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This paper presents a model of trust and its interaction with information flow, influence, and control, and reports on an experiment based on the model to test several hypotheses about problem-solving effectiveness. The subjects were managers and the independent variable was the individual manager's initial level of trust. Groups of business executives were given identical factual information about a difficult manufacturing-marketing policy problem; half the groups were briefed to expect trusting behavior, the other half to expect untrusting behavior. There were highly significant differences in effectiveness between the high-trust groups and the low-trust groups in the clarification of goals, the reality of information exchanged, the scope of search for solutions, and the commitment of managers to implement solutions. The findings indicate that shared trust or lack of trust apparently are a significant determinant of managerial problem-solving effectiveness.[1]

There is increasing research evidence that trust is a salient factor in determining the effectiveness of many relationships, such as those between parent and child (Baldwin *et al.*, 1945), psychotherapist and client (Fiedler, 1953; Seeman, 1954), and members of problem-solving groups (Parloff and Handlon, 1966). Trust facilitates interpersonal acceptance and openness of expression, whereas mistrust evokes interpersonal rejection and arouses defensive behavior (Gibb, 1961).

During the past fifteen years many managers have been introduced to programs, variously called sensitivity training (Bradford *et al.*, 1964), grid laboratories (Blake and Mouton, 1964), or group workshops (Schein and Bennis, 1965), to improve their skills in developing trust and thus, presumably, their managerial effectiveness. It has been difficult, however, to show a direct correlation between trust and managerial effectiveness in a working organization (Dunnette and Campbell, 1968; House, 1967), so that there is a need to clarify the theoretical basis for assertions about trust and managerial effectiveness and to devise experiments to test them.

[1] This article is based on a paper presented to the 17th International Congress of Applied Psychology, Liege, Belgium, July, 1971.

INTRODUCTION

Rogers (1961) found that in an effective helping relationship, one participant (counselor, therapist, helper) behaved in ways that developed trust and the other experienced an increase in trust, and concluded that the development of trust is a crucial initial factor and a necessary continuing element in such a relationship. He summarized extensive research in which an increase in trust appeared to be causally related to more rapid intellectual development, increased originality, increased emotional stability, increased self-control and decreased physiological arousal to defend against threat.

The level of trust in a relationship affects the degree of defensiveness. Gibb (1961) found that members of small groups that developed a "defensive climate," had difficulty concentrating on messages, perceived the motives, values, and emotions of others less accurately, and increased the distortion of messages. Other studies suggest that some interpersonal trust is required for effective problem solving in a group. Parloff and Handlon (1966) found that intensive, persistent criticism increased defensiveness and mistrust among members of a group and decreased their ability to recognize and accept good ideas. Meadow *et al.* (1959) reported that defensiveness induced a lasting decrease

in problem-solving effectiveness. They found that groups penalized for poor ideas and admonished to produce only good ideas while working on early problems produced poorer solutions to later problems when these restrictions were removed than groups that were not penalized and admonished during their early problem assignments.

This paper: (1) analyzes the concept of trust, (2) presents a model of the interaction of trust and problem-solving behavior, and (3) reports the results of an experiment that attempted to test several hypotheses derived from the model.

ANALYSIS OF CONCEPT

Trusting behavior, following Deutsch (1962), is defined here as consisting of actions that (a) increase one's vulnerability, (b) to another whose behavior is not under one's control, (c) in a situation in which the penalty (disutility) one suffers if the other abuses that vulnerability is greater than the benefit (utility) one gains if the other does not abuse that vulnerability. For example, a parent is exhibiting trusting behavior in hiring a baby sitter so he can see a movie. The action significantly increases his vulnerability, since he cannot control the baby sitter's behavior after leaving the house. If the baby sitter abuses that vulnerability, the penalty may be a tragedy that may adversely affect the rest of his life; if the baby sitter does not abuse that vulnerability, the benefit will be the pleasure of seeing a movie. Thus trust, as the term will be used in this paper, is not a global feeling of warmth or affection, but the conscious regulation of one's dependence on another that will vary with the task, the situation, and the other person.

MODEL

The following model, based on Gibb, (1964), conceptualizes the transforming of one's inner state of trust (or mistrust) into behavior that is trusting (or mistrusting) through (1) information, (2) influence, and (3) control.

