PREDICTING PROCESS IMPROVEMENT
TEAM PERFORMANCE IN AN
AUTOMOTIVE FIRM:
EXPLICATING THE ROLES OF
TRUST AND EMPOWERMENT

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Aneil K. Mishra, and William N. Cooke

ABSTRACT

This paper extends traditional models of group effectiveness by articulating the role that team trust and empowerment play in the performance of process improvement work teams. A two-part model is developed—the first part predicting team involvement and the second part predicting team effectiveness. In the first half of the model, it is hypothesized that team trust, empowerment, recognition, and conflict resolution skills enhance levels of team member involvement. In the second half, it is hypothesized that team member involvement, role clarity and access to information enhance levels of team performance. The model is tested on a sample of 43 process improvement work teams from a parts plant of a Big Three automotive firm.
Multiple referents are used to avoid problems of common method bias. Higher levels of empowerment, trust/conflict resolution, and recognition are related to team involvement. In turn, greater team involvement along with greater role clarity and access to information are related to higher levels of team performance. Finally, team involvement is found to mediate the relationship between the variables in the first part of the model and team performance.

The use of work groups in contemporary organizations is gaining popularity (Campion, Medsker, & Higgs, 1993). Indeed, some have claimed that teams “should be the basic unit of performance in organizations” (Katzenbach & Smith, 1993, p. 15). Others suggest that they provide greater flexibility than more permanent structures and processes in organizations facing rapidly changing circumstances (Lawler, Mohrman, & Ledford, 1995). Not surprisingly, in a recent study of the Fortune 1000 by the Center for Effective Organizations, 91 percent of organizations were found to use employee participation groups in 1993 as compared only with about 70 percent in 1987 (Lawler et al., 1995). The difficulty with the use of work groups is that they often lead to negative outcomes such as groupthink (Janis, 1972), destructive conflict (Alderfer, 1977), and failure to achieve performance objectives (Katzenbach & Smith, 1993). To better understand the factors that can reduce these negative outcomes and increase group performance, several theoretical models of group effectiveness have been developed (e.g., Cohen & Bailey, 1997; Goodman, Ravlin, & Schmike, 1987; Hackman, 1987). These models have been quite thorough in identifying the influences of team design—group composition (e.g., team size), task design (e.g., task variety), team processes (e.g., conflict) and team context (e.g., reward system)—on effectiveness outcomes.

Many of these theoretical models predict general team effectiveness. In this paper, we are interested in explaining the performance of a specific type of team—process improvement teams—that operate in a specific context—a UAW-represented automotive plant. Process improvement work teams are defined as a set of individuals who work interdependently with one another to identify and resolve production-related problems. While we draw on traditional models of team effectiveness in developing our framework, we wonder if they may neglect critical variables that may be important to this type of team in this context.

For example, in a process improvement team, trust, a variable that has received only scant attention in these models, may be particularly important. If team members do not trust each other and management, then they may be hesitant to offer ideas to improve quality and productivity because they may fear that their jobs may be in jeopardy due to increased plant efficiency. Conversely, if team members have a high degree of trust, they may be more willing to take the risks required to learn things and to cooperate with each other even when they won’t immediately benefit. Successfully identifying and resolving performance problems may require team members to reveal potentially damaging information
about unproductive behavior or prior mistakes committed by themselves or by others. Disclosing such information makes themselves or others vulnerable to criticism, ridicule, or even punishment. Trust among members then may be crucial for them to feel comfortable in doing so.

Similarly, in the context of process improvement teams in a union setting, team empowerment may also be important because team members must be willing to take initiative in offering ideas for how to improve organizational functioning. A sense of empowerment then may also be crucial to team members' taking initiative in then implementing solutions to identified problems. Members must feel as though their actions can make a difference and must feel confident about their own capacities to deal with these problems. If team members do not believe that their ideas will be taken seriously, that they can have impact, then the teams will have limited, or perhaps even negative, performance effects.

Interestingly, while trust and empowerment have gained increasing attention as predictors of individual and organizational performance, neither has received much attention at the group level, despite some findings that the capacity for learning within a team is directly related to the amount of trust among its members (Hackman, 1990) and recent claims that empowered individuals make for better team members (Katzenbach & Smith, 1993). This paper integrates team trust and empowerment with other aspects of group theory to predict the performance of 43 process improvement work teams in a Big Three automotive plant.

Our paper is organized as follows. First, we develop a theoretical framework including hypotheses about the role of team trust and empowerment in the context of process improvement work teams. We then describe the research design for testing the hypotheses. Next, the results are presented and discussed, and we end the chapter with a discussion of the results and directions for future research.

