CME Article #1

Effectiveness of a Healthy Work Organization Intervention: Ethnic Group Differences

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Learning Objectives

- Describe the features of a problem-solving, participatory intervention aimed at improving the organizational climate and worker health and well-being in a service-oriented retail setting.
- Identify the effects of this intervention on the study population as a whole.
- Compare the effects of the intervention on perceived organizational climate and employee well-being in different ethnic groups (Blacks, Hispanics, Whites).

Abstract

This study examined ethnic group differences in the effectiveness of a healthy work organization intervention on organizational climate and worker health and well-being. Our sample consisted of employees from 21 stores of a large national retail chain. The intervention involved establishing and facilitating employee problem-solving teams in 11 of the stores. Teams were charged with developing and implementing action plans tailored to the needs of their specific site. Pre- and postcomparisons of the treatment and control groups showed that the intervention produced positive effects on both the climate and health and well-being outcomes; however, these effects varied significantly by ethnic group. Particularly in terms of organizational climate, black and Hispanic employees were the primary beneficiaries of the participatory intervention process. These results are interpreted in terms of social identification and self-categorization theories and are contrasted with traditional participatory and diversity training approaches. (J Occup Environ Med. 2004;46:623–634)

Considerable attention has been given to exploring disparities in disease and disability as a function of ethnic group membership and socioeconomic status. It is widely acknowledged that minority and disadvantaged individuals have higher rates of cardiovascular disease, respiratory illness, gastrointestinal disease, and numerous other medical problems and conditions.[1,2] Ethnic minorities, the poor, and immigrants face excess risk for illness, disability, and premature death from a wide variety of causes.[1–3] Considerably less is known about the contribution of occupational factors to these disparities, beyond the fact that these same groups of people are often disproportionately represented in jobs characterized by hazardous environmental exposures and high levels of injury risk.[1,2] Psychosocial and organizational work factors are thought to contribute to these disparities,[4] but relevant research findings are quite limited.

The need to investigate psychosocial and organizational aspect of the work situation is becoming more urgent as the workforce becomes more diverse. The representation of women and people of color in the American workforce has grown steadily during the past several decades, and this trend is expected to continue as we move through the 21st century.[5–7] The presence of other ethnic groups, such as Hispanics, continues to grow as well. There are now more than 10 million Hispanic workers employed in the United States, and by 2025 it is expected that this number should ex-

ceed 15 million.[7] The failure of an organization to effectively accommodate and use its diverse workforce can have far-reaching consequences in terms of worker health and well-being, productivity, retention, and overall organizational effectiveness.[8]

The current study examined the differential impact of a participatory, problem-solving intervention on majority and minority employees in a service-oriented retail setting. The intervention process was directed at improving work organization and overall quality of work life. Employee teams identified and prioritized site-specific needs and developed action plans to meet team goals and to address their immediate needs and issues. We hypothesized that an intervention process, emphasizing information exchange, employee participation, and social networking, should be especially beneficial to minority employees as reflected in their perceptions of organizational climate, job stress, and personal well being. Our rationale for this was based on social identification and self-categorization theories, which suggest that employees form social in-groups and out-groups at work, based largely on salient visible personal characteristics in their work environment, such as demographics.[9–11] The formation of such groups occurs because people generally feel more comfortable or more at ease in settings where the attributes of their social and cultural identity are similar to the attributes of the people around them.

In-group/out-group distinctions often result in stereotyping, bias, and other forms of exclusionary treatment and can result in minorities developing feelings of self-doubt regarding their value or worth to the organization. Majority employees (in-group members) should have more positive perceptions of their value because they are less exposed to exclusionary treatment. For these reasons, workplace interventions that focus on the creation of a more collectivist organizational climate

(ie, a stronger climate of inclusion for all employees) should be particularly beneficial for minorities. In this way, we reasoned that the intervention used in the current study would moderate some of the adverse effects associated with increased workforce diversity.[9]

The team-based, problem-solving intervention used in the present study was based on active employee involvement, shared work-related goals, and action planning to improve the climate and effectiveness of the organization. Consistent with the concept of healthy work organization, the intervention emphasized the organization and structure of work processes and inherent interrelationships that exist between employee well-being variables and organizational effectiveness outcomes.[12–14] This intervention was not explicitly targeted to diversity in any manner. In fact, there is some evidence indicating that traditional diversity training may serve to highlight ethnic differences and thus actually increase exclusion and in-group/out-group differences. The present intervention sought to foster inclusiveness by augmenting information sharing and communication, and the development of shared goals related to improving the health and effectiveness of the organization through a participatory process.

Methods

Study Overview

This research was part of a larger study currently being conducted with a major national retailer. Although this particular company has demonstrated an impressive record of sustained growth and financial success, the study itself took place during a period of significant leadership transition and in an economy best described as recessionary and uncertain. Employees displayed a general level of concern and some resistance toward the changes and pressures in their work environment. For this reason, we expected the intervention process to provide a buffering effect

on the outcome variables. In other words, we did not necessarily anticipate improvement in organizational climate and employee health and well-being as a result of the intervention, but we expected the treatment stores to respond more favorably than the control stores.

Four operational districts within the southern region of this company agreed to participate in the intervention study. Two districts (comprising 11 stores) received the intervention, and two districts (comprising 10 stores) served as control sites. Treatment and control groups were configured by district to minimize intervention spillover effects and to simplify the logistics of on-site intervention facilitation and data collection. Individual retail units within this retail chain tend to be very similar in basic operations, layout, and product mix. Assignment to treatment and control was performed so as to make the two sets of stores as comparable as possible in location demographics, employee characteristics, and sales volume. Data collection for this study consisted of employee questionnaires administered in intervention and control stores both before and after the intervention process. The baseline survey occurred approximately 6 months prior to the start of the intervention. The follow-up survey was administered approximately 1 year after baseline data collection.