One who does not trust others will conceal or distort relevant information, and avoid stating or will disguise facts, ideas, conclusions and feelings that he believes will increase his exposure to others, so that the information he provides will be low in accuracy, comprehensiveness, and timeliness; and therefore have low congruence with reality. He will also resist or deflect the attempts of others to exert influence. He will be suspicious of their views, and not receptive to their proposals of goals, their suggestions for reaching goals, and their definition of criteria and methods for evaluating progress. Although he rejects the influence of others, he will expect them to accept his views. Finally, one who does not trust will try to minimize his dependence on others. He will feel he cannot rely on them to abide by agreements and will try to impose controls on their behavior when coordination is necessary to attain common goals, but will resist and be alarmed at their attempts to control his behavior.

When others encounter low-trust behavior, initially they will hesitate to reveal information, reject influence, and evade control. This short cycle feedback will reinforce the originator's low trust, and unless there are changes in behavior, the relationship will stabilize at a low level of trust.

All of this behavior, following from a lack of trust, will be deleterious to information exchange, to reciprocity of influence, and to the exercise of self-control, and will diminish the effectiveness of joint problem-solving efforts.

To the objective uncertainty inherent in a problem, for example, unavailable facts and unknown causal relationships between actions and results, low trust will add social uncertainty; that is, uncertainty introduced by individuals withholding or distorting relevant information and concepts.

Persons lacking trust attempting to solve a problem jointly will attempt to minimize their vulnerability. There will be an increase in the likelihood of misunderstanding or misinterpretation. The social uncertainty induced by their low trust will increase the probability that underlying problems may go undetected or be avoided, and that inappropriate solutions may be more difficult to identify. If the group is incapable of breaking out of this ineffective pattern of problem solving, it may seize an expedient solution as a device to end its work and dissolve itself.

Persons who trust one another will provide

relevant, comprehensive, accurate, and timely information, and thereby contribute realistic data for problem-solving efforts. They will have less fear that their exposure will be abused, and will therefore be receptive to influence from others. They will also accept interdependence because of confidence that others will control their behavior in accordance with agreements, and therefore will have less need to impose controls on others, (see Figure 1). Consequently they will contribute to a decrease in social uncertainty, and be less likely to misinterpret the intentions and the behavior of others. As a result, underlying problems are more likely to be identified and examined, and solutions more

