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Self-Determination in a Work Organization

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Research testing self-determination theory was discussed in terms of recent work on intrinsic motivation, participative management, and leadership. On three occasions, managers' interpersonal orientations—toward supporting subordinates' self-determination versus controlling their behavior—were related to perceptions, affects, and satisfactions of the subordinates. Data from 23 managers and their subordinates in a major corporation showed that managers' orientations did correlate with the subordinate variables, although the magnitude of the relation varied, seemingly as a function of factors in the corporate climate. An organizational development intervention, focused on the concept of supporting subordinates' self-determination, was provided for the managers. Evaluation of the program showed a clearly positive impact on managers' orientations, though a less conclusive radiation to subordinates.

To be self-determining means to experience a sense of choice in initiating and regulating one's own actions. Recent research linking self-determination to enhanced creativity (Amabile, 1983), conceptual learning (Benware & Deci, 1984), self-esteem (Deci, Schwartz, Sheinman, & Ryan, 1981), and general well-being (Langer & Rodin, 1976) has stimulated psychologists to clarify the antecedent conditions that promote self-determination and to detail the relevance of self-determination to various applied settings.

Concepts related to self-determination have been vigorously researched and discussed in the organizational literature for over a quarter century. Argyris (1957) and McGregor (1960), for example, stressed that organizational contexts providing workers the opportunity to satisfy their higher order needs (Maslow, 1943) promote effective performance. Furthermore, management styles (e.g., Likert, 1967; Marrow, Bowers, & Seashore, 1967) and organizational designs (e.g., Hackman & Oldham, 1980; Herzberg, 1966) that permit greater participation in decision making and greater flexibility in doing one's job have been found to be positively associated with employee satisfaction, quality of work life, and organizational effectiveness (e.g., Lawler, 1986), although these positive effects have emerged more clearly for some employees than for others (Hackman & Lawler, 1971).

Our research tested self-determination theory (Deci & Ryan, 1985) by exploring the interpersonal work climate created by managers for their subordinates. More specifically, it focused on the degree to which managers' interpersonal orientations tend to support subordinates' self-determination, that is, their sense of choice and personal initiative. The idea of managers' supporting self-determination is conceptually and philosophically consistent with participative management and vertical job enlargement, although it differs from them by focusing on the interpersonal orientation of managers rather than on the decision-making process or the job design.

The variables in the organizational literature that are perhaps closest to that of a manager's support for self-determination have been systematized in Bowers and Seashore's (1966) theory of leadership. These authors defined the management function of *support* as managers' behaviors that enhance subordinates' feelings of personal worth, and they aligned this concept to Halpin and Winer's (1957) idea of *consideration* and Likert's (1961) principle of *supportive relationships*. Our concept of supporting self-determination is also related to Bowers and Seashore's idea of support, although it extends their idea by specifying the factors that are likely to lead to subordinates' feelings of personal worth. These factors, which comprise the concept of managers' support for self-determination, have emerged from recent motivation research; thus, elaboration of the point requires a brief review of that motivation research.

Motivation Research

In a recent literature review, Deci and Ryan (1985) argued that the functional significance (i.e., the psychological meaning) of any input affecting the initiation and regulation of intentional behavior can be usefully classified as either *informational* (i.e., as supporting autonomy and promoting competence) or *controlling* (i.e., as pressuring one to think, feel, or behave in specified ways). Experiencing an input as informational fosters self-determination, whereas experiencing it as controlling diminishes self-determination.

Early studies on the contextual factors that affect self-determination were laboratory experiments involving external manipulations from which inferences could be drawn about whether specific events (e.g., reward structures, deadlines, or positive feedback) tend to be experienced as informational (i.e., as supporting self-determination) or controlling (i.e., as thwarting self-determination). These studies indicated, for example,

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that choice (Zuckerman, Porac, Lathin, Smith, & Deci, 1978) and positive feedback (Blanck, Reis, & Jackson, 1984; Deci, 1971) tend to be experienced as informational, whereas task-contingent rewards (e.g., Ryan, Mims, & Koestner, 1983), deadlines (Amabile, DeJong, & Lepper, 1976), threats of punishment (Deci & Cascio, 1972), surveillance (Lepper & Greene, 1975), and evaluations (Smith, 1974) tend to be experienced as controlling.

More recent studies have shown, however, that although a specific event (e.g., positive feedback) tends, on average, to have a particular functional significance, the interpersonal context within which the event is administered has an important influence on the functional significance of the event. Thus, for example, Ryan (1982) reported that positive feedback could be experienced as either informational *or* controlling, depending on the experimenter's style of communication. Similarly, Ryan, Mims, and Koestner (1983) concluded that performance-contingent rewards could be either informational or controlling, and Koestner, Ryan, Bernieri, and Holt (1984) concluded that limit setting could be either informational or controlling, again depending on the interpersonal contexts surrounding the events themselves.

A focus on the interpersonal context within which events occur seems particularly important when applying these concepts to organizational settings, because many events such as reward structures, evaluations, and deadlines are relatively invariant in these settings. Interpersonal contexts within organizations are more variable, however, so they represent an opportunity for explaining variation in employees' attitudes and for designing interventions to enhance them.

The first field studies conducted within this theoretical tradition related the interpersonal contexts of public school classrooms to students' attitudes and motivation (e.g., Deci, Schwartz, Sheinman, & Ryan, 1981; Ryan & Connell, in press; Ryan & Grolnick, 1986). These studies showed, for example, that teachers who were oriented toward supporting students' self-determination had a positive effect on the intrinsic motivation, self-esteem, and perceived competence of their students, relative to teachers who were oriented toward controlling their students' behavior.

A synthesis of these and other studies has led to the conclusion that promoting self-determination requires that the significant others in a target person's context (e.g., parents, managers, teachers) take that person's frame of reference. They must understand and acknowledge his or her needs, feelings, and attitudes with respect to the issue or situation at hand. When this is the case, the target person will be more trusting of the context and believe that it will be responsive to his or her initiations and suggestions.

More specifically, the investigations have identified the following three general factors: (a) support for autonomy (e.g., Deci, Nezlek, & Sheinman, 1981); (b) noncontrolling positive feedback (e.g., Ryan, 1982); and (c) acknowledging the other's perspective (e.g., Koestner et al., 1984). These factors are critical for promoting self-determination (i.e., for increasing the likelihood that an interpersonal context will be experienced as informational).