Participants

Completion of the questionnaires was voluntary, and all responses were confidential. Questionnaires were completed on-site and on paid time. Members of the research teams were on-site to distribute and receive completed questionnaires. Completed questionnaires were deposited into locked boxes provided by the research team. All employees in the stores were encouraged to complete questionnaires. The same survey was administered before and after the intervention. The baseline survey participants were not necessarily the

same as the follow-up survey participants. However, more than 93% of the workers completing the follow-up survey had worked for the company for more than 3 months.

A total of 2207 employees (response rate = 53%) participated in the baseline survey. One hundred and seventy six employees did not reveal their ethnic background, and 140 employees indicated ethnic backgrounds other than white, black, or Hispanic (eg, Native American, Asian/Pacific Islander), or indicated multiple ethnic backgrounds. These cases were excluded from the analyses. As such, 1891 respondents from the baseline survey were used for the analyses. There were 1100 participants in the intervention stores (white 953, black, 70, Hispanic 77) and 791 participants in the control stores were (white 669, black 85, Hispanic 37) in the baseline survey. The mean age was 37.7 years in the intervention stores and 37.5 years in the control stores. In the intervention group, 701 (65.0%) were men, and in the control group, 494 (64.0%) were men.

The follow-up sample included a total of 1723 employees (response rate = 47%) from the same stores. Again, participants who indicated ethnic backgrounds other than white, black, or Hispanic (260 employees) were excluded from the analyses. This left 1463 respondents from the follow-up survey. Of these, 798 were from the intervention stores (white 683, black 51, Hispanic 64), and 665 were from the control stores (white 580, black 51, Hispanic 34). The sample characteristics for age and gender in the follow-up sample were consistent with the baseline characteristics.

The ethnic compositions of respondents across time and treatment conditions are presented in Table 1. The ethnic group membership of participants in this study was generally similar to that of the total workforce at these stores. Data provided by the company at the beginning of the study indicated that 77% of employees were white, 11% were black, 9% were Hispanic, and 3% were other than these three categories.

Intervention

The intervention was designed to build capacity for employee participation and decision-making and to create a healthier work organization. Specifically, an employee problem-solving team, called an "ACTion Team," was organized within each intervention store. Consisting of approximately 8 to 12 employees, the ACTion Team was founded on the premise of creating a shared, mutual relationship between store employees and management for the purposes of improving employee health and well-being and store effectiveness. The ACTion team members came from all departments and organizational levels within the store. Team members could be either full- or part-time employees, and no minimum length of employment was required for participation. An important goal in constructing teams was to create teams that were broadly representative of the employees in each store.

The teams were charged with developing, implementing, and evaluating a tailored plan of action for addressing the issues or problems identified within the store. With assistance from facilitators from the Workplace Health Group (WHG) at the University of Georgia, the ACTion team developed their action plans using a five-step problem-solving process: familiarization, skill building, prioritization, action, and reaction.

In the familiarization step, the roles and responsibilities of the team were explained and discussed. In addition, the timeline for the project was presented, and the entire 6-month intervention process was described. Goals for the team were suggested and determined by team members, with the assistance of the WHG facilitator. Information dissemination (ie, feedback reports and team minutes) was discussed as well as what support could be expected from the WHG facilitator. In the skill-building phase, certain roles were determined (eg, team captain, recorder, project liaison), and a regular weekly meeting time was set. Ground rules for the team were established, including the requirements that key decisions would be decided by majority vote, that all opinions would be respected, and that team conversations would remain confidential unless otherwise decided by the group. A variety of structured activities were used by the facilitators, directed at improving team communication and cohesiveness (team mapping, mirroring), as well as developing problem-solving (eg, weighing pros and cons), time management (eg, prioritizing tasks), and conflict resolution (anger control, negotiation) skills.

The ACTion team identified issues to be addressed in the prioritization phase and began developing an action plan to tackle top priority issues. The WHG facilitator helped the team through a systematic set of activities that involved: (1) brainstorming sessions to identify salient issues, (2)

TABLE 1
Ethnic Compositions of Stores Across Time and Treatment Conditions

	Time 1			Time 2		
	White	Black	Hispanic	White	Black	Hispanic
Intervention	953 (87%)	70 (6%)	77 (7%)	683 (86%)	51 (6%)	64 (8%)
Control	669 (85%)	85 (10%)	37 (5%)	580 (87%)	51 (8%)	34 (5%)

issue clarification exercises to determine and understand the mediating factors impacting those issues, (3) priority matrices (ie, importance versus changeability) to prioritize identified issues, (4) strategy matrices (ie, feasibility versus impact) to design solutions, and (5) the construction of an initial work plan for the team's efforts.

In the action step, the ACTion team developed a detailed work plan to meet team goals and to address the identified priority issues. This action plan specified (1) the strategies that would be employed for improving each store issue, (2) the tasks that would be completed, (3) the person(s) who would perform the required work, (4) the timeline for when the tasks would be completed, (5) the follow-up steps needed, and (6) the required evaluation procedures. Action plan worksheets were used to help map out the necessary steps for addressing the store's priorities and for informing the rest of the workforce about the team's initiatives and progress. The action plans were discussed at regularly scheduled store meetings (which all or most employees must attend) and posted in the store's employee break room to foster maximum awareness of the team's activities and to widen employee participation and input. Finally, in the reaction phase, the ACTion team reviewed the action plan, monitored progress, and communicated with each other and the rest of the store's employees concerning what steps were being taken to refine and adjust the overall action plan.

Among the different teams, action priorities related to improving communication were most common. These included initiatives related to lateral communication (eg, pass-down books to facilitate customer service during shift changes), downward communication (eg, announcement centers in break rooms), and upward communication (eg, idea and suggestion systems). The teams also focused on improvements related to

coworker support and recognition. Developing employee of the month programs were popular, and these typically involved rewards, such as special parking privileges, certificates, and t-shirts. Other forms of recognition were also extended to employees who had gone above and beyond their specific job requirements to assist other employees and/or to improve customer service. In some instances, social events were planned to bring employees together outside of work.