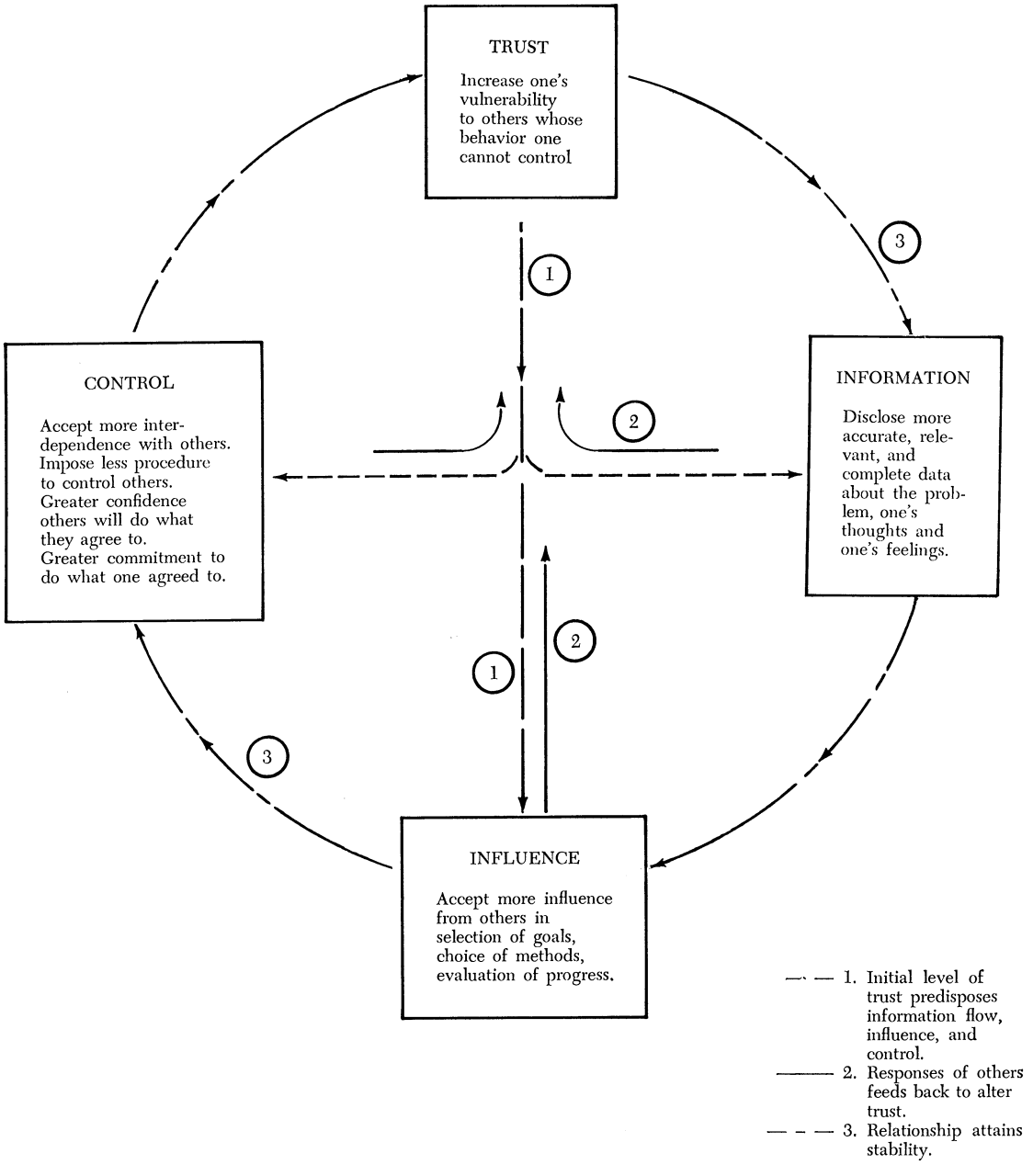

FIGURE 1. A MODEL OF THE RELATIONSHIP OF TRUST TO INFORMATION, INFLUENCE, AND CONTROL

likely to be appropriate, creative, and long-range.

Hypotheses

It is not assumed here that trust alone will solve a technical problem; it is assumed that group members collectively have adequate knowledge, experience, and creativity to define and solve a complex problem. It is also assumed that it is possible to increase or decrease trust in members of a problem-solving group.

On the basis of the model described, the following differences can be predicted in the problem-solving behavior of groups with high and low trust.

An increase in trust will increase the exchange of accurate, comprehensive, and timely information. Problem-solving groups with high trust will:

Hypothesis 1. Exchange relevant ideas and feelings more openly,

Hypothesis 2. Develop greater clarification of goals and problems.

Hypothesis 3. Search more extensively for alternative courses of action,

Hypothesis 4. Have greater influence on solutions.

Finally, an increase in trust will increase willingness to control one's own behavior, will increase confidence in the reliability of others, and will decrease efforts to control the behavior of others, all of which will contribute to increased satisfaction and motivation. Hence, problem-solving groups with high trust will:

Hypothesis 5. Be more satisfied with their problem-solving efforts,

Hypothesis 6. Have greater motivation to implement conclusions,

Hypothesis 7. See themselves as closer and more of a team,

Hypothesis 8. Have less desire to leave their group to join another.

Dynamics of Trust

Trust takes form in the interaction of two (or more) people, and the dynamics of this interaction is illustrated in Figure 2.