Although none of these studies on self-determination was done in a work organization, the general conclusions drawn from them are consistent with organizational studies such as those by Coch and French (1948), Lawler and Hackman (1969), Likert (1967), Marrow et al. (1967), and Scheflen, Lawler, and Hackman (1971), which have shown positive, motivationally relevant effects of factors such as participation, support for individual initiative, and open communications. Furthermore, the factors that tend to be experienced as diminishing self-determination are ones that workers tend to complain about in interviews (e.g., Terkel, 1972) and that comprise Likert's (1967) System 1 management. Therefore, it seems useful to test directly the importance of promoting self-determination in the workplace; thus, our research was designed to do that by focusing on interpersonal variables between managers and their subordinates.

The studies that have explored the effects of promoting self-determination have used a range of dependent variables, including intrinsic motivation (e.g., Zuckerman et al., 1978), positive emotional tone (Garbarino, 1975), creativity (e.g., Koestner et al., 1984), interest in the activity (Harackiewicz, 1979), conceptual learning (Grolnick & Ryan, 1987), perceived competence and self-esteem (Deci et al., 1981), and internalization of regulations (Eghrari & Deci, 1988). In this study, the dependent variables were the subordinates' perceptions, affects, and satisfactions with respect to their immediate work team and the corporation more generally. We reasoned that when managers provide a context that promotes self-determination, subordinates will trust the context and thus be more active in satisfying their own needs.

This study had two interrelated components. The first explored the relation of managers' interpersonal orientations (i.e., the extent to which they tend to support the self-determination of their subordinates) to a variety of subordinate variables; the second evaluated an intervention that focused on training these same managers to promote the self-determination of their subordinates. The ideas of autonomy support, noncontrolling feedback, and acknowledgment of the subordinate's perspective guided the research; these ideas were implicit in the measure of managers' orientations and were the foci of the intervention. With regard to the subordinates, we explored variables related to their attitudes about work and their motivation to perform effectively. These included perceptions of the context, feelings within that context, and satisfaction with various aspects of the context and the job.

The general prediction was that positive outcomes would be associated with managers' interpersonal orientations that are supportive of self-determination, and negative outcomes would be associated with orientations that are controlling and thus undermining of self-determination.

Method

The Work Setting and the Corporate Climate

Data for this research were provided by nearly 1,000 employees—technicians and field managers—in the service division of a major office machine corporation. The technicians spend virtually all of their time "on the road" repairing office machines, whereas their managers work in geographically organized branch offices. The managers and technicians have relatively little direct contact, although the managers are responsible for the work of the 18 or so technicians on their work team. Their typical contacts include the subordinates' briefly seeing the manager once a week to hand in time cards, occasionally speaking to the

manager by phone, and infrequently attending team meetings (monthly, on average).

The data collection in these studies took place over an 18-month period, spanning 3 calendar years (August of Year 1 to February of Year 3), in five different locations (referred to as Locations 1 through 5) from five different states: California, Utah, Washington, New York, and Colorado. In Year 1, the corporation was experiencing profitability and morale problems. The work force had been reduced and wages had been frozen. People were concerned about their job security and disgruntled about the pay freeze.

Corporate management responded to the troubled times in a variety of ways, although a central feature of their response was a commitment to change the organization climate toward more participative management and employee involvement. During the ensuing years, this resulted in (a) an enormous amount of training for the roughly 15,000 people in the service organization; (b) creation of problem-solving groups, using the quality-circle format; (c) restructuring of work teams to promote technicians' taking greater responsibility for solving their own problems; and (d) establishment of positions for internal, organizational development consultants to work with external consultants in facilitating the desired change.

In motivational terms, with this massive organizational development effort, the company attempted to provide greater self-determination and thus to facilitate greater intrinsic motivation and personal commitment (e.g., Lawler, 1973; Vroom & Deci, 1970). Insofar as this could be accomplished, it was expected that a variety of motivationally relevant variables would be positively affected and would result in improved profitability. Our research explored a set of motivationally relevant perceptual, affective, and satisfaction variables.

The training component of this study was merely the first phase of the large change effort in three service branches (Locations 1, 2, and 3), each of which employed approximately 140 people. The training focused on interpersonal issues and was intended to prepare the employees for the structural changes that would be introduced after this study was completed. The intervention took place at a time, during Year 2, when morale was low, and many technicians responded with initial skepticism. Most field managers, on the other hand, tended to be interested in the training because they believed it was relevant to the larger change effort that top management had endorsed.

Overview

In this project we used a dual approach to explore the relation between managers' support for self-determination and subordinates' self-reported perceptions, affects, and satisfactions. First, the interpersonal orientations of managers from three branches (Locations 1, 2, and 3) were assessed at three points in time and were correlated with the self-reports of their subordinates at those same three times. Second, an intervention that focused on training the managers to support their subordinates' self-determination was conducted in Location 1 between the first and second assessments of managers and subordinates, and in Locations 2 and 3 between the second and third assessments. Changes in managers' orientations and subordinates' self-reports were calculated to evaluate the intervention. We will now describe the design and time line of the primary assessments and interventions, which are shown in Figure 1.

At the three points in time (January of Year 2, May of Year 2, and February of Year 3), the managers completed the Problems at Work questionnaire, which assessed their tendency to support the self-determination versus to control the behavior of their subordinates. The subordinates (i.e., the technicians) completed the Work Climate Survey, which assessed their reactions to their immediate workplace and to the corporation and its top management. Correlations between variables from these two questionnaires (which are described later) were calculated for each of the three points in time, using work teams as the unit of analysis. The work teams were reasonably stable over the period of the study, with a low turnover rate, although the people who completed the questionnaire at the three times varied somewhat because of such factors as vacations and illness. Thus, for these correlational analyses, the subjects were somewhat different at each point in time.

During the 13-month period between the first and third assessments, a delayed-treatment strategy was used to evaluate an intervention aimed at helping the managers in the project become more supportive of their subordinates' self-determination. From February through April of Year 2, the intervention was conducted in Location 1. Thus, change from the first to the second assessment (i.e., January to May of Year 2) in the orientations of the managers from Location 1 (who had received the intervention) relative to that of the managers from Locations 2 and 3 (who had not yet received the intervention) constituted the first aspect of the evaluation. The data from the first two completions by the managers of the Problems at Work questionnaire provided this outcome variable. Relative changes in subordinates' experience over the same time period constituted the second aspect of the evaluation and provided an indication of whether the effects of the intervention had, over the short-term, radiated to the subordinates. This assessment of subordinate variables used the subordinates' responses on the Work Climate Survey at the first two assessment points. For these change analyses, a repeated measures procedure was used; thus, only the subjects who were present at both times were included in those analyses.