THEORETICAL FRAMEWORK

We offer a two-part model of effectiveness for process improvement work teams (see Figure 1). We first predict process effectiveness and then predict outcome effectiveness. In the first part, we posit that team trust and empowerment along with two team design variables from traditional models of effectiveness, team recognition and team conflict resolution, are posited to predict team involvement. Team involvement is defined as the active engagement of the members of the team in the team's activities. We are referring to behavioral involvement, rather than just emotional or intellectual involvement. When team members are involved, they willingly give of themselves in order for the team to operate effectively. It is a behavioral version of Hackman's (1987) team spirit or synergy, where every member acts committed to the team and is willing to work hard to make the team the best it can be.
In the second part of the model we posit that team involvement, in addition to two variables from traditional models of team effectiveness—the team’s access to information and the clarity of the team members’ roles—will predict team performance. Team performance is defined as how well the team achieves its goals around the general areas of quality, costs, productivity and scheduling. Indeed, it can be argued that the success of a team in a given context depends more upon how key stakeholders assess its performance than how it objectively performs (Hackman, 1987). Different constituencies will view performance from different perspectives (Cohen, 1993). Thus, we advocate a multi-dimensional construct of team performance that makes sense in a process improvement team context—quality, costs and productivity. In the next section of the paper, we provide the logic underlying the hypotheses in our theoretical framework.

Predicting Team Involvement

As shown in Figure 1, we propose that empowerment, trust, recognition and conflict management are important influences on the ability of team members to be actively engaged or involved in the team’s activities.

Empowerment

In this paper, our focus is on psychological empowerment or the experience of empowerment, rather than on other definitions that focus on the specific management practice of delegation. From this perspective, individual empowerment is
defined as a proactive self-orientation regarding the work relationship, as manifest in four dimensions: meaning, competence, self-determination and impact (Spreitzer, 1995; Thomas & Velthouse, 1990). Meaning reflects a sense of purpose or personal connection about work. Competence indicates that individuals believe they have the skills and abilities necessary to perform their work well. Self-determination reflects a sense of freedom about how individuals do their own work. Impact describes a belief that individuals can influence the system in which they are embedded.

We extend Spreitzer's (1995) and Thomas and Velthouse's (1990) notions of individual empowerment to a group level. By extension, empowered teams have a proactive group orientation regarding their relationship with the larger organization. Three of four dimensions clearly translate to a group perspective: teams may have a common purpose or meaning; they may have an overall sense of group competence; and they can have a sense of collective impact. The self-determination dimension is not relevant in a team context because group work requires team members to work interdependently rather than independently as discrete individuals (Shea & Guzzo, 1987). If team members had high levels of individual self-determination then they wouldn't be working cohesively as a group. Thus for this chapter, we define group empowerment in terms of three of the original four dimensions—meaning, competence, and impact.

Empowerment is important for the effective involvement of group members (Cohen, 1992). To the extent that all members experience a sense of empowerment, they will feel that their team can make a difference. They believe in the work they are doing, that they are competent at what they are doing, and that their work has impact. The result is that empowered team members are willing to engage themselves in their work, willing to take initiative to help the team perform (Spreitzer, deJanasz, & Quinn, 1998; Spreitzer & Quinn, 1996).

**Hypothesis 1.** More empowered teams will have higher levels of team involvement than less empowered teams.

**Trust**

Trust is defined as the willingness of one party to be vulnerable to the actions of others (Granovetter, 1985; Lewis & Weigert, 1985) based on the prior belief that they are trustworthy (Mayer, Davis, & Schoorman, 1995; Mishra, 1996; Sitkin & Roth, 1993). Being vulnerable means that a significant potential for loss exists (Deutsch, 1973; Luhmann, 1979; Zand, 1972). Several key dimensions of trustworthiness have been documented in the management literature, including a concern for others' interests, competence, openness and reliability (Hart & Saunders, 1997; Mayer et al., 1995; Mishra, 1996). Concern means that the other party cares about the interests of the first party and is not merely concerned about furthering their own interests. Competence means that the other party has the
skills and capacity to operate effectively. Openness means that the other party is honest and frank in communicating with the first party, even when the information is negative in nature. Reliability means that the other party keeps its promises and is consistent between words and deeds.

We propose that when team members trust each other, they will be more involved in the activities of the team. In terms of the concern dimension, team members' trust in one another minimizes fears of being punished or ridiculed for revealing mistakes. In terms of the competence dimension, team trust facilitates collective action because it enhances the expectation that everyone has the ability and skills to not only identify the "right" set of problems and causes, but also to indicate that capable action can be taken to deal with them once identified. In terms of the openness and reliability dimensions, team trust facilitates team involvement because there is the expectation that no information is being withheld by team members and that promises made will be promises kept.

**Hypothesis 2.** Teams with higher levels of member trust will have higher levels of involvement than teams with lower levels of trust.