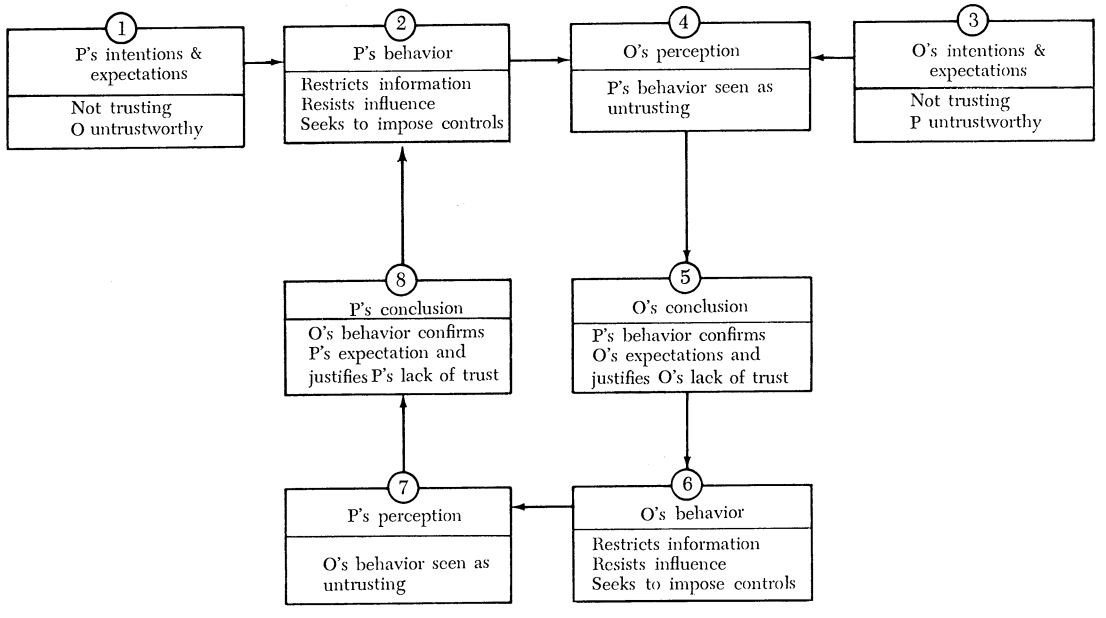

FIGURE 2. A MODEL OF THE INTERACTION OF TWO PERSONS WITH SIMILAR INTENTIONS AND EXPECTATIONS REGARDING TRUST

An increase in trust will increase the willingness to influence others and the receptivity to the influence of others. Hence, problem-solving groups with high trust will:

Let P denote one person and O the other. If (1) P lacks trust, (2) he will disclose little relevant or accurate information, be unwilling to share influence, and will at-

tempt to control O. (3) Assume O also lacks trust, (4) perceives P's initial behavior as actually untrusting, and (5) concludes he was right to expect P to be untrustworthy; then (6) he will feel justified in his mistrust of P. Since (7) P sees O's behavior as untrusting, he (8) will be confirmed in his initial expectation that O would not be trustworthy and (2) P will behave with less trust than when he entered.

The interaction will continue around the loop inducing O and P to behave with less and less trust until they arrive at an equilibrium level of low trust, each attempting to minimize his vulnerability and to maximize his control of the other. In the process the effectiveness of problem solving will decrease. After interaction has continued, each will tend to hold more firmly to his entering beliefs. They will not have a reliable basis for accepting or sharing influence, and the mutual resistance to influence will arouse feelings of frustration in both. If they have a deadline, each will attempt to impose controls on the other. If P is O's organizational superior, he may command O's compliance, which will reinforce O's mistrust. Usually, by the middle of the meeting the level of trust will be lower than the initial level.

Gibb (1964) offers support for the dynamics of this interaction. In observing small group behavior he noted that the defensive behavior of a listener generated cues which subsequently increased the defensiveness of the communicator, resulting, if unchecked, in a circular pattern of escalating defensiveness.

The pattern of spiral reinforcement illustrated in Figure 2 would operate constructively if it is assumed that both P and O entered the relationship with trust in the other. Gibb (1964) observed that when defensiveness was reduced, members were better able to concentrate on the content and meaning of a message, became more problem oriented, and were less concerned about imposing controls on each other's behavior.

METHOD

The spiral reinforcement model of the dynamics of trust (Figure 2) has been presented to establish a theoretical rationale for the methods used to induce different levels of trust, but this study did not focus on a test of the spiral reinforcement model. The aim of this study was to examine the relation between trust and problem-solving effectiveness as formulated in the eight hypotheses.

To test the hypotheses derived from the model, the research was designed so that half of the experimental groups started work on a business-management problem with a mental set toward low trust and half with a mental set toward high trust. Mental set, as used here, includes intentions as to one's behavior, expectations as to the behavior of others, feelings such as anxiety or discomfort, and cognitive frame used to interpret events and form perceptions. In this research trust was not examined as a personality variable; that is, an element of individual character, but as an induced attitude, one that the individual could alter in a situation in which he was led to intend and to expect trust (or mistrust) from others as he attempted to solve a problem. Because trust as a personality trait was not relevant, and to avoid alerting the subjects to the issue of trust, no prior measures were taken of the subjects' attitude toward trust.