Finally, issues related to work scheduling were often addressed, given that such issues are especially salient in retail environments, especially when stores are open 7 days a week from very early in the morning to late at night (as was the case with the retailer used in this study). Work scheduling was also a concern because many stores employed a large number of part time workers who often worked odd schedules that changed significantly from week to week. Action priorities related to scheduling most often involved providing employees with greater input into schedule development, and with earlier and more consistent feedback pertaining to schedule changes.

As the teams became established, the amount of direct facilitation by the WHG was reduced in an effort to help the teams become more independent and self-sustaining. Although all intervention stores used the same five-stage intervention process and intervention manual, specific activities and initiatives undertaken varied from site to site based on identified needs and specific action strategies adopted by the teams.

After the process, a separate evaluation was conducted in which team members were asked to report on how well the intervention was implemented. Process questionnaires were administered to team members, organizational informant interviews were conducted, and facilitators' notes and summaries were reviewed and compared. Feedback from ACTion Team members supported the fidelity of

the intervention process, with the majority of team members reporting that the team did a good job of identifying problem areas that needed improvement (92%), setting priorities for action (82%), and devising effective strategies or solutions (76%). All of these are key steps of the intervention process.

Overall, 74% of team members rated the success of the ACTion Team as either excellent (48%) or very good (26%). These individuals expressed numerous benefits associated with their involvement on the teams, including "a chance to express their views," "a better understanding of the organization," "a stronger commitment to the organization," and "an improvement in job skills." Employees in control stores completed both the baseline and follow-up questionnaires, but no teams were formed, and no organized activities or consultation were provided.

Measures

The demographics portion of the survey included questions about ethnicity, age, gender, marital status, education, length of employment, supervisory responsibility, and the number of children living at home. The organizational climate measures emphasized employee perceptions of their overall work environment,[15] and included six scales: organizational support, coworker support, participation with others, participation with supervisors, communication, and safety and health climate. Organizational support emphasized the actions taken by the organization to assist and bolster employees in undertaking their tasks and responsibilities.[16] Eisenberger, Huntington, Hutchison, and Sowa's nine-item global measure[17] was used in this study. Coworker support focused on the informal interpersonal relationships that develop among peers at work. Ribisl and Reischl's scale[18] was used to measure this component. The seven items assessed the extent to which coworkers' care about each

other, provide helpful advice, and so forth. Both the organizational support and coworker support measures were scored with a five-point Likert scale, ranging from 1 (disagree strongly) to 5 (agree strongly).

Participation emphasized the extent to which employees have opportunities for meaningful input into work-related decision-making. Two brief scales were used to assess different facets of participation. The first measure was a three-item involvement-with-supervisor scale[19] that included questions such as, "Do you feel you can influence the decisions of your immediate supervisor regarding things about which you are concerned?" The second three-item scale assessed general involvement in the workplace[20] and included items such as "I take part with others at my workplace in making decisions that affect me." Both components of participation were scored with a five-point Likert scale, ranging from 1 (rarely) to 5 (very often).

Communication referred to whether employees perceive that effective information exchange occurs within the organization.[21] The eight-item communication measure was adapted from Vandenberg, Richardson, and Eastman.[22] This scale included items such as management gives enough notice to employees before making changes in policies and procedures. A five-point Likert scale was again used, ranging from 1 (disagree strongly) to 5 (agree strongly). Safety and health climate

involved employee perceptions about the importance assigned to safety and health within the organization. The seven-item scale used in the current study was a version of the National Institute for Occupational Safety and Health's Safety Climate Scale.[23] Safety and health climate was scored with a five-point Likert scale, ranging from 1 (disagree strongly) to 5 (agree strongly).

Employee well-being was assessed in terms of job stress and overall health status. Job stress emphasized employee perceptions and reactions to stressors at work. The six-item scale, adapted from Cohen, Kamarck, and Mermelstein,[24] included questions such as: "In the last month, how often have you been upset because of something that happened unexpectedly at work?" The job stress scale was scored with a five-point Likert scale, ranging from 1 (never) to 5 (very often). Overall health status was assessed using a single item adapted from the SF-36 Health Survey.[25] The question asked employees to rate their overall health status from 1 (poor) to 5 (excellent).

Table 2 shows the means, standard deviations, and correlations between all study variables at baseline. The numbers within parentheses on the diagonal of the table are internal consistency (coefficient alpha) estimates. All of the scales for the organizational climate and well-being measures had reliability estimates greater than 0.70.

Data Analysis

The expected maximization (full information maximum likelihood) multiple imputation procedure from LISREL Version 8.5 (Scientific Software International, Lincolnwood, IL)[26] was used to impute missing values in the data set. As a point of reference, only 4% of the total responses were missing.

Multivariate analysis of covariance (MANCOVA) was used to examine ethnic differences in the effectiveness of the healthy organizational intervention (SPSS version 10.1, Chicago, IL).[27,28] The three-way analysis (general linear model approach) involved eight outcome variables, three predictor variables, one control variable, and one covariate. The eight outcome variables were the six organizational climate dimensions (organizational support, coworker support, participation with supervisors, participation with others, communication, safety and health climate), and the two well-being measures (job stress and perceived health status). The three predictor variables were ethnicity (white, black, and Hispanic), time (baseline and follow-up), and intervention (treatment and control).