Although it seemed reasonable to expect that the managers' orientations would be affected during the intervention period, it was probably not reasonable to expect the change to radiate to the subordinates that quickly, because the managers and subordinates spent so little time together. Yet, the assessment was done at that time because of the organization's needs.

In May and June of Year 2, the intervention was conducted in Location 2, and from September through November of that same year it was conducted in Location 3. By the time of the third data collection (February of Year 3), all three locations had received training. Thus, there was a much larger group for determining longer term pre–post changes, and it was expected that radiation would have occurred in that amount of time. The problem, however, is that there was no longer a comparison group, because Locations 2 and 3, which had comprised that group, were now part of the intervention group. Consequently, an additional comparison was made by using other subordinate data. The time line for this appears in Figure 2.

In two of the experimental branches (Locations 1 and 2), an Employee Attitude Survey, which is routinely administered by the organization about every 12 to 14 months, had coincidentally been administered shortly before and then again several months after the respective interventions. In addition, branches from two other states (Locations 4 and 5) had taken the Employee Attitude Survey on the same schedules as these two intervention branches. More precisely, Locations 1 and 4 completed the survey in August of Year 1 and August of Year 2, whereas Locations 2 and 5 completed it in December of Year 1 and December of Year 2. Because neither Location 4 or 5 had yet been exposed to this intervention or to any of the training or structural changes involved in the large corporate effort to change the organizational climate, they represented an appropriate comparison group. A global satisfaction index derived from the Employee Attitude Survey was used as part of the long-term evaluation of the intervention, and the change for the two intervention branches (Locations 1 and 2) relative to the two control branches (Locations 4 and 5) was the critical comparison.

Instruments

Three questionnaires were used in this research. Two of them—the Problems at Work questionnaire and the Work Climate Survey—were designed and administered by us, whereas the third—the Employee Attitude Survey—was designed and administered by the personnel department of the corporation as part of its normal procedures. For the two questionnaires we administered, respondents used individualized code names so that their responses could be anonymous while still allowing

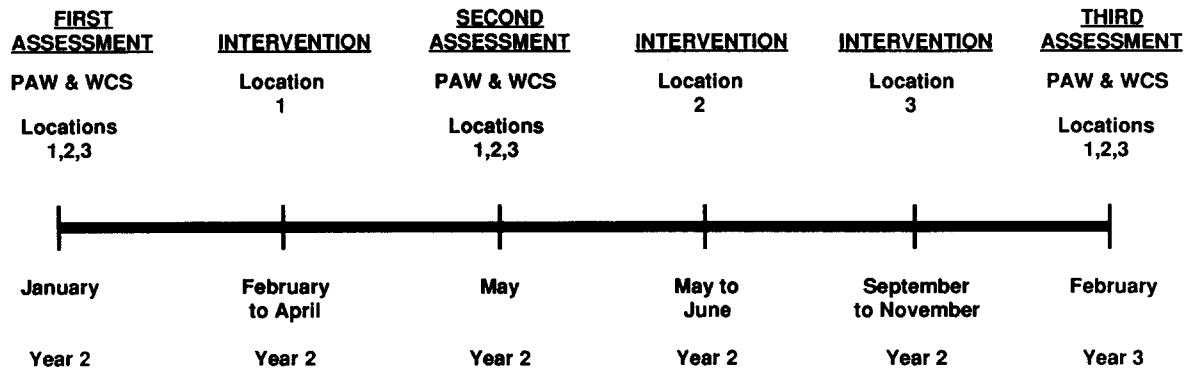

Figure 1. Design and time line for the primary assessments and interventions that covered a 13-month period during 2 of the calendar years, designated as Years 2 and 3. (PAW refers to the Problems at Work questionnaire, which assessed managers' orientations; WCS refers to the Work Climate Survey, which assessed subordinates' perceptions, affects, and satisfactions.)

their data from different points in time to be compared. For the Employee Attitude Survey, there was no identifying information except for location.

The Problems at Work (PAW) questionnaire was designed for use in this research to assess managers' orientations. The questionnaire format was patterned after the Problems in Schools questionnaire (Deci, Schwartz, Sheinman, & Ryan, 1981), which had previously been developed, using the same constructs, to assess teachers' interpersonal orientations. The instrument comprises eight vignettes, each one describing a typical problem that a manager might encounter with a subordinate. Following each vignette are four possible ways of dealing with the problem. These four responses vary in the degree to which support for self-determination is present, in other words, in the degree to which facilitating autonomy, providing noncontrolling feedback, and acknowledging the subordinates' perspective are implicit in that response. One of the four responses for each vignette is considered *highly supportive* of self-determination: It involves the manager listening, acknowledging feelings, providing feedback if appropriate, and encouraging the subordinate to decide how to handle problems. A sample response for the vignette of a poorly performing work group is: Have discussions with the group to facilitate the members' devising strategies for improving output. A second response to each vignette is considered *moderately supportive* of self-determination: The manager encourages the subordinate to figure out a solution to the problem by observing how others, who are not having trouble, would handle that situation. This response encourages less autonomy because the subordinates may tend to use someone else's solution rather than their own and to focus on social comparison, which can be controlling. Still, it is somewhat supportive of self-determination because it does not prescribe a solution. An example is: Show him some of the ways others relate to their customers so he can compare his own style to theirs. A third response to each vignette is considered *moderately controlling* and thus undermining of self-determination: The manager tells the subordinate what he or she *should* do to deal with a problem. An example is: Impress upon her that she should keep up with her work schedule for her own good. Finally, each vignette has a response that is *highly controlling* and thus most undermining of self-determination: The manager prescribes a solution, with no inputs from the subordinate, and uses sanctions such as rewards or punishments to ensure that the solution is used. An example is: Insist that the orders be carried out within a specified time limit and check to be sure he is meeting those deadlines.