Subjects. Because of their high potential for top management, upper-middle managers from all functions and product divisions of a large, international electronics company were periodically selected by their superiors, after discussion with the corporate personnel staff, to attend an off-site, four week, in-residence program in management development given several times a year that accepted sixteen managers at a time. Eight managers in each program, were randomly chosen to be subjects and distributed into two problem-solving groups, each with four members. The remaining eight managers were observers; each was randomly assigned to a group with four members and each group observed one problem-solving group. Data were gathered in eight programs providing a total of sixty-four subjects in sixteen problem-solving groups and fifty-nine observers (five programs were short one manager) in sixteen observing groups. There were no subordinates, superiors, or peers from the same department or division in any program. Interviews confirmed that the subjects and the observers did not know about the experi-

ment, which was designed as a learning event embedded in the program.

Problem. The central problems involved (1) developing a strategy to increase short-term profits without undermining long-term growth of a medium-sized electronics company with very low return on investment, outdated manufacturing facilities, whose labor force had been cut 25 percent and whose top management personnel had been changed and reorganized two years before, and (2) obtaining commitment to implement such a program despite strong managerial disappointment because expectations of immediate investment for expansion and modernization would not be met. The situation, a variation of one described by Maier *et al.* (1959), involved four executive roles: president and vice presidents for marketing, manufacturing, and personnel. Subjects were randomly assigned to the roles.

Procedure. All subjects and observers were given a written description of the production, marketing, financial, and personnel difficulties of the company.

In the presence of the observers, subjects were told they were to conduct a meeting lasting thirty minutes in the president's office to make appropriate management decisions. Ostensibly, they were to demonstrate their decision-making competence to their fellow managers, the observers.

Each subject was then given an additional written statement with factual and attitudinal information relevant to his function. He had no knowledge of the role information given to other subjects. The subjects privately read and absorbed this problem information for twenty-five minutes so there would be minimal need to refer to it during the meeting.

Treatments. Subjects were randomly assigned to one of two group conditions: an entering mental set toward high or low trust.

The factual data about production, marketing, finance, and so on was identical in both conditions, and all vice presidents were led to expect that the president would announce approval of a long-studied plant expansion.

In both conditions the president's statement told him that on the preceding day, he had received an ultimatum from the board of directors demanding an increase in profits within one year or else he would be forced to resign. Furthermore, he was told that expansion was not feasible because it would reduce short-term profits, take more than a year to build and start up a new plant, and the board was not likely to approve the financing, so as a first step toward increasing profits, he would have to announce his decision against expansion. The vice presidents had no knowledge of the president's dilemma when they started their thirty-minute problem-solving meeting.

Induction of conditions of trust. The induction of the two levels of trust was accomplished by operating on the following entering beliefs of subjects: (1) the task competence of others, (2) norms on introducing information and new ideas, (3) norms on attempts to influence managers outside of one's primary responsibility, (4) likelihood that others would abuse trusting behavior, and (5) competitiveness or collaborativeness for rewards.

In a high-trust group, a manager's entering mental set toward trust was shaped by the following paragraph, which followed the factual information in the role statement:

> You have learned from your experiences during the past two years that you can trust the other members of top management. You and the other top managers openly express your differences and your feelings of encouragement or of disappointment. You and the others share all relevant information and freely explore ideas and feelings that may be in or out of your defined responsibility. The result has been a high level of give and take and mutual confidence in each other's support and ability.

Subjects in low-trust groups had a similar paragraph in their role information, but worded to induce a decrease in trust.

The reward system was operated on by information placed only in the president's statement. In the high-trust condition, the president was led to see his relation to his vice presidents as collaborative. His role statement said that "although the Board's decision considered you specifically, since you appointed the current top management team it is likely that the Board will go outside for a successor and possibly other vice presidents."

In the low-trust condition the president was led to see his relation to his vice presi-

dents as potentially competitive. His role statement said that since the board's ultimatum pertained to him, it was possible that they might appoint one of the vice presidents as his successor. The vice presidents in both conditions were given no information about whether their relation to the president was potentially competitive or collaborative.

All subjects were told that "whenever information is incomplete, introduce whatever facts and experiences seem reasonable under the circumstances."

Observers. In addition to reading the written general description of the company's problems, before observing the problem-solving meeting, the observers were told of the vice presidents' factual basis for seeking and expecting to get final approval for plant expansion and that the president had received a one-year ultimatum from the board the preceding day, but they were given no information about the attitudinal parts of the statements.