The control variable was a customer service program (CSP) that was initiated in some of the stores in the middle of the intervention. CSP addressed the management of both customers' needs and employees' tasks and responsibilities during their

TABLE 2
Correlations Between Outcome Variables Before the Intervention

Variables	M	SD	1	2	3	4	5	6	7	8
1. Organizational support	3.43	0.77	(0.91)							
2. Coworker support	3.36	0.81	0.58*	(.92)						
3. Involvement with others	3.17	1.07	0.48*	0.42*	(0.77)					
4. Involvement with supervisor	3.27	0.89	0.53*	0.41*	0.49*	(0.88)				
5. Communication	3.32	0.71	0.66*	0.48*	0.43*	0.48*	(0.86)			
6. Safety and health climate	3.95	0.72	0.59*	0.46*	0.34*	0.39*	0.59*	(0.90)		
7. Job stress	2.63	0.91	−0.45*	−0.39*	−0.21*	−0.31*	−0.41*	−0.37*	(0.88)	
8. Overall health status	3.60	0.87	0.14*	0.09*	0.09*	0.05	0.15*	0.11*	−0.18*	(NA)

$n = 1863$, * $P < 0.01$, (NA): not available for a single item.
Note: The numbers within parentheses on the diagonal are alpha values of the scores of the scales.

shifts. This initiative represented a potential confounding effect in terms of intervention effectiveness. The CSP initiative was implemented between the baseline and follow-up periods in some of the stores, whereas for other stores, it was implemented after the follow-up period. CSP was operationalized as a dummy variable to account for this difference. The covariate was whether or not respondents had completed a survey at baseline. Because the company did not permit us to track individual participants across time, we included a question on the follow-up survey that asked respondents whether they had completed the baseline survey. The significance level (alpha) used to examine the interaction effect was 0.10, as opposed to 0.05, because a three-way interaction effect with continuous values is hard to detect because of a large loss of power and an increased error level[29]

Determinations of statistical significance were based on the F statistic, Wilk's Λ, and P values in MANCOVA. The larger the F statistic, the smaller the Λ and P values.[30] The homogeneity assumption of MANCOVA was satisfied ($P = 0.08$), which suggests that problems with statistical analyses across ethnic groups would be minimal, despite the fact that the three ethnic groups considerably differed in sample size.

Results

The MANCOVA results are summarized in Table 3. There was a significant overall main effect for ethnicity ($P = 0.02$), and all but one of the interaction terms reached statistical significance. The two-way interaction between time and intervention suggests a "virtual" intervention effect in that the organizational climate and well-being outcomes of the intervention group were better after the intervention than before compared with those of the control group. The time by ethnicity interaction indicates that the outcome variables for the three ethnic groups had different change patterns across the two time periods. However, all of these effects were subsumed within a significant three-way time by intervention by race interaction in 0.10 alpha level. This interaction indicates that the effects of the healthy work organization intervention were different, and changed differentially across time, for white, black, and Hispanic workers.

Table 4 contains the individual statistical results for each of the eight organizational climate and well-being variables. Cell means and standard deviations for the outcome variables can be found in Table 5. Looking first at the main effects for ethnicity, coworker support was lower among black workers than among whites or Hispanics ($P < 0.001$); however, interpretation of this result was qualified by significant two- and three-way interactions involving the ethnicity variable. The time by intervention interactions reveal that all of the organizational climate and well-being variables, with the exception of safety and health climate, were positively affected by the healthy work organization intervention. Significant time by ethnicity interactions were obtained for three of the measures: overall health status, job stress, and communication. White employees had higher levels of perceived job stress relative to blacks and Hispanics, with this becoming more pronounced over time, independent of the intervention. For health status, black employees reported poorer overall health after the intervention than before it, regardless of whether or not they were in the intervention group. Levels of perceived health status tended to be more stable across time for Hispanics and whites. For communication, more positive ratings were evident for blacks after the intervention, whereas the scores for the other two groups decreased across time.

The three-way interactions provide some insight into the differential intervention effects for the three ethnic groups. Significant interactions involving time by intervention by ethnicity were obtained for organizational support, coworker support, and involvement with supervisors. Viewed together, these three organizational climate variables show a pattern of more beneficial effects, from pre- to post-intervention, for black and Hispanic employees, relative to white employees. Similar interactions were not obtained for the two well-being measures.

Figure 1 contains a plot of cell means for coworker support. Perceived coworker support increased from baseline (pre-intervention) to follow-up (post-intervention) for black and Hispanics in the intervention group, whereas coworker support decreased across the two time periods for blacks and Hispanics in

TABLE 3
Effects of Ethnicity, Time, and Intervention on Organizational Climate and Well-being*

Effect	Wilk's Λ	F	Hypothesis df	P
Time	0.995	2.12	8.00	0.03
Intervention	0.997	0.98	8.00	0.45
Ethnicity	0.990	1.98	16.00	0.01
Time × intervention	0.993	2.84	8.00	0.00
Time × ethnicity	0.990	1.93	16.00	0.01
Intervention × ethnicity	0.997	.874	16.00	0.82
Time × intervention × ethnicity	0.992	1.56	16.00	0.07
Intercept	0.210	1468.61	8.00	0.00

* All variables were analyzed controlling for the effects of CSP and for any effects associated with respondents participating in the survey process at both time periods or at only one time period. These effects are not presented in Table 3.

TABLE 4
Organizational Climate and Well-being Components Affected by Ethnicity, Time, and Intervention*

Effect	df	F	P
Ethnicity			
Overall health status	2	2.51	0.08
Job stress	2	2.35	0.09
Organizational support	2	2.74	0.07
Coworker support	2	6.98	0.001
Involvement with others	2	2.95	0.05
Involvement with supervisors	2	1.71	0.18
Communication	2	1.17	0.31
Safety and health climate	2	1.22	0.29
Time × intervention			
Overall health status	1	8.20	0.004
Job stress	1	5.58	0.02
Organizational support	1	10.31	0.001
Coworker support	1	13.10	0.00
Involvement with others	1	3.46	0.06
Involvement with supervisors	1	5.98	0.02
Communication	1	3.34	0.07
Safety and health climate	1	3.76	0.07
Time × ethnicity			
Overall health status	2	4.02	0.02
Job stress	2	3.03	0.05
Organizational support	2	.53	0.59
Coworker support	2	1.33	0.27
Involvement with others	2	.54	0.58
Involvement with supervisors	2	.31	0.73
Communication	2	3.65	0.03
Safety and health climate	2	.35	0.70
Time × intervention × ethnicity			
Overall health status	2	1.08	0.34
Job stress	2	1.84	0.16
Organizational support	2	2.63	0.07
Coworker support	2	6.10	0.002
Involvement with others	2	2.19	0.11
Involvement with supervisors	2	2.78	0.06
Communication	2	1.61	0.20
Safety and health climate	2	2.19	0.11

* All variables were analyzed controlling for the effects of CSP and for any effects associated with respondents participating in the survey process at both time periods or at only one time period. These effects are not presented in Table 4.

the control group. The changed magnitudes were statistically significant, although they seemed small both in Figs. 1 and 2 ($P < 0.05$). For whites, perceived coworker support declined across time in both the intervention and control groups.