Respondents read a vignette and then rate each response on a 7-point Likert-type scale for the extent to which that response is characteristic of what they would do if faced with the problem situation. Their ratings for each of the four types of responses are summed across the eight vignettes, giving a score for each of the four subscales. As mentioned, the four types of responses were designed to vary along an underlying dimension of support for self-determination, and, in fact, the correlations among subscale scores did conform to a simplex pattern (Guttman, 1954). Thus, we formed a composite score reflecting a person's level of this dimension by combining the four subscale scores, using weightings of +2, +1, −1, and −2 for the *highly supportive* of self-determination, *moderately supportive* of self-determination, *moderately controlling*, and *highly controlling* subscales, respectively. This pattern of

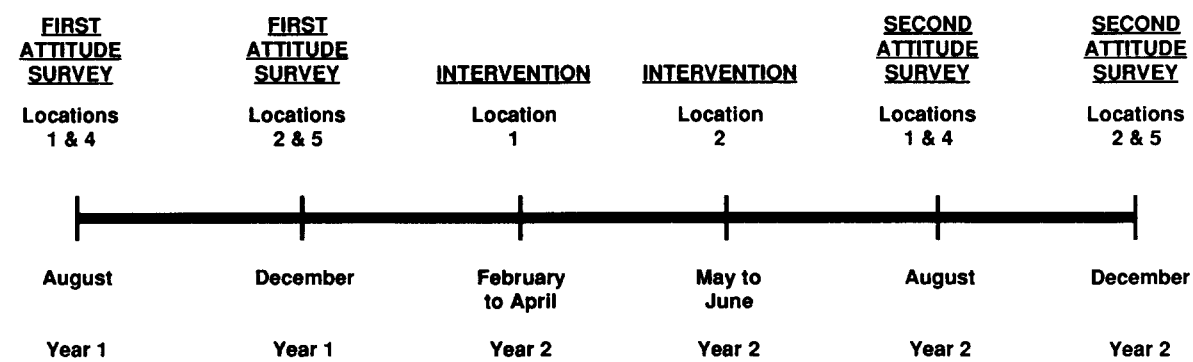

Figure 2. Design and time line used to evaluate the intervention with the corporation's Employee Attitude Survey. (The interventions for Locations 1 and 2 are, of course, the same ones referred to in Figure 1.)

weightings possesses two important characteristics, as follows: (a) It weights support of self-determination positively and control of behavior negatively, and (b) it weights the stronger instance of each more heavily than the weaker instance. Thus, high scores on the composite indicate that managers are supportive of self-determination, whereas low (or negative) scores indicate that they are undermining of self-determination.

A preliminary scale consisted of 12 vignettes; 46 managers from the same company completed that version, although none of the respondents came from the five locations of this research. Item-total correlations and factor analyses (principal-components with varimax rotation) were conducted, and 8 vignettes, whose responses correlated in the predicted fashion and also loaded appropriately, were retained. When the actual data were collected from Locations 1, 2, and 3, the item-total correlations and factor analyses were repeated to confirm that the integrity of the scale's structure remained. Cronbach alphas, assessing internal consistency of the total scale score at Times 1 and 3, were .70 and .75, respectively, and the test–retest reliability of the measure for a sample of 13 managers over a 4-month period was .80.

The Work Climate Survey (*WCS*) was patterned after and used some items from the Job Diagnostic Survey (Hackman & Oldham, 1975, 1980), although it was tailored to the present organization and to the issues being studied. It consisted of three parts. The first part included items that assessed subordinates' *perceptions* of various aspects of their work climate and jobs. Subjects rated, on a 7-point scale, items such as "To what extent does your supervisor let you know how well you are doing on your job?" Factor analyses (principal-components with varimax rotations) and item-total correlations were conducted, using data from a preliminary sample of 257 respondents who did not participate in any other aspects of the research. On the basis of these analyses, we made various modifications. Additional analyses were then done on the data from the first assessment of 204 subjects in Locations 1, 2, and 3. These analyses revealed the following: First, there were 2 three-item factors—Perceived Freedom on the Job and Trust in the Corporation—whose factor loadings were all in excess of .75. Cronbach alphas for these two subscales were .51 for Perceived Freedom, and .80 for Trust. The internal consistency of the Perceived Freedom factor was considered inadequate. Subsequent interviews with a subset of respondents indicated that some people interpreted the items from this factor as meaning that their managers allow them autonomy and others interpreted the items as meaning that their managers neglect them and thus provide no support. Consequently, although the subscale would have been theoretically interesting, it was not used in the analyses because it did not uniformly assess the variable of interest. The Trust in the Corporation factor, on the other hand, was quite reliable and was therefore used.

In addition, 12 subordinate-perception items described the following four aspects of supervision: amount of feedback, quality of feedback, allowing autonomy where possible, and protecting subordinates from pressures emanating from higher levels in the organization. Three items had been intended to relate to each of these four aspects. As it turned out, all 12 items consistently loaded on one factor, Quality of Supervision, so we used this single 12-item factor. All but 2 of the 12 factor loadings exceeded .58, and those 2 exceeded .44. The Cronbach alpha for this subscale was .91.

The second part of the survey included 11 items, each of which was simply a word or phrase that described either the work environment or the subordinates' feelings in the work context. Examples are: supportive, constrained, relaxed, and under the gun. Subjects rated, on a 4-point scale, how applicable the descriptor was to their own situation. Principal-components factor analyses (with varimax rotation) of these 11 items revealed the following two factors: a five-item factor with descriptors of the environment and a six-item factor with descriptors of workers' feelings in their work environment (all factor loadings were above .55). Cronbach alphas for the Environment and Feelings factors were .81 and .88, respectively. The first two example items given previously are from the Environment factor, and the last two are from the Feelings factor. Although the subscales on the first two parts of the survey were formed from factor analyses, the subscale scores were formed by summing individual items.

The third part of the Work Climate Survey listed the following 10 job characteristics: personal autonomy, variety, quality of feedback from supervisor, opportunity to make inputs, job security, pay and benefits, work atmosphere, trust in supervisor, trust in corporation, and potential for advancement; subjects were asked to rate, on a 7-point scale, how *satisfied* they were with the amount of each characteristic they experienced on their job. In addition, they were asked to rate their general satisfaction with their job, also on a 7-point scale. In most of the analyses, each of these 11 items was treated as a separate variable so that we could relate managerial orientations to specific loci of satisfaction. Items from the Work Climate Survey were worded in both positive and negative directions; however, all data were coded in such a way that higher scores were considered more positive.

The Employee Attitude Survey is an instrument developed by the corporation within which this study was conducted. It is used with all 15,000 members of the service organization, each of whom typically completes it every 12 to 14 months. There are two forms of the survey, a long form and a short form. The long form has 80 items, 55 of which are used to compute a global satisfaction index; the short form has 20 items, all of which are from the 55 items that make up the global satisfaction index. These 20 items were selected because they were statistically representative of the pool of 55 items, and all 20 items are used to compute the (short-form) global satisfaction index. The two forms of the survey are alternated so that each one is completed every second time. In this research, the short form was used for the first administration in the four branches considered (Locations 1, 2, 4, and 5) and the long form was used for the second. Respondents used a 5-point scale to rate each item on this scale, and the global satisfaction index was computed by averaging the relevant items once the necessary reversals had been done; thus, higher scores were always more positive. The alpha coefficient for both the long form and the short form was .92. Data on respondents from the four locations that were relevant to our analyses were provided by the corporation.