Measures. After thirty minutes, group discussion was stopped and each subject and observer completed a questionnaire with eight or nine items. The respondent was to indicate whether in his group, or the group he observed, there was "much" or "little" of the property described in each item.

The items were: (1) trust, (2) openness about feelings, (3) clarification of the group's basic problems and goals, (4) search for alternative courses of action, (5) mutual influence on outcomes, (6) satisfaction with the meeting, (7) motivation to implement decisions, (8) closeness as a management team as a result of the meeting. The subjects' questionnaire had a ninth item: "As a result of this meeting would you give little or much serious consideration to a position with another company?" The written statement could only suggest to each subject an entering mental set toward high or low trust. By the end of the meeting each subject's level of trust would depend on the extent to which his entering beliefs were confirmed by the behavior of the other managers.

RESULTS

Measures of Trust. The responses of subjects and of observers are reported separately in Table 1, with the chi-square value for each item.

The subjects' rating of level of trust confirms that the induction of high and low trust was successful ($p < .001$) after one-half hour of problem discussion. This result, although not a direct test of the spiral reinforcement model, does offer support for it.

Since the observers used only their personal standards for their ratings, it is noteworthy that they had little difficulty recognizing the behavior indicative of low or high trust ($p < .001$).

The hypotheses about differences between groups with high or low trust were confirmed by the responses of the subjects (items 2–9, $p < .001$) and observers (items 3–9, $p < .001$; item 2, $p < .05$).

Qualitative Differences. There were also observable qualitative differences in the comprehensiveness and creativity of the problem solving of the two groups.

High-Trust Groups. In the high-trust groups the president consistently disclosed voluntarily the board's demand for better short-term performance. These teams, after initial frustration with the disapproval of immediate expansion, dealt with the short-range plans to increase profitability and then began to design long-range plans for modernization and expansion that they would present to the board.

Short-range plans emerging from the discussion among the vice presidents included straightforward proposals to review the product line, to identify and promote sales of high-profit items, and to cut back output of low-profit items. Their more creative proposals, flowing from substantial changes in their perceptions, included, for example, leasing space in a nearby vacant plant, rearranging work flow, selectively modernizing equipment that would provide greatest cost benefits and require minimal capital, subcontracting standard components, and rapidly converting two new products from research to production. In one group the managers agreed to invest their personal savings to help finance modernization, to show the board their strong commitment to the company's future.

Low-Trust Groups. In low-trust groups, the vice presidents had difficulty understanding the basis for the president's decision

TABLE 1. FREQUENCY OF RESPONSE TO EACH ITEM BY SUBJECTS AND OBSERVERS UNDER HIGH TRUST AND LOW TRUST WITH CHI-SQUARE VALUES FOR DIFFERENCES

Item	Response	Subjects: Condition High trust	Subjects: Condition Low trust	Subjects χ^{2*}	Observers: Condition High trust	Observers: Condition Low trust	Observers χ^{2**}
1. Trust	Much	30	9	28.1	19	7	16.7
	Little	2	23		6	26	
2. Openness about feelings	Much	31	15	26.4	15	12	4.2
	Little	1	17		7	21	
3. Clarification of problems and goals	Much	24	10	10.8	18	7	12.9
	Little	8	22		8	26	
4. Search	Much	21	6	13.8	11	5	14.7
	Little	11	26		11	28	
5. Influence	Much	29	6	30.8	19	2	32.0
	Little	3	26		6	31	
6. Satisfaction	Much	28	7	25.6	20	2	32.7
	Little	4	25		6	31	
7. Motivation to implement conclusions	Much	30	10	26.6	19	4	22.2
	Little	2	22		7	29	
8. Closeness as a team	Much	27	9	19.1	17	5	16.6
	Little	5	23		9	28	
9. Desire to take a job in another company	Much	8	22	10.8			
	Little	24	10				

* $p < .001$ for all χ^2 values in this column.
** $p < .001$ for all χ^2 values in this column except item 2 for which $p < .05$.

against expansion and his desire for short-range profits. In several groups they asked him if there were reasons behind his decision other than those he had disclosed, but he steadfastly refused to reveal information about the board's demands. As a result the vice presidents in low-trust groups could not sense how close the company might be to reorganization and possibly dissolution. They spent most of the meeting disagreeing with the president by repeating their basic arguments for immediate expansion. Finally, after prolonged frustration, the president would impose directives on the group. Usually he would demand review of the product line to eliminate low-profit items. If there was any creativity it came from the president, who was desperately seeking a solution in spite of the resistance of his vice presidents. Occasionally, the president would propose that it might be possible to lease space in a nearby vacant plant, but his idea would be discarded as unworkable by the belligerent vice presidents. In several groups the president threatened to dismiss a vice president.