**Team Recognition**

People tend to engage in behaviors that are rewarded. Reward systems encompass pay, promotions, benefits and recognition. They are an important part of many team frameworks. Hackman (1987), Shea and Guzzo (1987), and Gladstein (1984) discuss the criticality of a team-based reward system. We focus on a key element of reward systems that is likely to vary across teams within the same organization, even when the organization doesn't provide differential pay to reward group-level performance outcomes—recognition. Lawler (1992) emphasizes that recognition is an important part of an employee involvement system. Recognition is the managerial acknowledgment of employee team achievement. It might include public praise, expressions of a job well done, or special attention. Katzenbach and Smith (1993, p. 126) argue that positive reinforcement "helps to shape new behaviors critical to team performance." Moreover, they also argue that "groups that lack mutual accountability for performance have not shaped a common purpose and approach that can sustain them as a team" (Katzenbach & Smith, 1993, p. 61). When employees feel that their good deeds are recognized then they feel more valued and are more likely to want to be involved in the organization. When teams are recognized for their work, they are more likely to continue the behavior that was recognized in the first place. Recognition of the team enhances members' motivation to continue to work as a team.

**Hypothesis 3.** Teams that receive more recognition will have more team involvement than teams that receive less recognition.
Conflict Resolution

Conflict can be defined as instances in which members of a team have opposing or incompatible interests, or who disagree about the means that should be used to achieve interests that are in common. Because teams bring together individuals from different backgrounds and with different value systems, conflict is inevitable. The more different the team is, the more potential there is for conflict (Pelld, 1986; Williams & O'Reilly, 1998). Two types of conflict are often discussed in the literature (Jehn, 1995; Pelld, 1996)—task conflict (i.e., disagreement among group members about the content of the task being performed) and social-emotional conflict (i.e., interpersonal incompatibilities among group members). We are interested in how well team members manage conflict, whether it be task or social-emotional conflict; thus, we do not distinguish the two types of conflict in the development of our hypothesis.

For conflict to be resolved, it must be confronted, otherwise team members may continue to compete against one another’s interests or perspectives (Thomas, 1976), groupthink may ensue (Janis, 1972), or performance objectives may go unfulfilled (Katzenbach & Smith, 1993). Process-focused interventions to resolve conflict by airing different points of view and perspectives have often been used to improve team functioning (Cordery, Mueller, & Smith, 1991; Shea & Guzzo, 1987). Conflict management skills are particularly important in teams with diverse backgrounds or competencies to help them deal with these differences and to help ensure that minority opinions are heard by the team (Hackman, 1987).

**Hypothesis 4.** Teams that are better at managing conflict will have more team involvement than teams that do not manage conflict well.

Predicting Team Performance

Team Involvement

Theories of participative management argue that when employees are more behaviorally involved in their work, performance will be higher (Lawler, 1992). When team members are involved and committed to the group’s activities, they are likely to perform at a higher level, assuming that group norms are consistent with productivity. Prior work has shown that the involvement of employees has a positive, albeit small, effect on performance (e.g., Arthur, 1994; Denison & Mishra, 1995; Wagner, 1994). Both cognitive and motivational rationales for the performance effects of involvement have been documented in the literature. From a cognitive perspective, employees often have more complete knowledge and information about their work tasks than do managers and are in a better position to plan and schedule work and to identify and resolve obstacles to achieving optimal organizational performance (Cooke, 1994). Organizations seek to involve
employees because they have untapped knowledge, problem-solving skills, creativity and effort, which, if utilized through their involvement in organizational decision making, can lead to enhanced performance (Cooke, 1992). Employees come to understand which behaviors and task strategies are most effective, which do not work, and how work processes might be improved (Lawler, 1992). Because employees possess this knowledge, performance can be enhanced when employees are involved (Locke & Schweiger, 1979; Miller & Monge, 1986).

Increasing the degree to which employees are involved may also increase performance through enhanced motivation. Involvement provides employees with intrinsic rewards from work (Thomas & Velthouse, 1990). Research on participative decision making has shown that employees who have a "say" in the introduction of new work procedures are motivated to do what is necessary to make them work, resulting in job satisfaction and ultimately to improved performance (Spreeitzer, Kizilos, & Nason, 1997).

**Hypothesis 5.** Teams that have higher levels of member involvement will have higher team performance than teams with lower levels of member involvement.

**Role Clarity**

Role clarity means that team members work together in a coordinated way without duplicating or wasting efforts. Team members that have role clarity perform well because everyone knows what role they are to play. When members' roles are clearly specified, they can be coordinated for efficiency. Members can be assigned tasks according to who has the most appropriate skills. Clarity about what each member, including the team leader, is responsible for individually and collectively, enhances a sense of mutual accountability, fosters collective action by the group and improves team performance (Katzenbach & Smith, 1993). In addition, having a clear, concrete set of team goals and objectives that are readily understood and agreed upon by team members also enhances coordination within the group and the attainment of performance objectives (Katzenbach & Smith, 1993).