The Intervention

The intervention consisted of an external change agent's spending 13 days working with the employees of a particular branch. The bulk of the time was spent with the managers (a branch manager and approximately 8 field managers who report to the branch manager and each of whom supervises about 18 technicians), although the technicians also had contact with the change agent on three occasions.

The change agent spent the 13 days as follows: 1 day with the branch manager, 5 days with the management team, and 7 days with the various field managers, including some time that each of them spent meeting with his or her team of technicians.

The intervention began with the consultant's spending a day with the branch manager, building trust, explaining the intervention, and listening to the manager give his or her perceptions of the dynamics in the branch. The assessment was then conducted with the field managers by using the Problems at Work questionnaire; this was followed immediately by an orientation to the intervention. Next, the field technicians convened to complete the Work Climate Survey and to receive their orientation. With the preliminary work done, the consultant conducted a 2-day, off-site, team-building, management-development session for the management team. At three other times in the ensuing weeks, the management team reassembled with the consultant for follow-up development sessions. During this period, the consultant spent time with each field manager individually, during which he observed the manager leading a team meeting, and provided the manager with feedback on management style and group dynamics. Following the intervention itself, the postreatment assessment was completed.

The content of the training sessions included discussions and activities that were organized around the three basic themes that prior research (reviewed in the introduction of this article) has shown to be critical for promoting self-determination. The first theme was that of maximizing the opportunity for subordinates to take initiative, that is, to make choices and solve problems relevant to them. This was operationalized in part by demonstrations and discussions about group participation and individual initiative. The second theme was that of informational feedback. According to interviews and anecdotes, the majority of feedback in organizations is critically negative and thus demotivating. Even the positive feedback is all too frequently controlling; it emphasizes how people should behave and implies that the manager is in control. Informational feedback in an organization relates to providing performance feedback that facilitates competence while supporting the subordinates' autonomy. It involves providing positive feedback with a minimum of controlling language and treating poor performance as a problem to be solved rather than as a focus for criticism.

The third theme of the training was recognizing and accepting the subordinates' perspective, that is, their needs and feelings. Working in organizations involves a great deal of accommodating to limits, and limits frequently require that people do things they do not want to do. It is probable that these continual experiences prompt emotions that could interfere with effective functioning and cause interpersonal tension. By recognizing and reflecting such desires and feelings, the manager can ease the tension and increase the likelihood of effective performance. Thus, the workshop included training related to acknowledging the needs and feelings of subordinates. It also focused on feelings among the managers. Perhaps the most common mode of dealing with interpersonal difficulties (e.g., not liking something that a colleague did) is to avoid the topic or the person. In the workshops, considerable time was spent having managers identify and express the feelings they had for each other. The intent was for them to learn to manage feelings more effectively in their everyday work environment.

In the management-development workshops, these three themes predominated. Managers were encouraged to examine their own behavior with respect to these topics and to consider possible changes in their behavior. Through discussions, managers realized, for example, that they sometimes treat their subordinates in ways that leave them (the managers) infuriated when their supervisors do such things to them. This type of learning through examination of one's own behaviors and emotional reactions characterized the intervention.

The other component of the intervention was for the managers to experiment with these practices within their own teams. After the 2-day development workshop, each field manager had a meeting with his or her team of field technicians. The idea was for the managers to experiment with facilitating greater subordinate involvement. The change agent observed the meetings and later provided each manager with feedback about his or her behavior and about the group's reactions.

Subsequent meetings with the management group were directed at strengthening the changes that were occurring and planning future activities that could continue the development toward greater participation, involvement, and initiative on the part of each member of that branch.

Results

Data from this research were analyzed in two phases. The first was a set of correlational analyses aimed at exploring whether self-determination, and managers' support for self-determination, are important concepts in the workplace. The second phase involved analyses of change and was intended to evaluate the impact of the intervention.

Phase 1: Correlations

This first phase of the analysis focused on these two questions: (a) whether managers' support for self-determination (as assessed by the Problems at Work questionnaire) was positively correlated with subordinates' perceptions, affects, and satisfactions (as assessed by the Work Climate Survey); and (b) which of the subordinate variables correlated with subordinates' general satisfaction. Managers and subordinates from Locations 1, 2, and 3 completed the questionnaires at three points in time; the primary analyses were correlations at each of these three times.

Table 1
Correlations Between Managers' Orientations Toward Supporting Self-Determination and the Work Climate Variables of Subordinates for Locations 1, 2, and 3 at Three Points in Time

Variable	Time 1 (n = 20)	Time 2 (n = 23)	Time 3 (n = 15)
Trust in corporation	.12	.55**	.72**
Quality of supervision	−.04	−.03	.47
Environment is supportive	−.09	.16	.43
Feel nonpressured	.00	.03	.61*
Satisfaction with			
personal autonomy	−.14	.06	.23
variety	−.27	.20	.42
quality feedback	−.06	−.07	.57*
opportunity for inputs	−.17	.11	.71**
security	−.03	.31	.60*
pay & benefits	−.37	.31	.53
work atmosphere	.03	.22	.47
trust in supervisor	.21	.15	.30
trust in corporation	.13	.45*	.55*
potential for advancement	.17	.07	.53*
General satisfaction	.03	.17	.69**

* $p < .05$. ** $p < .01$.

Data from all members of a team (on whom we had data) were averaged before being correlated with their managers' interpersonal orientation (i.e., support for self-determination) score. Thus, although there were more than 200 technician respondents at each point in time, the sample sizes (given the work team as the unit of analysis) were 20, 23, and 15 teams, respectively, for the three points in time.

The correlations between managers' orientations and the subordinate variables appear in Table 1. As one can see, at Time 1 (January of Year 2) the managers' orientations did not correlate significantly with any subordinate variables. At Time 2 (May of Year 2), management style correlated significantly with trust in the corporation (r = .55) and with satisfaction with trust in the corporation (r = .45). Finally, at Time 3 (February of Year 3), management style again correlated significantly with trust (r = .72) as well as with feeling nonpressured (r = .61) and the following six satisfaction variables: quality of feedback (r = .57), opportunity for inputs (r = .71), security (r = .60), trust in corporation (r = .55), potential for advancement (r = .53), and general satisfaction (r = .69).

The correlations between general satisfaction and the other Work Climate Survey variables for the three points in time are reported in Table 2. At Time 1, general satisfaction related to level of trust in the corporation and to satisfaction with personal autonomy, satisfaction with security, satisfaction with pay and benefits, satisfaction with work atmosphere, and satisfaction with trust in the corporation.