Conversation among subjects of the low-trust groups after they had answered the questionnaire, showed the high defensiveness and antagonism they had induced in each other. For example, half the vice presidents said that they were so discouraged they had started to think of looking for another job in the middle of the meeting, and several said they hoped the president's plane would be hijacked or crash. The president usually retorted that he had decided to dismiss them before the next meeting.

Discussion. One might contend that the managers were attempting to follow rigidly the attitude toward trust suggested in their briefing, but in the debriefing interviews, the managers said that after their meeting had started, their level of trust varied in response to the behavior of the other managers. In low-trust groups, for example, about half of the vice presidents said that by the end of the

meeting they found themselves trusting one or another vice president more than they expected to and trusting the president much less than when they had started.

That the pattern of spiral reinforcement requires all members of a group to hold similar intentions to trust (or not trust) may be too stringent a condition. The following anecdotal evidence suggests that several members with similar intentions may be sufficient. An unanticipated incident illustrates how difficult it may be for one person acting alone to break the reinforcement pattern even though he has formal power. In one low-trust group, in an effort to behave with trust toward his vice presidents, the president early in the meeting disclosed that the board wanted better profit performance in one year or else might ask for his resignation, but this attempt to show trust did not alter the emergence of low-trust behavior among the vice presidents. Indeed, in interviews after the meeting, the vice presidents said they interpreted the president's statement as a means of shifting blame to the board for his decision not to approve expansion, so that instead of increasing their trust, his behavior confirmed their mistrust. Also, they interpreted the president's comment that he might be forced to resign as evidence that the board did not trust him, so they should not either. Two vice presidents in this group said that by the middle of the meeting they were thinking about how they might hasten the president's resignation. It seems that behaving with high trust towards others who are not trusting will not necessarily induce trust, and if one does so it is wise to limit one's increase in vulnerability.

Another illustration of the difficulty of interrupting the spiral reinforcement pattern occurred in a high-trust group, in which the president did not reveal the board's demand for short-term profits. The vice presidents said that the president seemed troubled, and asked him if he was explaining all the reasons behind his decision not to expand. In the debriefing interviews, after they learned about the president's predicament, one vice president turned to the president and said, "Why didn't you tell us? We could have done so much more to help you and ourselves." The group's level of trust had remained high, but the creativity and comprehensiveness of its solutions had suffered in comparison with other high trust groups.

Because of the many limitations of the experiment—that is, the small number of subjects, data gathered over several years, the study conducted within the context of a management development program—the study was restricted to conditions in which all managers in a group had the same initial level of trust. The condition of mixed trust, in which some members would tend to trust and others would tend to mistrust, was not included; but one could predict that the effects on creativity and comprehensiveness of solutions, and on motivations to implement solutions might be intermediate between those of the high-trust and low-trust groups. The two incidents described above are consistent with such a prediction.

Furthermore the problem used in this study was quite complex, required that the participants generate the alternatives, and had no unique, optimal solution. There might be less of a difference in the output of high-trust and low-trust groups working on highly structured problems; that is, problems with clear, tangible goals, with well-defined information, with alternatives provided, and with a unique solution. Theoretically, the structure inherent in the problem might reduce a group's susceptibility to the social uncertainty generated by low-trust behavior. On the basis of the data in Table 1, however, it would seem that, given similar member competence, groups that develop high trust would solve problems more effectively than low trust groups, that is, they would do better in locating relevant information, in using their members' skills to generate alternatives, and in eliciting commitment.

The data also indicate that patterns of low-trust and high-trust group behavior are recognizable by untrained observers. Possibly the consistency between the responses of subjects and observers was increased by the fact that they were all managers in one company, presumably exposed to a common organizational culture, but any such effect was probably offset by the fact that they came from widely separated divisions, and some were foreign nationals who had worked in overseas subsidiaries.