Involvement with supervisor reflects a slightly different pattern (Fig. 2). Overall, involvement with supervisor scores showed little changed or slightly decreased from baseline to follow-up. However, for blacks and Hispanics in the control group, the decrease from baseline to follow-up was significant ($P < 0.05$). For whites, decline in perceived involvement were relatively similar across both the intervention and control groups. Although all three ethnic groups perceived lower involvement with supervisors over time, the intervention seemed to buffer declines in perceived involvement among Blacks and the Hispanics, relative to Whites.

A similar buffering effect was evident for organizational support, but it was confined mostly to black employees. Even for the interactions that did not reach significance, the results of the analyses suggest that the intervention was more beneficial to minority than majority employees.

Discussion

This study examined ethnic differences in the effectiveness of a healthy work organization intervention on organizational climate and worker well-being. As predicted, the results showed a differential pattern of intervention effectiveness across ethnic groups, particularly in terms of changes in organizational climate perceptions. All of the organizational climate and well-being measures, with the exception of health and safety climate, showed positive changes as a function of the intervention process. However, there were significant interactions involving ethnicity for three of the organizational climate measures: organizational support, coworker support, and participation with supervisor. As shown in Figs. 1 and 2, black and Hispanic employees benefited more from the participatory, team-based intervention than did white employees. The results for coworker support show direct benefits for minority group employees in the intervention stores. However, for organizational support and participation with supervisor, it appears that the intervention served to limit or buffer adverse effects occurring throughout the organization. It is important to note that these effects came from data collected on all store employees, not just those who had directly participated in the team process. Somewhat surprisingly, these positive impacts on climate did not extend to the measures of work stress or general health status.

One limitation of this study was that the sample sizes of the white subgroups were considerably larger than that of the black or the Hispanic subgroups. However, this ethnic composition of survey participants was fairly representative of the true representation of the ethnic composition for the whole organization. For example, blacks and the Hispanics represented about 11% and 9% of all

TABLE 5
Organizational Climate and Well-being Variables by Ethnicity

| Variables	Intervention Group						Control Group					
	Black		Hispanic		White		Black		Hispanic		White	
	B	A	B	A	B	A	B	A	B	A	B	A
Organizational support	3.30 ± 0.84	3.22 ± 0.79	3.44 ± 0.76	3.19 ± 0.95	3.42 ± 0.78	3.15 ± 0.85	3.36 ± 0.82	2.90 ± 1.04	3.43 ± 0.94	3.02 ± 0.88	3.47 ± 0.76	3.13 ± 0.88
Coworker support	3.19 ± 0.91	3.43 ± 0.85	3.31 ± 0.84	3.54 ± 0.74	3.37 ± 0.81	3.30 ± 0.76	3.25 ± 0.80	3.12 ± 0.84	3.51 ± 0.82	3.17 ± 0.85	3.40 ± 0.79	3.33 ± 0.77
Involvement with others	3.04 ± 1.10	3.02 ± 1.06	3.00 ± 1.07	3.05 ± 1.27	3.15 ± 1.09	3.08 ± 1.08	3.04 ± 1.07	2.84 ± 1.19	3.34 ± 0.93	2.77 ± 1.11	3.26 ± 1.04	3.04 ± 1.04
Involvement with supervisor	3.18 ± 0.87	3.14 ± 0.87	3.17 ± 0.81	3.10 ± 0.73	3.24 ± 0.89	3.13 ± 0.88	3.31 ± 0.90	2.92 ± 0.94	3.21 ± 0.86	2.94 ± 0.87	3.34 ± 0.89	3.15 ± 0.93
Communication	3.24 ± 0.80	3.38 ± 0.65	3.25 ± 0.71	3.15 ± 0.83	3.31 ± 0.73	3.03 ± 0.76	3.24 ± 0.74	3.10 ± 0.81	3.31 ± 0.76	3.08 ± 0.82	3.37 ± 0.68	3.34 ± 0.79
Safety and health climate	3.87 ± 0.70	3.87 ± 0.86	3.92 ± 0.68	4.04 ± 0.71	3.93 ± 0.74	3.88 ± 0.77	3.89 ± 0.72	3.88 ± 0.85	4.00 ± 0.87	3.82 ± 0.63	4.01 ± 0.70	3.96 ± 0.74
Job stress	2.67 ± 0.93	2.55 ± 0.98	2.70 ± 1.00	2.53 ± 1.06	2.62 ± 0.91	2.84 ± 0.98	2.71 ± 0.83	2.48 ± 0.98	2.44 ± 0.99	2.76 ± 0.79	2.64 ± 0.92	2.83 ± 1.01
Overall health status	3.67 ± 0.96	3.45 ± 0.93	3.53 ± 0.89	3.72 ± 0.97	3.58 ± 0.88	3.61 ± 0.91	3.68 ± 0.78	3.33 ± 0.98	3.62 ± 1.04	3.55 ± 0.74	3.63 ± 0.86	3.57 ± 0.89

Note: B, before the intervention; A, after the intervention.
Mean ± standard deviation.

employees in the study stores, respectively. These groups, as a percentage of survey participants, were 8% and 6% in the baseline survey, and 7% and 7% in the follow-up survey. Therefore, the ethnic profile of our sample was similar to that of the organization. In this sense, this feature of the sample represents a strength of the study. Further support for the notion that our sample is a true representation of the organization is provided by the high response rates we obtained for the surveys (53% for baseline and 47% for follow-up).