Thus, subordinates' general satisfaction with their work lives

Table 2
Correlations Between General Satisfaction and the Other Variables From the Work Climate Survey for Locations 1, 2, and 3 at Three Points in Time

Variable	Time 1 (n = 20)	Time 2 (n = 23)	Time 3 (n = 15)
Trust in corporation	.68**	.34	.89**
Quality of supervision	.38	.67**	.76**
Environment is supportive	.40	.79**	.69**
Feel nonpressured	.42	.77**	.83**
Satisfaction with			
personal autonomy	.61**	.45*	.04
variety	.28	.40	.33
quality feedback	.16	.58**	.82**
opportunity for inputs	.30	.58**	.64**
security	.69**	.48**	.84**
pay & benefits	.62**	.03	.84**
work atmosphere	.58**	.84**	.86**
trust in supervisor	.35	.72**	.54*
trust in corporation	.72**	.64**	.79**
potential for advancement	.12	.24	.38

* $p < .05$. ** $p < .01$.

at Time 1 seems to have been primarily a function of two kinds of variables, as follows: (a) extrinsic variables, such as pay and security, that had been threatened by the wage freeze and reduction in work force and (b) elements related to their general sense of the corporation and its top management. These findings are consistent with anecdotal evidence picked up by the external change agent, namely, that workers expressed their dissatisfaction in terms of the company. For example, "This is the kind of company that doesn't give a damn about its people" was the type of comment that was frequently heard at that time.

At Time 2, the picture began to shift somewhat. The extrinsic and general contextual variables continued to be important (although pay and benefits was less important because an end to the pay freeze had been announced), but the biggest difference was that variables related to the immediate supervisor (e.g., quality of supervision and satisfactions with quality of feedback, opportunities to make inputs, and trust in the supervisor) were clearly related to general satisfaction. Recall that they had not been related at Time 1. This is of particular interest because, as could be seen earlier, managers' orientations (as assessed by the Problems at Work questionnaire) were also related to some subordinate variables at Time 2, whereas they had not been at Time 1.

At Time 3, general satisfaction was even more strongly related to supervisory variables and to general atmosphere variables and extrinsic variables. By this time, when extrinsic elements had improved in the organization and when all three of the branches had received the intervention training, perceptions of their jobs and satisfaction with job characteristics all related strongly to general satisfaction and, as we showed earlier, to the actual orientations of their supervisors. In general, therefore, the complex of perceptual and attitudinal variables as well as the actual climate provided by the manager all seemed to cohere. Workers whose managers supported self-determination tended to feel good and to be positive about most things, whereas those whose managers were controlling tended to feel bad and to be negative about most things.

The correlations of attitudinal variables with general satisfaction at the three points in time provide some insight into why correlations between managers' orientations and subordinates' attitudes were quite strong at Time 3, whereas they did not exist at Time 1. As mentioned earlier, the general ambience in the company was quite bad at Time 1, with the pay freeze and reduction in work force being the palpable evidence of that to the workers. So unsettling was this general situation that immediate supervisory issues were apparently not very salient to the technicians. However, as the general situation improved somewhat (the freeze was over and the company had made a commitment to improving the general organizational climate) issues related to immediate supervisors became more salient as correlates of workers' general satisfaction.

Not surprisingly, there were intercorrelations among various subordinate variables on the Work Climate Survey.[1] Thus, a higher order factor analysis (principal-components with varimax rotation) was conducted on the 15 variables from the Work Climate Survey. The following three independent factors emerged: an Extrinsic factor, a Supervisory factor, and a Job Design factor. Thirteen of the 15 variables had virtually identical loadings at each point in time. However, consistent with the earlier discussion, general satisfaction and satisfaction with work atmosphere, both of which loaded on the Extrinsic factor at Time 1, had shifted to the Supervisory factor at Time 3. Of further interest is that both the trust in corporation and satisfaction with trust in corporation variables loaded on the Extrinsic factor throughout. Higher order factor composites were computed for the three points in time, using the 13 variables with stable loadings, as follows: (a) Extrinsic (trust in corporation, satisfaction with security, satisfaction with pay and benefits, and satisfaction with trust in the corporation); (b) Supervisory (quality of immediate supervision, environment is supportive, feel nonpressured, satisfaction with quality of feedback from supervisor, satisfaction with opportunity to make inputs, and satisfaction with trust in supervisor); and (c) Job Design (satisfaction with personal autonomy, satisfaction with variety, and satisfaction with potential for advancement). Team averages of these three higher order factor composites were then correlated with the managers' support for self-determination scores. The results appear in Table 3. At Time 2, managers' orientations were significantly correlated with the Extrinsic factor, although presumably this was primarily a function of the trust in corporation variables; at Time 3, managers' orientations were significantly correlated with all three higher order factors. Thus, the results using higher order factor composites closely parallel the results using the lower order variables.

To summarize, the relation between managers' support for self-determination and workers' job-related attitudes was significant and important when more general corporate variables related to job security and pay were not overly salient. When security and pay were threatened, these variables (along with trust in the top management, who were presumably responsible for the threat) were most predictive of job-related attitudes.

Phase 2: Change

The second phase of the analyses involved assessing the impact of the experimental intervention in Locations 1, 2, and

[1] A table of these correlations can be obtained from Edward L. Deci.

Table 3
Correlations Between Managers' Orientations Toward Supporting Self-Determination and the Higher Order Factors From the Subordinates' Work Climate Surveys for Locations 1, 2, and 3 at Three Points in Time

Factor	Time 1 (n = 20)	Time 2 (n = 23)	Time 3 (n = 15)
Overall Extrinsic	−.03	.55**	.63**
Overall Supervisory	−.03	.08	.62**
Overall Job Design	−.08	.14	.54*

* $p < .05$. ** $p < .01$.

3. The schedule for the project, in which we used a delayed-treatment design, was as follows: Time 1 assessment, late January of Year 2; Location 1 intervention, February through April of Year 2; Time 2 assessment, early May of Year 2; Location 2 intervention, May through June of Year 2; Location 3 intervention, September through November of Year 2; and Time 3 assessment, February of Year 3. Thus, to assess short-term change, Location 1 was treated as the intervention group, and Locations 2 and 3 as the comparison group. Then, because Locations 2 and 3 had become part of the intervention group by Time 3, all three branches were part of the intervention group for the assessment of longer term change.