Finally, this study revealed that theory and research on group forces have had only a minor impact on the thinking of managers. The managers in this study were among the best educated and the most sophisticated to be found in corporate organizations. After completing the questionnaires, but without any information about the trust model, they were brought together and asked for their explanation of what had happened in the two groups. They consistently responded that the outcomes were the result of the personalities of the men (who had been randomly assigned to the different roles) or the president's style (which they interpreted as autocratic or democratic) or the time he stated his decision not to expand (early or late in the meeting). The possibility that a shared level of trust, that is, a group force or a belief held by several or all members of a group, could constitute a social reality which could significantly affect problem-solving effectiveness was not mentioned.

CONCLUSIONS

The findings of this study confirm the hypotheses derived from the model. The results indicate that it is useful to conceptualize trust as behavior that conveys appropriate information, permits mutuality of influence, encourages self-control, and avoids abuse of the vulnerability of others.

It appears that when a group works on a problem, there are two concerns: one is the problem itself, the second is how the members relate to each other to work on the problem. Apparently in low-trust groups, interpersonal relationships interfere with and distort perceptions of the problem. Energy and creativity are diverted from finding comprehensive, realistic solutions, and members use the problem as an instrument to minimize their vulnerability. In contrast, in high-trust groups there is less socially generated uncertainty and problems are solved more effectively.

This study also offers qualitative support for the spiral-reinforcement model. It suggests that mutual trust or mistrust, among members of a group, are likely to be reinforced, unless there is marked or prolonged disconfirming behavior. Exactly what disconfirmation is needed and how much requires further investigation.

Finally, this research offers evidence that a social phenomenon, trust, can significantly alter managerial problem-solving effectiveness.

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REFERENCES

Baldwin, Alfred L., Joan Kalhorn, and Fay Hoffman Breese
1945 "Patterns of parent behavior." Psychological Monograph, 58, 268, pp. 1–75.

Blake, Robert R., and Jane S. Mouton
1964 The Managerial Grid. Houston: Gulf Publishing.

Bradford, Leland P., Jack R. Gibb, and Kenneth D. Benne
1964 T-Group Theory and Laboratory Method. New York: John Wiley.

Deutsch, Morton
1962 "Cooperation and trust: some theoretical notes." In Marshall R. Jones (ed.), Nebraska Symposium on Motivation. Lincoln, Nebraska: University of Nebraska Press, pp. 275–319.

Dunnette, Marvin D., and John P. Campbell
1968 "Laboratory education: impact on people and organizations." Industrial Relations, 8, 1, pp. 1–27.

Fiedler, Fred E.
1953 "Quantitative studies on the role of therapists' feelings toward their patients," in Orval H. Mowrer (ed.), Psychotherapy: Theory and Research. New York: Ronald Press, Ch. 12.

Gibb, Jack R.
1961 "Defense level and influence potential in small groups." In Luigi Petrillo and Bernard M. Bass (eds.), Leadership and Interpersonal Behavior. New York: Holt, Rinehart Winston, pp. 66–81.
1964 "Climate for trust formation." In Leland P. Bradford, Jack R. Gibb and Kenneth D. Benne (eds.), T-Group Theory and Laboratory Method. New York: John Wiley, pp. 279–301.

House, R. J.
1967 "T-group education and leadership effectiveness: a review of the empiric literature and a critical evaluation." Personnel Psychology, 20, 1, pp. 1–32.

Maier, Norman R. F., Allen R. Solem, and Ayesha A. Maier
1959 Supervisory and Executive Development. New York: John Wiley, pp. 308–315.

Meadow, Arnold S., Sidney J. Parnes, and Hayne Reese
1959 "Influence of brainstorming instructions and problem sequence on creative problem-solving tests." Journal of Applied Psychology, 43, pp. 413–416.

Parloff, Morris B., and Joseph H. Handlon
1966 "The influence of criticalness on creative problem solving dyads." Psychiatry, 29, pp. 17–27.

Rogers, Carl R.
1961 On Becoming A Person. Boston: Houghton Mifflin. 39–58.

Seeman, Julius
1954 "Counselor judgments of therapeutic process and outcome." In Carl R. Rogers and Rosalind F. Dymond (eds.), Psychotherapy and Personality Change. Chicago: University of Chicago Press, Ch. 7.

Schein, Edgar H., and Warren G. Bennis
1965 Personal and Organizational Change Through Group Methods. New York: John Wiley.