**Hypothesis 6.** Teams in which members have more clarity about their roles will have higher team performance than teams that have less role clarity.

**Access to Information**

Theories of participative management emphasize the need for employees to be well-informed in order to make good decisions (Lawler, 1992). They must have access to information relevant to their work. A good information system provides members with the data they need to assess the situation and evaluate alternative decision strategies. Information such as competitive benchmarks, best practices,
front-line work measures, and customer interviews can provide teams with fresh perspectives needed to reshape their purpose, approach and performance goals (Katzenbach & Smith, 1993, p. 161). This information must be provided in a way that is accessible and meaningful to employees. This will generally require some basic training in how to measure and track performance data and make optimal cost-cutting decisions. Furthermore, this information must be provided in a relevant and timely manner (Locke & Latham, 1990).

**Hypothesis 7.** Teams that have greater access to relevant information will perform at a higher level than teams that have lesser access to information.

**Mediating Effect of Team Involvement**

As indicated in Figure 1, team involvement is specified to mediate the relationship between the four variables in part one of the model—empowerment, trust, recognition, and conflict resolution—and team performance. In other words, it is through team involvement that these variables have their effect on performance. They increase the engagement of team members and that in turn affects performance.

**Hypothesis 8.** Team involvement will mediate the relationships between empowerment, trust, recognition, and conflict resolution and team performance.

**RESEARCH DESIGN**

**Data Collection**

The data are drawn from a UAW-represented parts and components manufacturing plant of one of the Big Three domestic automobile companies. The plant employs roughly 500 hourly production and maintenance employees, down from approximately 1,100 hourly employees in the early 1980s. In addition, the plant employs another 200 salaried supervisors, managers, engineers and other staff. The hourly workforce is predominately white (80%), male (65%), and older (average age is 50)—most have a high school education or less.

From the early 1980s through 1992, hourly employees engaged in a voluntary program of employee participation in which teams would meet weekly to identify and attempt to resolve production-related problems and inefficiencies. Employee participation peaked by 1990 at which point about 60 % of hourly employees attended weekly team meetings. In 1990, the joint union-management steering committee began working on a new participation design in an effort to improve
performance. The new program, launched in 1993, required all production employees (but not skilled trades employees) to participate. Forty-three teams were configured to bring together employees who naturally work together in the operation of equipment and assembly of parts and components. Teams range in size from 6 to 15 members.

Roles for elected team leaders (who are part of the team), team coordinators (who are first line supervisors), superintendents (to whom the supervisors report), and support staff (including maintenance, engineering, materials handling, and quality control) were formalized. Team members and their leaders received 12 hours of formal classroom training in how to conduct meetings and how to track and brainstorm proposals for improving performance, safety and housekeeping. Team leaders also received an additional 12 hours of classroom training in leadership, coaching skills, and conflict resolution. To help facilitate activities and provide informal training, three well-trained, full-time Employee Resource Coordinators (ERCs) were assigned to assist 13-15 teams each.

Teams meet once a week during regular business hours for one hour to identify performance problems, brainstorm solutions and ways to improve performance, and schedule work, including the rotation of members across jobs. Most teams also meet briefly at the start of their shift to review daily production schedules and to review assignments or make last-minute adjustments. Elected team leaders (who serve three-month terms but who may be reelected to consecutive terms) are responsible for leading team meetings and coordinating team activities.

In 1996, the joint steering committee decided to evaluate the work team system. One of the authors (who facilitated the design of the new program) was asked to make an initial assessment by conducting a set of confidential interviews with plant personnel. Following that assessment, the joint steering committee agreed to conduct a plant-wide survey to obtain a more detailed and thorough assessment. At that point, all the authors of this chapter framed the analysis and designed the survey instruments used in the data collection. The three ERCs administered the confidential questionnaires to teams during their regular weekly meetings over a three-week period in May, 1997. They also distributed and collected surveys from team coordinators, team leaders and superintendents, in addition to completing questionnaires themselves. The final data set covers 43 teams, with surveys from 351 hourly employees, 38 team leaders, 21 coordinators, 11 superintendents, and 3 ERCs. Responses covering all 43 teams were received by team members, superintendents and ERCs. Team leader responses for four teams and coordinator responses for six other teams were not available because 10 teams had been functioning either without a team leader or coordinator.