Another issue related to the small sample sizes of the minority populations is the potential problem of low statistical power. Small sample sizes are often associated with low power, which can inflate type II error rates (ie, accepting differences between groups as not significant, when in fact the differences are significant).[31,32] This suggests that when there are few significant findings in the results of a study, a researcher may suspect problems associated with power. However, in the current study, most of the results involving ethnicity were significant, and the pattern of results was consistent both theoretically and statistically. Furthermore, the statistical power in the triple interaction of time × intervention × ethnicity was within acceptable boundary even with the smallest ethnic group size, 34, the Hispanic control group in follow-up survey based on Cohen and Cohen (1983)'s power statistic. This implies that statistical power is not a primary concern in this study, and that there is little of a likelihood that we overestimated the effectiveness of the healthy work organization, even though the black and the Hispanic subgroups were relatively small.

Another limitation had to do with aspects of the experimental design across baseline and follow-up survey administrations. Our analyses were performed using time as a between, not as a within, factor. Because of the retailer's requirements for com-
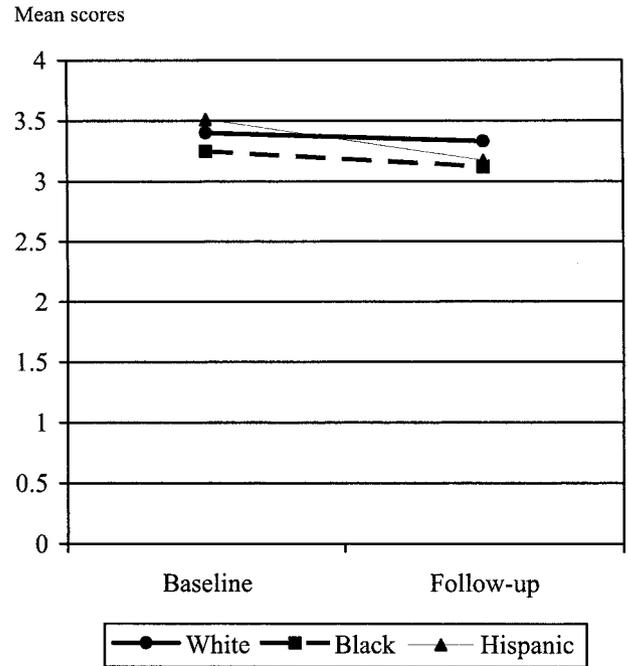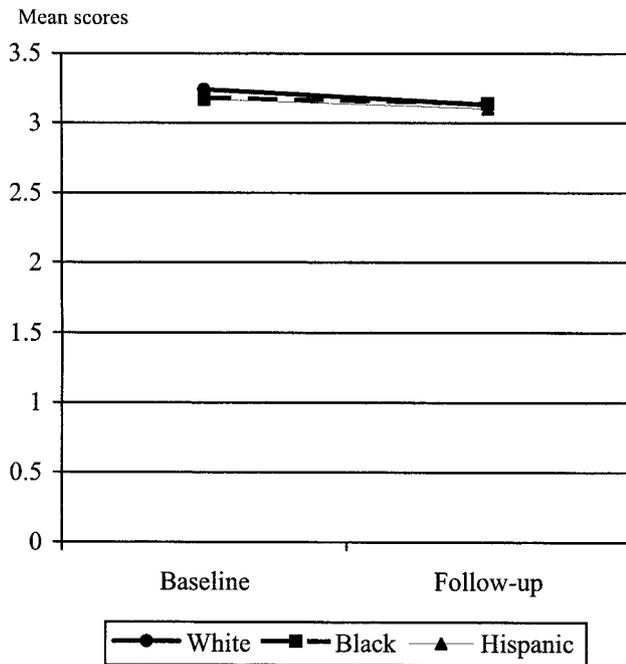
Intervention (Coworker support)

Mean scores

Control

Mean scores
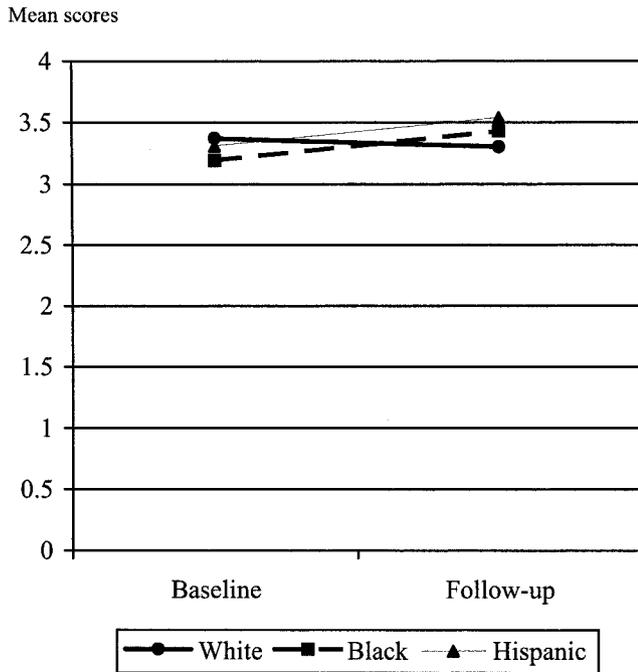
Fig. 1. Intervention effectiveness on coworker support by ethnicity.

