelations^a

	1	2	3	4	5
1. MBO Assessment of Job	(.91)				
2. MBO Assessment for Organization	.62	(.84)			
3. Supervisory Trust	.33	.31	(.93)		
4. Management Trust	.50	.53	.44	(.87)	
5. Consultant Trust	.41	.45	.40	.34	(.81)

^aCoefficient alpha values are in parentheses. This analysis was conducted on Time 2 data (N = 162). Very similar results were obtained when Time 1, 2, and 4 data were analyzed, i. e., identical questions were administered to substantially the same (85%) population.

TABLE 2
Factor Analytic Results of Trust - MBO Assessment Questions (Varimax Rotation)^a

Factor Name	Items	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	h ²
MBO Assessment of Job	1	.853	.128	.241	.107	.123	.043	.079	.836
	2	.890	.009	.125	.149	.131	-.015	-.007	.847
	3	.516	.056	.006	.313	.110	.283	.293	.543
	4	.784	.126	.097	.210	.091	.002	.033	.693
	5	.618	.129	.166	.192	.169	.532	.020	.775
	6	.636	.197	.081	.182	.141	.474	-.056	.730
MBO Assessment for Organization	7	.694	.018	.186	.319	.180	.024	.044	.654
	1	.270	-.041	.036	.219	.161	-.055	.253	.217
	2	.308	.094	.119	.816	.217	-.055	-.063	.838
	3	.139	-.020	.055	.691	.076	.089	.414	.686
	4	.495	.045	.133	.566	.066	.146	-.039	.612
Supervisory Trust	5	.426	.032	.084	.573	.132	.097	.053	.547
	1	.160	.756	.087	.053	.084	.000	-.092	.623
	2	.061	.794	.169	.035	.053	-.048	.137	.688
	3	-.003	.631	.184	.083	.201	-.047	-.155	.505
	4	.008	.841	.053	-.010	.120	.028	.119	.739
Management trust	5	.108	.726	.002	-.034	.125	.260	-.058	.626
	1	.186	.105	.008	.173	.798	.182	.193	.783
	2	.177	.168	.083	.160	.738	.041	.158	.663
	3	.256	.152	.186	.087	.278	.093	-.172	.246
MBO Consultant Trust	4	.109	.269	.006	.034	.664	-.098	-.192	.572
	1	.251	.120	.689	-.006	-.067	.088	-.160	.590
	2	.301	.064	.599	.333	.007	.236	-.041	.622
	3	.143	.075	.677	.086	.173	-.023	.364	.654
	4	.030	.215	.788	.059	.071	-.081	.009	.684
Eigenvalue		7.8	2.9	1.6	1.3	1.0	0.5	0.5	
Variance Explained		29.0	19.7	13.9	14.9	12.9	5.2	4.4	

^aThis analysis was conducted on time 2 data (n=162). Similar results were obtained when time 1 and 3 data were analyzed, i.e., identical questions were administered to substantially the same population.

from .31 to .841, except for Item 3 on the management scale. Although Item 3 had only a .278 factor loading, the item was retained because the content clearly referred to management trust.

The assessed value of MBO for one's own job loaded in Factor 1 with values that ranged from .516 to .853. The loading of the assessed value of MBO for the organization was not as clear. Because the loadings were higher for Factor 4 (except for Item 8); because the eigenvalues and intercorrelations indicate distinction between the scales; and because the items have different evaluative focus toward MBO, the scales are indeed different and were analyzed as such.

The results of the cross-lagged correlation technique and correlational analysis are summarized in Tables 3 and 4. The Table 3 results indicate that there is not a uniform causal direction between the trust variables and the

TABLE 3
Causal Analysis of Trust and the Assessment of MBO

Trust Measures		Corrected Cross-Lagged Coefficients ¹	Static Coefficients	Dynamic Coefficients
A. MBO Assessment for the Individual's Job				
			Time 2	Time 3
Supervision	r(MI2.ST3)	.02	.33*	.38**
	r(ST2.MI3)	.33**		.24**
Management	r(MI2.MT3)	-.05	.49*	.58*
	r(MT2.MI3)	-.29*		.30*
Consultant	r(MI2.CT3)	-.04	.38*	.47*
	r(CT2.MI3)	-.02		.27*
B. MBO Assessment for the Organization				
			Time 2	Time 3
Supervision	r(MO2.ST3)	-.12	.21*	.31*
	r(ST2.MO3)	.27*		.16
Management	r(MO2.MT3)	-.13	.43*	.58*
	r(MT2.MO3)	.18**		.30*
Consultant	r(MO2.CT3)	.03	.33*	.46*
	r(CT2.MO3)	.17		.17

¹Dynamic and Corrected Cross-Lagged Coefficients have had Trust (Time 1) partialled out. As a result these correlations are lower than one would normally expect.