Measures

Variable definitions are provided in Table 1. All scales are composed of multiple seven-point Likert scale items. The items were subjected to an exploratory
factor analysis to ensure that they did indeed reflect distinct scales (see the Appendix for the items comprising each scale). The factor analysis of the independent variables, using principal component estimation and oblique rotation, yielded support for each construct. The one exception was trust and conflict resolution—the items for these two scales loaded together. Thus, they were combined to form a single scale called trust/conflict resolution (Cronbach alpha = .98). Each scale in the model had acceptable levels of internal consistency (all exceeded 0.70; see Cronbach alpha values for each scale in the Appendix).

To avoid potential common response bias, the dependent variables were assessed by different referents than the independent variables. All of the independent variables (empowerment, trust/conflict resolution, recognition, role clarity and access to information) were assessed by the team members. Their individual responses were aggregated to the team level (a mean score was used) after ensuring that there were adequate levels of interrater agreement as assessed by intraclass correlation coefficients (Shrout & Fleiss, 1979) and James, Demaree and Wolf’s (1984) \( R_{WG(j)} \) coefficient for multiple-item measures with multiple raters.
Table 2. Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>s.d.</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Empowerment</td>
<td>5.87</td>
<td>.47</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Recognition</td>
<td>3.60</td>
<td>.66</td>
<td>.07</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Trust/Conflict Resolution</td>
<td>4.62</td>
<td>.92</td>
<td>.27</td>
<td>.30</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Role Clarity</td>
<td>4.89</td>
<td>.73</td>
<td>.34</td>
<td>.35</td>
<td>.60</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Access Info</td>
<td>4.45</td>
<td>.78</td>
<td>.39</td>
<td>.53</td>
<td>.63</td>
<td>.76</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Clarity &amp; Access to Info</td>
<td>4.67</td>
<td>.71</td>
<td>.39</td>
<td>.47</td>
<td>.66</td>
<td>.93</td>
<td>.94</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Team Involvement</td>
<td>4.95</td>
<td>1.36</td>
<td>.46</td>
<td>.30</td>
<td>.41</td>
<td>.28</td>
<td>.55</td>
<td>.44</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>8 Performance</td>
<td>19.24</td>
<td>3.13</td>
<td>.29</td>
<td>.42</td>
<td>.42</td>
<td>.38</td>
<td>.48</td>
<td>.46</td>
<td>.61</td>
<td>1.0</td>
</tr>
</tbody>
</table>

All intraclass correlation coefficients and $R_{WG(I)}$ values exceeded .55 (see the appendix for actual values for each construct). One of the dependent variables, team involvement, which attempts to capture the extent to which team members participate in team efforts to improve performance, is based on observations made by the ERCs, with one ERC rating each team. ERCs are the selected referents because they attend all team meetings and provide resource support for team activities. Thus, besides the team members themselves, they would have the best sense of the level of involvement of the team members. The other dependent variable, performance, is based on the aggregated observations of four sets of referents: ERCs, team leaders, team coordinators, and superintendents (a mean score is used here as well). We used this aggregated measure of performance in order to capture the overall level of performance across four key constituencies. We should also note that even though team leaders are members of the team, their assessments are only used for the dependent variable, performance, not for measuring the independent variables.

Results

Correlations among all the scales are provided in Table 2. Two OLS regression equations are specified to test the first seven hypotheses. In the first equation, team involvement is a function of empowerment, recognition, and trust/conflict resolution. In the second equation, performance is a function of team involvement, role clarity and access to information.

Equation One

Table 3 provides the results of the OLS estimation of the first equation. Empowerment, recognition and trust/conflict resolution are positively associated with team involvement.1
Table 3. OLS Estimates of Determinants of Team Involvement (Standard Errors in Parentheses)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (s.d.)</th>
<th>Team Involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPOWERMENT</td>
<td>5.87 (.47)</td>
<td>1.10***</td>
</tr>
<tr>
<td>RECOGNITION</td>
<td>3.60 (.66)</td>
<td>.40*</td>
</tr>
<tr>
<td>TRUST/CONFLICT</td>
<td>4.62 (.92)</td>
<td>.37**</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.68 (2.39)</td>
<td></td>
</tr>
<tr>
<td>(R^2)</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>(N)</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

Notes: 
* = significant at \(\leq .10\) level;  
** = significant at \(\leq .05\) level;  
*** = significant at \(\leq .01\) level (using one tailed tests).

These results provide clear support for hypothesis one—team empowerment is found to be associated with high levels of team involvement—and hypotheses three—recognition is found to be associated with team involvement. The results also provide partial support for hypotheses two (more trust leads to more involvement) and four (more conflict resolution leads to more involvement). Because the measures for these two constructs could not be independently measured, a single measure of trust/conflict resolution was created. It was this combined construct of trust/conflict resolution that was found to be related to team involvement. The results also indicate that a significant portion of the variance in team involvement is being explained; this variance explained is particularly notable given that as these data come from independent sources and hence is not attributed to common method bias.