Intervention (Involvement with Supervisor)

Mean scores
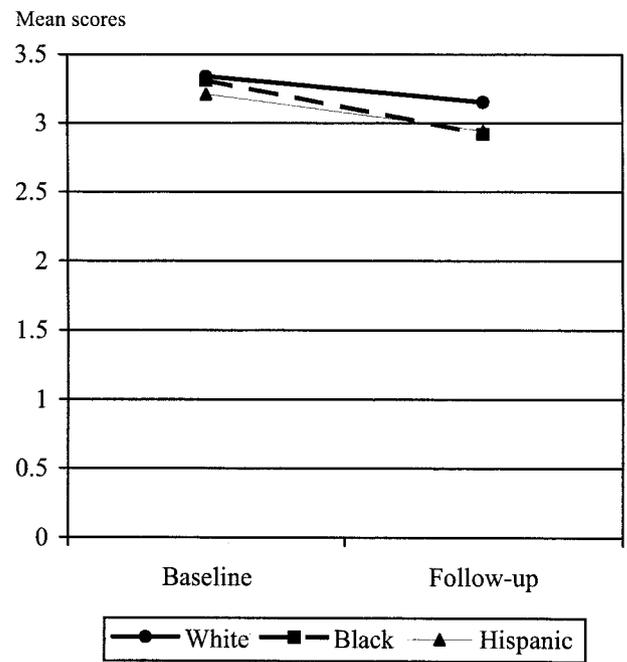

Control

Mean scores

Fig. 2. Intervention effectiveness on involvement with supervisor by ethnicity.

plete anonymity and confidentiality, we were not able to identify individuals across time periods, and therefore, we were not able to conduct repeated measures analyses. This has the potential to create problems with error terms. Fortunately, a question was included on the follow-up survey that asked whether the respondent had also completed the first survey. The response to this item served as a covariate in the analyses.

In this way, we kept the same cell sizes for the analyses and were able to remove the variance associated with completing or not completing the baseline survey. Despite this limitation, the longitudinal nature of our design represents a much-needed addition to other research that is primarily cross-sectional, and our results from baseline to follow-up reveal patterns that would not have been captured had only one time period been used.

Overall, the intervention effects observed in this study were greater for the ethnic minority groups than for the majority groups. One explanation for this pattern might stem from the minority proportions that existed in the ACTion teams. The proportions of Hispanics in the ACTion teams were slightly greater than the proportions of Hispanics among survey participants or among all employees in the organization. Perhaps the greater Hispanic representation had a strong favorable effect on Hispanics, maybe even more so than on whites. However, black employees also benefited favorably from the intervention effects, relative to whites, despite the fact that black representation on the ACTion teams mirrored the survey participant populations (and the population of the organization as a whole). Certainly, future research can benefit from examining intervention effectiveness among larger organizational populations, as a function of intervention team demographic composition. At least from this study, it appears that intervention team composition may have some influence on which segments of the larger population benefited from the intervention.

The fact that both blacks and Hispanics (and not just Hispanics) benefited more from the intervention, relative to whites, supports the idea that that these groups received direct benefits stemming from the intervention itself (and not so much from ACTion team composition). Theoretically, this can be explained via self-categorization and social identity

perspectives.[10,33] These theories suggest rather clearly that a participatory intervention, such as the one used in this study, can diminish in-group and out-group distinctions (which are often based in perceptions related to discrimination and social exclusion) by fostering a more inclusionary workplace environment. Our findings for the two social support measures (organizational support and coworker support) bear this out and suggest that the intervention did help promote feelings of support on the part of minority employees, both in terms of how they viewed the organization and how they perceived their peers and coworkers.

These effects occur because the participatory intervention creates an overarching inclusionary environment that transcends demographic differences within the organizational unit. Employees involved in the intervention, through the specified action plans, learn to work together toward supra-ordinate or common goals,[33,34] and the social in-groups within the larger population likely form as a result of shared goals, not demographics. In this sense, minority employees will perceive higher levels of favorable effects because they experience a "social shift" from out-group to in-group status, as the intervention effects take hold. White employees, although perhaps enjoying some favorable intervention effects, would see smaller incremental benefits because their social categorization status from pre- to post-intervention does not change (ie, in-group status both before and after the intervention).

Consistent with the above rationale, our results suggest that interventions which foster communication, shared goals, and active problem-solving can be useful approaches for making progress toward meeting workforce diversity goals and for providing diversity training. Such programs emphasize work-related goals and outcomes, and can therefore boost group integration and cohesiveness.[34,35] A participatory in-

tervention approach can help avoid unwanted side effects often associated with traditional diversity training, namely that trying to help people understand each other's differences sometimes actually increases awareness of group distinctions, which can then lead to the very types of bias and exclusionary behaviors that the programs were designed to minimize.[36]

Although the intervention produced overall positive effects on job stress and health status (significant time by intervention interactions), differential effects for the three ethnic groups were not found. The absence of effects consistent with the climate findings is somewhat difficult to explain. Looking at the work stress results, it does appear at first glance that the intervention benefited blacks and Hispanics to a greater extent than it did whites (see Table 4); but for blacks at least, their stress levels improved across time periods regardless of whether they received the intervention. For the health status measure, the perceived health status of blacks declined across time for those in both the intervention and control groups. For the other two racial groups, the levels of perceived health status were somewhat more stable across time. One possibility is that the changes in organizational climate dimensions may represent leading indicators of subsequent changes more directly related to employee health and well-being. The current popularity of annual or biannual climate surveys in many organizations suggests that climate measures are often seen in this light. The intervention was essentially designed to alter the climate of the organization, with the expectation that such changes should translate into improvements in work role adjustment and employee health. The effects obtained on the climate measures suggest that the first part of this change sequence was accomplished.

In summary, this study suggests that a team-based, problem-solving intervention can impact work climate

and may be particularly beneficial to minority group employees. A longer follow-up period may be needed to detect positive effects on employee stress levels, productivity, and other health and well-being measures. The results of this study also suggest that organizational climate may play a mediating role in producing these effects. Another possibility is that these changes in climate may operate by enhancing organizational commitment, or the employee's psychological attachment to the organization.[37–39] These hypotheses much await subsequent research.

As a final point, it is worth noting that the positive effects of this intervention were not limited to employees who had directly participated in the process. One of the limitations of many previous employee involvement interventions is that the benefits of participation, in terms of changes employee perceptions, attitudes, and behaviors, have often been confined to those who had directly participated in the process.[40] The present results suggest that diffusion of benefits can occur when the intervention process includes specific strategies intended to boost general employee awareness and to inform other organization members about the purposes, activities, and accomplishments of the problem-solving teams.