* $p < .01$

** $p < .05$

TABLE 4
Amount and Direction of Change in Mean Scale Values
(One Tailed Test)

Scale	Mean t_2	Mean t_3	Difference	t
(1) MBO Assessment For Job	3.51	3.36	-.15	.202**
(2) MBO Assessment For Organization	3.33	3.20	-.13	-1.62**
(3) Supervisory Trust	3.86	3.82	-.04	.73
(4) Management Trust	3.42	3.36	-.06	.85
(5) Consultant Trust	3.83	3.62	-.21	4.01*

* $p > .001$

** $p > .05$

MBO assessment variables. Because $r = .33$ (ST2.MI3) $> r = .02$ (MI2.ST3) and $r = .28$ (MT2.MI3) $> r = -.05$ (MI2.MT3) the implication is that the source of influence is trust in supervision and management, and not the assessment of MBO for an individual's job. The causal direction is similar for trust in supervision and management and the assessment of MBO for the organization because $r = .26$ (ST2.MO3) $> r = -.12$ (MO2.ST3) and $r = .18$ (MT2.MO3) $> r = -.13$ (MO2.MT3). The dynamic correlations (mostly significant) however, are not strong enough to rule out the possibility that these findings could have been caused by some third variable.

Although significant correlations are found between trust in the MBO consultant and the two MBO assessments in Table 4, the cross-lagged correlational technique indicates that neither exerts the primary influence in the causal relationship. As discussed in Kenny (1975), two conclusions can be drawn: first, that no causal relationship exists between the variables; or second, that an interaction effect has occurred. The results shown in Table 4 suggest that the lack of a significant relationship is probably due to an interaction effect. Since the MBO consultant was not known by most employees, they had no experience upon which to base a dimension of trust. Once the consultant began installing the program, employees had an opportunity to hear from others or observe directly the extent to which the consultant acted in a trustworthy manner. Because their trust in the MBO consultant developed in conjunction with the installation of the MBO program, an interaction effect occurred which "washed out" any significant results that could be attributed to either variable by the cross-lagged correlational technique. This interpretation of data is supported by the significant (.001) change in the mean values of consultant trust. Neither trust in supervisor nor trust in management changed significantly.

Finally, this study provides support for utilizing situational trust measures. Although the three dimensions of trust were significantly correlated, these dimensions were not uniformly related to the dependent variable. Supervisory and management trust were shown to be causally related to the assessment of MBO. No such causal relationship was evident between MBO consultant trust and assessment of MBO. The construct analysis of these scales gives further evidence that people perceive these dimensions as distinct. This analysis again indicates trust levels are resistant to change unless the subjects lack experience with the object (MBO consultant) of trust.

Discussion

The objective of this study was to determine the causal relationship between interpersonal trust and the successful installation of MBO. This study does not attempt to determine if MBO influences organizational effectiveness or managerial performance. The research was designed to address competing theoretical arguments: (1) trust is necessary for an MBO installation to be successful; (2) the trust levels in an organization will increase with a successful MBO installation; or (3) trust levels and a

successful MBO installation will exhibit an interaction effect.

The results indicate that trust in supervision and management will determine how successful the MBO process is perceived to be for the individual's job and for the organization as a whole. This supports Patten's (1972) model for instituting an MBO system. He contends that organization development techniques should be used to remove emotional blockages, e.g., low trust, prior to instituting an MBO program. More recently, Patten (1977) has given more emphasis to MBO as a device for building trust. This study does not support this reformulation of the causal order, but does lend support to the widely held notion that a good organizational climate (trust being an aspect of that climate) is conducive to the successful installation of MBO (McGregor 1960; Jamieson 1973; Hollmann 1976).

A more general but certainly more speculative conclusion can be drawn from these findings. If the MBO installation can be thought of as an example of a major management intervention, then these findings would suggest that trust is an important determinant to the success of such interventions. This is consistent with conclusions drawn by Keller (1978) and Shirley (1973) concerning trust and management interventions. Provided this is true, monitoring and maintaining trust at high levels would facilitate management interventions that must occur periodically as organizations adapt to change. This more general interpretation is consistent with Lawler's (1969) contention that trust is instrumental in the successful implementation of a compensation program.