The first intended outcome of the project, which was to change managers' orientations toward greater support for self-determination, was expected to appear as a significant change for the intervention group (Location 1) relative to the control group (Locations 2 and 3) on scores from the Problems at Work questionnaire. The second aim was to have that change in management orientation radiate to the level of the subordinates. We anticipated that this change would not be evident by Time 2, because managers and subordinates interact so infrequently; nonetheless, changes in the intervention versus comparison groups on subordinate variables from the Work Climate Survey were compared for Time 1 to Time 2. By Time 3 we anticipated that radiation would have occurred, so we predicted changes in the experimental branches from Time 1 to Time 3 on variables from both the Work Climate Survey and the Employee Attitude Survey.

The Time 1 and Time 2 scores on the Problems at Work questionnaire for managers from Location 1 versus Locations 2 and 3 were subjected to a 2 × 2 repeated measures analysis of variance (ANOVA). If the desired change occurred, it would be reflected in an interaction between the time and location variables. The means for the four cells appear in Table 4, and the significant interaction, $F(1, 19) = 5.91$, $p < .03$, between time and location indicates that the intervention did have a positive effect on the managers' orientations. Furthermore, a simple effects test (Winer, 1962) confirmed that the change in the intervention group means was itself significant, $t(19) = 2.57$, $p < .02$.

Although the intervention was designed to influence the managers' interpersonal orientations in supervising their subordinates, the goal of such an intervention, of course, is that this change radiates to the level of the subordinates. Changing management orientation is useful when the subordinates perceive their manager differently and respond to that perceived change.

To test this, variables from the Work Climate Survey that assessed subordinates' perceptions, feelings, and satisfactions at Times 1 and 2 were also subjected to 2 × 2 repeated measures ANOVAs. Only 1 out of 16 variables, satisfaction with potential for advancement, yielded the desired interaction. Thus, by May of Year 2, just as the intervention was coming to a close in Location 1, there was no evidence that the intervention with managers had affected the experiences of their employees.

As mentioned, we had not really expected a change within this short time frame, because subordinates had relatively little contact with their managers. A longer time frame was thought to be necessary to detect the impact of the intervention on subordinate variables, but various organization considerations, plus the delayed-treatment design in which the intervention began with members of the control group in May of Year 2, prevented delaying the Time 2 assessment until later.

Given these limitations, a two-fold strategy for assessing change in subordinate variables was used. First, in February of Year 3, which was between 3 and 10 months after the completion of the interventions in each branch (Locations 1, 2, and 3), the Time 3 assessments were done. This allowed us to detail changes from pre- to posttreatment, although of course these data are at best suggestive because there was no longer a comparison group. Second, the Employee Attitude Survey had been taken in Locations 1 and 2 shortly before each of their interventions began, and then again a year later (see Figure 2). There were two other branches in the country on the same schedules as each of these two branches, so these other two branches (Locations 4 and 5) served as a control group for the experimental group comprising Locations 1 and 2. (The survey for Location 3 came in the middle of the intervention, so this site could not be included in the experimental group for this analysis.) As mentioned earlier, neither Location 4 nor Location 5 had yet had any intervention related to the company's effort to change the climate of the organization.

Data from the 15 variables on the Work Climate Survey, which are relevant to evaluating the impact of the intervention on the field technicians, appear in Table 5. The means were formed from all technicians from Locations 1, 2, and 3 on whom we had both pre- and posttreatment data. The data were subjected to a one-way, repeated measures multivariate analysis of variance (MANOVA; Hotelling's T^2) and then to 15 one-way, repeated measures ANOVAs. The MANOVA showed a significant change from pre- to posttreatment, $F(15, 88) = 3.39$, $p < .01$. The subsequent ANOVAs revealed that two variables changed significantly from pre- to posttreatment. They were trust in the

Table 4
Means and Standard Deviations for Management Orientation Toward Supporting Self-Determination for Location 1 (the Intervention Branch) Versus Locations 2 and 3 (the Comparison Branches) at Time 1 (Pretraining) and Time 2 (Posttraining in Location 1)

	Time 1		Time 2	
	M	*SD*	*M*	*SD*
Location 1 (n = 8)	51.5	22.6	63.5	20.5
Locations 2 and 3 (n = 13)	56.5	14.9	54.0	18.0

Table 5
Means and Standard Deviations for Work Climate Variables From Pre- to Posttreatment for Locations 1, 2, and 3 (n = 103)

Variable	Pretreatment		Posttreatment	
	M	*SD*	*M*	*SD*
Trust in corporation	3.20*	1.24	3.52*	1.35
Quality of supervision	4.79	1.15	4.69	1.31
Environment is supportive	3.22	0.70	3.16	0.79
Feel nonpressured	2.10	0.65	2.13	0.68
Satisfaction with				
personal autonomy	4.94	1.41	5.08	1.43
variety	4.92	1.40	4.70	1.43
quality feedback	4.66	1.77	4.43	1.99
opportunity for inputs	4.22	1.60	4.32	1.54
security	5.02	1.58	4.78	1.79
pay & benefits	4.24	1.87	3.97	1.85
work atmosphere	4.44	1.74	4.37	1.64
trust in supervisor	4.85	1.86	4.84	1.89
trust in corporation	3.84	1.61	4.11	1.64
potential for advancement	3.22**	1.71	3.78**	1.77
General satisfaction	4.83	1.61	4.81	1.69

Note. Asterisks indicate that pretreatment means differ from posttreatment means, in one-way, repeated-measures ANOVAs.
* $p < .05$. ** $p < .01$.

corporation, $F(1, 102) = 5.07$, $p < .05$, and satisfaction with potential for advancement, $F(1, 102) = 12.8$, $p < .01$. Furthermore, satisfaction with trust in the corporation showed a marginally significant increase, $F(1, 102) = 2.91$, $p < .10$.

Recall from the earlier analyses that trust in the corporation was the variable that most consistently and most strongly related to managers' orientations, so it is to be expected that this variable would increase in response to the changes in managers' orientations toward greater autonomy support. Similarly, satisfaction with trust in the corporation was significantly correlated with managers' orientations at Times 2 and 3, so it is also readily understandable that this variable would be affected by the changes in managers' orientations. Satisfaction with potential for advancement was significantly related to management orientation only at Time 3, so that finding is somewhat less easily interpretable.

Table 6 shows the means for the global satisfaction index on the Employee Attitude Survey for pre- and posttreatment. The sample sizes and compositions differed at the different assessment times and there was no way to identify individual respondents or their teams, so the data were treated as independent samples, thus making the test more conservative. As can be seen, the global satisfaction index for the experimental branches improved over the intervention year, whereas the index for the comparison branches declined; the significant interaction, $F(1, 747) = 12.7$, $p < .001$, indicates that the intervention had a positive effect. The data are less than ideal, however, because the pretreatment mean of the comparison group differed from that of the intervention group; therefore some of the change could be explained by regression toward the mean. Nonetheless, the magnitude of the effect suggests that the change is more than regression toward the mean, so it does provide some support for the utility of the intervention.