References

1. Dembe A. Social inequalities in occupational health and health care for work-related injuries and illnesses. *Int J Law Psychiatry.* 1999;22:567–579.
2. Mamman A. A diverse employee in a changing workplace. *Organization Studies.* 1996;17:449–477.
3. U.S. Department of Health and Human Services. *Healthy People 2010.* Washington, DC: U. S. Department of Health and Human Services; 2000.
4. Johnson JV, Hall EM. Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population. *Am J Public Health.* 1988;78:1336–1342.
5. Collins S. Black mobility in white corporations: up the corporate ladder but out on a limb. *Social Problems.* 1997;44:55–67.
6. James EH. Race-related differences in promotions and support: underlying effects of human and social capital. *Org Sci.* 2000;11:493–508.
7. Johnston WB, Packer AH. *Workforce 2000—Work and Workers for the 21st Century.* Indianapolis, IN: Hudson Institute; 1987.
8. Valentine S, Mosley G. Aversion to women who work and perceived discrimination among Euro-Americans and Mexican-Americans. *Perceptual & Motor Skills.* 1998;86:1027–1033.
9. O'Reilly C, Chatman J Culture as social control: Corporations, cults, and commitment. In: Staw B, Cummings L, eds.. *Research in Organizational Behavior*, [18]. Greenwich, CT: JAI Press; 1996.
10. Riordan CM, Shore LM. Demographic diversity and employee attitudes: an empirical examination of relational demography within work units. *J Appl Psychol.* 1997;82:342–358.
11. Williams KY, O'Reilly CA. Demography and diversity in organizations: a review of 40 years of research. *Res Org Behav.* 1998;20:77–140.
12. DeJoy DM, Wilson MG. Organizational health promotion: broadening the horizon of workplace health promotion. *Am J Health Promotion* 2003;17:337–341.
13. Rosenstock L. Work organization research at the National Institute for Occupational Safety and Health. *J Occup Health Psychol.* 1997;2:7–10.
14. Vandenberg RJ, Park KO, DeJoy DM, et al. The healthy work organization model: Expanding the view of individual health and well-being in the workplace. In: Perrewé P, Ganster D, eds. *Research in Occupational Stress and Well-Being, Vol. 2.* New York; JAI Press/Elsevier Science; 2002:57–115.
15. Schneider B, Reichers AE. On the etiology of climates. *Personnel Psychol.* 1983;36:19–39.
16. Eisenberger R, Cummings J, Armeli S, et al. Perceived organizational support, discretionary treatment, and job satisfaction. *J Appl Psychol.* 1997;82:812–820.
17. Eisenberger R, Huntington R, Hutchison S, et al. Perceived organizational support. *J Appl Psychol.* 1986;71:500–507.
18. Ribisl KM, Reischl TM. Measuring the climate for health at organizations: development of the worksite health climate scales. *J Occup Med.* 1993;35:812–824.
19. Vroom VH. Some personality determinants of the effects of participation. *J Abnormal Soc Psychol.* 1995;59:327.
20. Caplan RD, Cobb S, French JRP, et al. *Job Demands and Worker Health.* (Rep. No. NOISH Publication No. 75–160). Washington, DC: U. S. Government Printing Office; 1975.
21. Saal FE, Knight PA. Organizations and behavior. In: FE Saal, PA Knight, eds. *Industrial/Organizational Psychology*, 2 ed. Pacific Grove, CA: Brooks/Cole Publishing Company; 1995:360–398.
22. Vandenberg RJ, Richardson H, Eastman L. High involvement organizations: their antecedents and consequences. *Groups Org Manage.* 1999;24:300–339.
23. DeJoy DM, Murphy LR, Gershon RM. The influence of employee, job/task, and organizational factors on adherence to universal precautions among nurses. *Int J Indust Ergonom.* 1995;16:43–55.
24. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav.* 1983;24:385–396.
25. Ware JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). *Med Care.* 1992;30:473–481.
26. Du Toit M, Du Toit S. *Interactive LISREL: User's Guide.* Lincolnwood, IL: Scientific Software International, Inc; 2001.
27. Norusis MJ. *SPSS Base 10.0 User's Guide.* Chicago, IL: SPSS; 2002.
28. Rutherford A. An introduction to general linear models: regression, analysis of variance, and analysis of covariance. In: Rutherford A, ed. *Introducing ANOVA and ANCOVA: A GLM Approach.* Thousand Oaks, CA: Sage Publication; 2001:1–177.
29. West SG, Aiken LS, Krull JL. Experimental personality designs: Analyzing categorical by continuous variable interactions. *J Personality.* 1996;64:1–48.
30. Huberty CJ. *Multivariate Methods in Analyses.* New York: John Wiley & Sons; 1994.
31. Cohen J, Cohen P. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences.* Hillsdale, NJ: Lawrence Erlbaum; 1983.
32. StatSoft Inc. Power analysis. In: *Electronic Textbook.* Tulsa, OK: StatSoft. Available at: http://www.statsoft.com/textbook/stathome.html. Accessed May 5, 2004.
33. Hogg MA, Turner JC. Intergroup behavior, self-stereotyping and the salience of social categories. *Br J Social Psychol.* 1987;26:325–340.
34. Locke EA, Latham GP. Building a practically useful theory of goal setting and task motivation. *Am Psychol.* 2002;57:705–717.
35. Sherif M. *The Psychology of Social Norms.* New York: Harper & Row; 1936.
36. Nemeth P, Christensen S. The challenge of cultural diversity: harnessing a diversity of views to understand multicultural-

ism. *Acad Manage Rev.* 1996;21:434–462.

37. Mathieu JE, Zajoc DM. A review and meta-analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychol Bull.* 1990;108:171–194.

38. Meyer JP, Stanley DJ, Herscovitch L, et al. Affective,continuance,&normativecommitment to the organization: a meta-analysis of antecedents, correlated, and consequences. *J Vocational Behav.* 2002;61:20–52.

39. Reade C. Antecedents of organizational identification in multinational corporations: Fostering psychological attachment to the local subsidiary and the global organization. *Int J Human Resource Manage.* 2001;12:1269–1291.

40. Shapiro G. Employee involvement: opening the diversity Pandora's box. *Personnel Rev.* 2000;29:304–323.