MBO and other major management interventions often involve an outside consultant and this study indicates that an outsider should proceed with caution. Levels of trust in the MBO consultant changed significantly during the installation of the program; this indicates that participants in the program were still forming their trust in the outside consultant. If the consultant acts in such a way as to create mistrust, the belief in the value of the program could erode very quickly, which would create even more mistrust. A situation like this could certainly jeopardize the installation of most management programs that require trust.

Limitations

The analytical procedures used in this study reduce the generalizability of these findings. Although causal relationships between supervisory and managerial trust and the assessment of the MBO program have been inferred, the analytical procedures used do not rule out the possibility that other independent variables may affect how MBO is assessed. Because these independent variables have not been identified, one cannot determine how much they would contribute to the explanation of the variance in the dependent variable.

Another limitation is the analytical procedures used to prove causality. Confidence in these techniques must be tempered by the realization that certain basic assumptions have been made and that there are certain weaknesses in the methodology. Only to the extent that the attributes of the

data are congruent with these assumptions can the analytical procedures be considered appropriate.

Finally, as indicated by this study, the time lag between data points can influence the results. In this study, the data were collected over a six month period. If trust had increased, a longer lag time could have changed the causal relationships that were evident in this study. This particular problem is common in longitudinal research; the researcher often does not have a theoretical basis for determining when the data should be collected and what the lag period should be. Additional research with different time lag intervals is needed to discover how time affects the relationship between trust and MBO.

The measure of the MBO assessment poses another limitation for these data. Although perceptions of managers and professionals probably provide meaningful data, they were not corroborated by independent observation. If, indeed, trust does affect the utilization of MBO, then other more objective measures should be influenced by trust levels.

In addition to the limitations imposed by the analytical procedures, the generalizability of the data is affected by the field location. Since these data were collected from only one organization, the industry, the urban location, the exclusion of women from the analysis, and the other factors that made this organization unique could have affected the causal relationships discovered. Only replications in diverse organizations can determine whether the effects are consistent with those in other situations or whether moderating variables exist.

Implications and Future Research

The results of this study have several applications for management and consultants. The most obvious is the realization that trust is going to affect the installation and perceived success of MBO. In fact, managers and consultants would be advised not to install a MBO program if trust levels are particularly low. Kegan (1972) found that properly designed sensitivity training will increase trust. Patten (1972) recommended team building. Although the suggested methods for enhancing trust in the organization are diverse, the common element seems to be increased interpersonal communications and interaction in what organization change agents would term a "safe environment." It should be noted, however, that other attempts to increase trust have been unsuccessful (Strong and Schmidt, 1979; and Friedlander, 1966).

In terms of future research, the first and most obvious need is to replicate the present study in other organizations with different time lag intervals. Next, this line of correlational causal research should be pursued in order to identify other variables which contribute to the success of MBO. Hollmann's (1976) research would certainly justify examining other dimensions of climate as possible factors that influence the success of MBO. Once these variables can be identified and measured, then regression analysis can be utilized to determine how much each contributes toward the success of MBO.

A major question that this research has left unanswered is what level of trust is adequate for installing MBO. Although writers discuss an adequate level of trust, no empirical research has addressed this issue (Patten, 1972; Porter et al., 1975; Hollmann, 1976).

Finally, because this research was prompted by the failures of MBO to become a viable management strategy within organizations, research on variables that are causally related to maintaining MBO systems would be an important avenue of research. Patten (1972) has proposed that reward and penalty systems should be installed to reinforce behaviors that are critical to the MBO process. In related research ($n = 2$), Ivancevich (1974) found that an MBO program which incorporated reinforcement programs retained its viability longer than an MBO program without reinforcement. Thus compensation and other personnel systems apparently could be designed to be consistent with MBO and reinforce the appropriate behavior from organization members.

In conclusion, empirical investigations of determinants of a successful MBO installation are almost non-existent. Given the limitations of this study, several contributions can be noted. First, trust in supervision and management is causally related to assessed success of MBO. However, there was little support for the same linkage between the MBO consultant and assessed MBO success. Second, trust has been shown to be quite resistant to change in the organizational setting. Yet, more questions seem to be identified than are answered. The influence of trust in managerial processes is certainly a fertile area for future research.

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