Discussion

In this article we have presented an exploration of self-determination in a work organization. Previous research on self-determination, much of it done in the psychology laboratory, has isolated the following three general factors that are integral to promoting self-determination: provision of choice, noncontrolling feedback, and the acceptance and acknowledgment of the other's perspective (Eghrari & Deci, 1988; Ryan, 1982; Zuckerman et al., 1978). When these elements are present in an interpersonal context, individuals in that context tend to be more self-determining. This experience of self-determination has been found to positively affect creativity, conceptual learning, emotional tone, and self-esteem.

Relatively little research has taken these constructs directly into applied settings, although some work has been done in public school classrooms (deCharms, 1976; Deci et al., 1981; Ryan & Connell, in press; Ryan & Grolnick, 1986) and in institutional homes for the aged (Langer & Rodin, 1976). Our investigation, by exploring the concept of self-determination in a work organization, represents a first step in extending the previous self-determination research to another applied domain that is central in the lives of most adults, and it links this research tradition to previous organizational research on participative management and job enlargement.

In this research, the first issue explored was whether managers' support for the self-determination of their subordinates would affect a set of perceptual, affective, and satisfaction variables in their subordinates. The data indicate that managers' interpersonal orientations did relate to the target variables, particularly to trust variables, although they did so inconsistently. When the broad corporate conditions were bad (particularly concerning pay and security), there was no relationship; but when broad conditions began to improve and managers began to receive the intervention training, the relations became stronger. It is of course difficult to separate the effects of the improved conditions and the training, although the training was probably viewed by the technicians as an indication that corporate management was committed to improving conditions in the organization. Thus, it seems that when employees were very concerned about extrinsic elements such as pay, benefits, and security, and about tension in the corporate climate, immediate supervisory issues were not as important as we had predicted. Managers' support for self-determination is apparently not

Table 6
Means and Standard Deviations for the Pre- and Posttreatment Global Satisfaction Index From the Employee Attitude Survey for Intervention Branches (Locations 1 and 2) and Comparison Branches (Locations 4 and 5)

Location category	Pretreatment		Posttreatment	
	M	*SD*	*M*	*SD*
Intervention branches	3.31	0.86	3.48	0.69
n	188		235	
Comparison branches	3.65	0.65	3.44	0.70
n	151		177	

enough to buffer employees from major problems that emerge from higher levels in the organization, especially when these problems threaten pay and security. Only when the company showed concrete evidence of being concerned with the workers, by unfreezing wages and by making a commitment to change the general climate, did the immediate supervisory situation become a strong correlate of satisfaction. Under these conditions, providing an informational, autonomy-supportive context was very important.

The data further suggest that the field managers are representatives of the corporation for the technicians, given the fact that the managers' orientations affected the workers' perceptions of the corporation and its top management. It is interesting, however, that this relationship appeared only when top management was not threatening the workers with loss of pay or employment. We had not, of course, predicted these limiting conditions on the relation between managers' support for self-determination and the subordinate variables, although it is an interesting point that deserves further investigation. It could be that these results support the concept of a hierarchy of needs (Alderfer, 1972; Maslow, 1943), in which the higher order need for self-determination was salient only when lower order needs for pay and job security were well satisfied and thus not salient. Alternatively, the results could simply indicate that in this situation, in which the actions of top management were extremely salient and were experienced as negative, the technicians were less attuned to their field managers' individual orientations. This would mean that their need for self-determination may still have been salient and strong, but that the relatively small variability among the managers' orientations was not adequate to provide differential satisfaction of the need and thus to affect job attitudes.

The second focus of this research was whether it is possible to change managers' orientations (toward greater support for self-determination) through training and development, and whether any change that might occur in those orientations would in turn affect their subordinates' experience of work. The data do provide some indication that it is possible to make a significant change in the workplace by training managers to support their subordinates' self-determination. The effects of the intervention on managers' orientations was reasonably well documented, although its radiation to subordinates was less clear. In this large-scale field experiment, we encountered many of the methodological problems that typically accompany such research, so we did not have an adequate test of the impact of the intervention on subordinates. Nonetheless, by using a two-prong strategy for trying to ascertain whether there was radiation of manager effects, we did obtain some suggestion of positive treatment effects for subordinates.

As we expected, there was no evidence of treatment effects in Location 1 at the end of the intervention when there was still an appropriate control group. Presumably because of the minimal contact between managers and subordinates, it took many weeks before the change in managers' orientations appeared to have influenced subordinates. Parenthetically, this speculation is supported by a supplemental analysis. As one can see from Table 1, the managers' orientations (PAW scores) at Time 2 correlated with only two subordinate variables at Time 2 (*r*s greater than .45). However, when managers' Time 2 orientations were correlated with Time 3 subordinate variables, there were four significant correlations greater than .45.

In terms of dynamics, it is interesting that subordinate variables concerned with trust in the corporation were more clearly related to managers' styles than were any of the other subordinate variables, even those that supposedly described the managers themselves. This suggests one of two phenomena. It is possible either that (a) field technicians, when they get dissatisfied with their managers, displace those negative feelings onto the less proximal corporation (it is safer to blame top management with whom they have no contact than to blame their immediate supervisors); or, alternatively, (b) the more controlling managers actually attribute their own actions to top management rather than accepting responsibility for their own managerial behavior. For example, "There's nothing I can do about it; they said it has to be done" is the kind of disclaimer by a controlling manager that could encourage the displacement.

Previous research has indicated that structural changes, aimed at facilitating participative or autonomy-supportive management are of great value. It is therefore encouraging to note that even management training, the effects of which are often thought to be transient, may have an impact that persists several months after the completion of the program. Indeed, in this work situation in which managers have minimal contact with their subordinates, the intervention (if it did have an effect on the subordinates) appears to have required a few months to have an impact.

In closing, it seems reasonable to conclude that, with certain limitations, the experience of self-determination, promoted by managers' being autonomy-supportive, has positive ramifications for people's work lives. What remains to be explored, beyond the possible limiting conditions on this effect discussed previously, are (a) the extent to which the subordinates themselves contribute to their own experience of self-determination either by uniquely interpreting their manager's orientation as supporting self-determination or by behaving in a way that leads their manager to be more supportive of their self-determination; (b) the extent to which factors in the field managers' social context (e.g., their supervisors' support of their self-determination) affect the orientation that these field managers have toward their subordinates; and (c) the extent to which workers' experience of self-determination, which was shown to positively affect motivationally relevant attitudes, translates into improved performance and productivity.

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