Equation Two

Table 4 provides the results of the OLS estimation of the second equation, with alternative specifications regarding the effects of role clarity and access to information. In column 1 are the results obtained when all three variables are included in the equation. As hypothesized, team involvement is positively and significantly associated (at the \(< .01\) level) with higher average team performance. Although role clarity and access to information are both positively associated with performance, neither variable obtains significance. Collinearity between role clarity and access to information (\(r = .76\)) may be causing inefficient estimation. On excluding access to information (column 2) the estimated role clarity coefficient is positive and significant at the \(< .05\) level. Similarly, when role clarity is excluded (column 3), the estimated access to information coefficient is positive and
significant at the < .10 level. As a final specification, we combine both variables by taking the mean score of role clarity and access to information. As reported in column 4, the combined variable, role clarity and access to information, is positively and significantly associated (at the < .05 level) with greater performance improvement. These results provide support for hypothesis five (that team involvement will be related to team performance) and marginal support for hypotheses six (that role clarity will be related to team performance) and seven (that access to information will be related to team performance). High levels of team involvement, role clarity, and access to information are each found to be related to higher levels of performance improvement. Once again, a substantial amount of variance in performance is being explained.

Test for Mediation

Testing the mediation effect involved examining several regression analyses (Baron & Kenny, 1986). In the first regression (provided in Table 3 and was used to test hypotheses 1-4), we want to show that the independent variables predict the mediator. The results of this regression indicate that the variables in part one of the model—empowerment, recognition, and trust/conflict resolution—do predict team involvement. In the second regression, we want to show that the mediator is related to the dependent variable. This regression is provided in Table 4 and indicates that team involvement does predict team performance. In the third

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (s.d.)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEAM INVOLVEMENT</td>
<td>4.95 (1.36)</td>
<td>1.24***</td>
<td>1.27***</td>
<td>1.15***</td>
<td>1.18***</td>
</tr>
<tr>
<td>ROLE CLARITY</td>
<td>4.89 (.73)</td>
<td>.85</td>
<td>.95**</td>
<td></td>
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</tr>
<tr>
<td>ACCESS INFO</td>
<td>4.45 (.78)</td>
<td>.15</td>
<td>.83*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLARITY + ACCESS INFO</td>
<td>4.67 (.71)</td>
<td></td>
<td></td>
<td></td>
<td>1.02**</td>
</tr>
<tr>
<td>Intercept</td>
<td>8.30*** (2.66)</td>
<td>8.30***</td>
<td>9.85***</td>
<td>8.65***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.63)</td>
<td>(2.20)</td>
<td>(2.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>.42</td>
<td>.42</td>
<td>.41</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>43</td>
<td>43</td>
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</tr>
</tbody>
</table>

* = significant at ≤ .10 level;
** = significant at ≤ .05 level;
*** = significant at ≤ .01 level (using one-tailed tests).
**Table 5.** OLS Estimates of Team Performance for Mediation Test (Standard Errors in Parentheses)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Team Performance</th>
<th>Team Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMPowerMent</strong></td>
<td>1.20*</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>(.93)</td>
<td>(.91)</td>
</tr>
<tr>
<td><strong>RECOGNITION</strong></td>
<td>1.56*</td>
<td>1.11**</td>
</tr>
<tr>
<td></td>
<td>(.66)</td>
<td>(.61)</td>
</tr>
<tr>
<td><strong>TRUST/CONFLICT</strong></td>
<td>.92*</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>(.49)</td>
<td>(.46)</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.83</td>
<td>6.97</td>
</tr>
<tr>
<td></td>
<td>(5.60)</td>
<td>(5.26)</td>
</tr>
<tr>
<td>R²</td>
<td>.31</td>
<td>.46</td>
</tr>
<tr>
<td>N</td>
<td>43</td>
<td>43</td>
</tr>
</tbody>
</table>

Notes: * = significant at ≤ .10 level; ** = significant at ≤ .05 level; *** = significant at ≤ .01 level (using one tailed tests).

regression, we want to show that the independent variables predict the dependent variable—that is, that there are direct effects of empowerment, trust/conflict resolution, and recognition on team performance. This regression is provided in Table 5 and indicates that empowerment, trust/conflict resolution, and recognition are all related to team performance.

In the final regression, support for mediation is provided if the direct effects of the independent variables are reduced or go to zero when the mediator is added to the model. This would indicate that the variables in part one of the model have their primary effect on team performance through team involvement. The results of this regression, also provided in Table 5, show that the effects of empowerment and trust/conflict resolution become insignificant when team involvement is included in the model. The results also indicate that the effect of recognition is reduced, though still remains significant, when team involvement is included. These findings provide support for full mediation of team involvement on empowerment and trust/conflict resolution and partial mediation of team involvement on recognition. Consequently, support is found for hypothesis 8 on the mediating effect of team involvement on the relationship between empowerment, trust/conflict resolution, and recognition, and team performance.

**DISCUSSION**

General support is found for the two-part model focused the effectiveness of process improvement teams. In the first part of the model, empowerment, team
trust/conflict resolution, and recognition are found to influence the extent to
which team members are involved in the activities of the team. Empowerment and
recognition induce team members to contribute in meaningful ways to the team’s
activities. Trust and conflict resolution minimize barriers that inhibit members
from working cohesively as team.

With regard to the recognition finding, one might wonder whether we are cap-
turing recognition or success (because recognition typically follows from success-
ful behavior). Certainly recognition is related to success but is not the same thing.
Our measures do not explicitly mention success but rather efforts. Moreover, if
this measure was merely picking up success then we would expect a very high
correlation with team performance, but the correlation is only moderate, no higher
than the relationship between many other constructs in our model. Thus, we
believe that we are picking up the effects of recognition, rather than merely suc-
cess. However, the fact that the relationship between recognition and team perfor-
ance is only partially mediated by team involvement, does suggest that there is
a strong direct relationship between recognition and team performance, indepen-
dent of team involvement.

In the second part of the model, team involvement and threshold levels of role
clarity and access to information were found to influence the performance of the
team. While team involvement has a linear relationship with performance, role
clarity and access to information had threshold effects. It may be that too much
role clarity is a function of a lot of micro-management on the part of the team
coordinator, leaving little room for team discretion and hence lower performance.
It may also be that very high amounts of information may create information
overload, also contributing to lower performance. Too much information may be
distracting to team members and may force them to lose focus. Once again,
because these threshold effects were not specified in the model a priori, future
research must confirm these findings in the study of other teams.

This study is among the first to examine the role of empowerment and trust on
team performance. The inclusion of these variables in our model became obvious
when we focused on the specific type of team we were examining in the specific
context the team was embedded in—process improvement work teams in an auto-
mobile plant. Our model goes beyond examining more traditional structural
design elements of a team (such as role clarity, access to information, and
rewards) to consider intrapersonal and interpersonal as well. Empowerment rep-
resents an intrapersonal factor that reflects an individual’s personal sense of con-
tral in the workplace. More empowered team members engender a team that is
more willing to take initiatives that are the province of process improvement
teams. Team trust, an interpersonal factor, is important because it reduces de-
fensive postures within the team and enhances the resolution of conflict that is inher-
ent in any significant team effort, thus facilitating a collaborative approach to
problem-solving tasks.
Our research design was particularly appropriate for testing the model, enhancing confidence in our findings. Teams were drawn from the field where they had a history of working with one another. Different referents provided data on different elements of the model. Employee resource coordinators provided data on the extent of team member involvement. Multiple referents including the employee resource coordinators, team leaders, team coordinators, and superintendents, provided data on team performance along four dimensions: productivity, quality, meeting schedule, and cost containment. Team members provided data on all of the other variables in the model. This design is a strength because we can be assured that our results are not merely the consequences of common methods.

The study also has several limitations. First, the theoretical model is developed to focus on process improvement work teams. While we expect that trust and empowerment would still have an influence on the effectiveness of other types of teams such as self-managing teams, product development teams, or top management teams, the specific logic about the role of each in these types of teams would have to be developed. It may be that trust and empowerment may be even more crucial in environments were team members are working interdependently continuously rather than the intermittent periods experienced by these process improvement teams. Thus, future research should examine the roles of trust and empowerment in the context of different types of teams.

Second, the theoretical model is tested on a small sample of teams in a single organization. A variety of organizational contextual influences such as the effects of corporate culture, design, financial rewards and training were not examined because of the single organizational design. Moreover, while we do not believe that that this organization is unique, we cannot determine the generalizability of our results to other organizations and other industries. Future research should test the theoretical model in different organizational contexts.

Third, the model is tested with cross-sectional data, limiting our ability to demonstrate causal relationships. For example, it may be that teams with high levels of performance adopt more involving structures and provide more access to information. To address this deficiency, longitudinal work is necessary. We hope to be able to collect performance data at a second point in time in the near future to overcome this weakness of the design.

Implications for Research and Practice

The implications for research are quite straightforward. Our results suggest that empowerment and trust may be important variables in predicting team effectiveness. As such, traditional models of team effectiveness should be extended to include the influence of these interpersonal and intrapersonal variables. Future work is necessary to determine their effects in different types of team settings.

The implications for practice focus on how to create trust and empowerment in a team setting. We know from prior work that trust is fragile, can take a long time
to build, but can be violated with a single act. Thus, consistency in action is critical for trust to be developed and sustained. Team membership should be fairly stable so that team members have time to get to know one another and learn to work together. Team management should also role model trusting behaviors such as delegation so that team members can follow their lead. It is important that management not create mechanisms which either explicitly or implicitly create competition amongst team members. For example, if individual performance is rewarded, then it will be difficult to get members to trust one another to work collectively because there are strong incentives to further one's individual interests at the expense of the group.

Developing and sustaining empowerment can also be challenging for organizations. Many organizations implement empowerment programs that have at best limited effect on employee behavior. Often managers are afraid to give up control. In such cases, employees feel like they cannot take a proactive approach to their work because they are micro-managed by their boss. In order for team members to feel empowered, the organization must provide real mechanisms for team members to have input into and influence over relevant organization decision making. Training and development can help employees increase a sense of competence in their skills and abilities, also critical for empowerment.

Unfortunately, given the uncertainty many organizations are facing as they struggle to be competitive in a fast-changing global environment, many organizations are creating conditions that are often at odds with the notions of trust and empowerment. The significant focus on downsizing seen in many organizations trying to cut costs is a particular impediment to building and sustaining trust and empowerment. Clearly, if organizations want to build trust and empowerment, they must be committed to a long-term approach focused on valuing employees.

CONCLUSION

Given the increased attention being placed on teams in the workplace, we need increasingly more developed and specific models of their effectiveness. This paper builds on earlier models of team effectiveness by articulating the roles of team empowerment and trust in both process and outcome effectiveness. Empowerment is critical because it leads to the initiative that is sought by organizations that implement teams. Trust is critical because it provides the lubricant necessary for diverse team members to interact fruitfully. Together, empowerment and trust can contribute to the functioning and performance of teams. We argue that these variables are particularly important in the type of team we are examining—process improvement teams—in a particular context—a UAW parts plant in an automotive firm.
APPENDIX

Factors & Items

Empowerment (Cronbach’s Alpha = .7082; Shrout & Weiss’s (1979) ICC: .91; James, Demaree, & Wolf’s (1984) $R_{WG(j)}$: .88)

1. The work I do is important to me.
2. I am confident about my ability to do my primary job.
3. How well I do my job is important to my work area.
4. My primary job tasks are personally meaningful to me.
5. I am self-assured about my capabilities to perform my various job tasks.
6. The work I do is personally rewarding.
7. It is important to the success of my work area that I do my job well.
8. I have mastered the skills necessary for my job.
9. I have a significant influence on the success of our work area.

Trust (Cronbach’s Alpha = .9763; ICC: .98; $R_{WG(j)}$: .83)

I believe most team members...

1. are straightforward with each other.
2. are competent and knowledgeable.
3. do not try to get out of commitments.
4. do not take advantage of one another.
5. communicate honestly with each other.
6. contribute to our work area’s success.
7. act consistently.
8. do not manipulate other members.
9. do not intentionally mislead each other.
10. will help our work area succeed into the future.
11. are reliable.
12. care about the best interests of other members.
13. do not withhold important information.
14. are concerned about other member’s welfare.
15. can be counted on.
16. can help solve problems in our work area.
17. can be trusted.

Conflict Resolution (Cronbach’s Alpha = .8992; $R_{WG(j)}$: .70)

1. most team members get along pretty well with other team members.
2. There isn’t much serious interpersonal conflict within our team.
3. We are effective at settling disputes among team members.
Role Clarity (Cronbach’s Alpha = .9127; ICC: .91; R_{WG(1)}: .73)

1. I know what the expected roles and responsibilities of team members are.
2. I know what the expected roles and responsibilities of the team leader are.
3. I know what the expected roles and responsibilities of the team coordinator are.
4. The expected goals and objectives of teams are clear.

Access to Information (Cronbach’s Alpha = .8821; ICC: .88; R_{WG(1)}: .63)

1. We have sufficient access to the information to carry out our team objectives.
2. Information and data presented to our team are relevant to our needs.
3. We have learned to understand and use business and performance data.

Recognition (Cronbach’s Alpha = .8002; ICC: .76; R_{WG(1)}: .57)

1. Our team gets sufficient recognition for our efforts.
2. Our team deserves more recognition for our efforts and accomplishments.
   (reversed)
3. Our team receives positive feedback when we have found new ways to improve performance.
4. Management shows the right amount of appreciation for what we get done as a team.

ACKNOWLEDGMENTS

We thank the workers at the Big Three automotive plant where we collected the data for their willingness to participate in the study. We also appreciate the helpful comments of Amy Edmundson and Anthony Pratkanis as well as the participants at the Stanford Conference on Groups and Teams. This research was supported in part by the Marshall School of Business at the University of Southern California, Wayne State University, and the Babcock Graduate School of Management’s Research Fellowship Program at Wake Forest University.

NOTE

1. Team size was entered as a control variable in each model but it was not significant nor did it change the significance or signs of the other variables any of the models.
REFERENCES


