

Team Racial Composition, Member Attitudes, and Performance: A Field Study

ANTHONY M. TOWNSEND and K. DOW SCOTT*

Attitudinal, performance, and demographic data from 1200 workers on self-directed teams are examined to determine if racial composition affects team performance, if African-Americans and whites have different attitudes toward their teams and team performance, and whether any differences explain performance differences associated with different racial composition. Results indicate that racial composition affects team performance and racial differences in team and performance-related attitudes. Differences in attitudes reduce, but do not eliminate, racial composition effects on team performance.

ALTHOUGH OPEN RACIAL ANTAGONISM HAS LARGELY PASSED FROM the workplace, a continuing subtext of stereotype and belief fuels an implicit tension among workers from different racial and ethnic backgrounds. Race, particularly between African-Americans and whites,¹ is a demarcation of an “us” and a “them,” with each group holding certain ideas about the other and about themselves (Thomas, Phillips, and Brown, 1998). Despite the historical tension between African-Americans and whites in the workplace, researchers have only recently begun to examine how race may associate with different attitudes, expectations, and motivations in the workplace. Although we do not believe that race per se *determines* an individual’s attitudes toward work and rewards, it

*Department of Business Administration, College of Business, University of Delaware and Institute of Human Resources and Industrial Relations, Loyola University. E-mail: amt@udel.edu and dscott@luc.edu.

We wish to thank Nasser Daneshvary and Bradley S. Wimmer for their help with this article.

¹The research that we are presenting here only considers differences between African-Americans and whites; no other groups are significantly represented (all other minorities equal less than 1 percent of the total) in our sample, and we excluded them from the analysis.

can contribute to a set of life experiences that affects these attitudes. Thus, being African-American or white can be a proxy for a set of psychosocial experiences that lead to the formation of commonly held attitudes within each race. To the extent that these attitudes are manifest or affect various aspects of a racial group's performance in the organization, they add to the body of racial stereotype and the potential for continued tension.

Our interest in differing attitudes between African-Americans and whites developed as we gathered qualitative information in preparation for a series of team studies. We asked a number of focus groups (made up of either work teams or facility management) to identify factors that they believed affected team performance. In several of these focus groups, participants very bluntly stated that they felt that the racial composition of teams made a difference in performance; other participants often added similar "unofficial" comments when the focus group sessions were over. It became clear that there was a perception among a number of workers, facilitators, and managers that teams that had higher percentages of African-Americans did not perform as well as did predominantly white teams. Clearly, a perceived racial difference was affecting the organizational experience of workers of both races.

Given this organizational climate, we believed that it would be interesting to examine how (or if) race affects team performance and to explore some of the underlying factors associated with any "race effect." The resulting research examines the impact that teams' racial composition has on team performance and then explores how racially associated work attitudes explain these performance differences.

Literature Review

Research has indicated that a range of demographic differences among workgroup members can affect such outcomes such as team cohesion, performance, innovation, absenteeism, and turnover (Lichtenstein et al. 1997; Pfeffer 1983, 1985; Tsui and O'Reilly 1989). Guzzo and Shea (1992) and Baugh and Graen (1998), however, note that this area of research is still quite limited and that there have been few empirical investigations attempting to evaluate the effects of differences in the demographic composition of teams.

Recently, Harrison, Price, and Bell (1998) have specifically addressed the issue of demographic diversity in workgroups and found that the effect of "surface" demographic differences (e.g., race, gender, education level) lessen over time, whereas underlying attitudinal diversity increases in

importance over time and negatively affects work group cohesion. Although Harrison, Price, and Bell (1998) do not examine the specific relationship between what they term “surface demographics” and deep-level attitudinal diversity, they suggest that the importance of deep-level attitudinal differences may provide a key to understanding what appear to be lasting differences associated with surface demographics (i.e., race). Specifically, if (as suggested by Cox, Lobel, and McLeod, 1991) race is a proxy for a set of attitudinal differences that occur from extra- or intra-organizational experiences common to a racial group, then differences in team performance that would appear to be associated with race in fact may be associated with attitudes and experiences for which race is a proxy.

At the collective level, only a relatively small body of empirical literature examines the effects of racial diversity on teamwork, usually as part of a broader set of demographic factors. These studies (see Watson, Kumar, and Michaelson 1993; Cox, Lobel, and McLeod 1991; McLeod, Lobel, and Cox 1996; O’Reilly, Caldwell, and Barnett 1989; Zenger and Lawrence 1989) focus either on dichotomous (i.e., heterogeneous versus homogeneous) group differences or on the individual group members’ demographic fit with their group and the impact of that fit on individual behavior. None of this literature focuses on performance related to the relative composition of diverse groups; e.g., they do not evaluate whether differing proportions of any of their race or ethnic groups affect group performance. With the exception of Harrison, Price, and Bell (1998), Baugh and Graen (1998), and Riordan and Shore (1997), the literature also fails to investigate the effects of diversity on the team’s overall ability to become a cohesive entity.

Race and performance. Although we are unable to identify research that discusses race and *team* performance [with the exception of Cox, Lobel, and McLeod (1991), which we discuss below], there is a small body of literature that indicates that *individual* performance differences exist between African-Americans and whites. Greenhaus, Parasuraman, and Wormley (1990) found that African-American subjects had lower performance ratings than whites independent of rater bias. The authors noted a number of potential factors associated with these differences, such as extraorganizational effects or a differing experience of the organization, as well as the possibility that there might remain some undetected form of bias in the evaluation. Several other performance studies have at least partially refuted the notion that racial bias is the sole cause of lower performance evaluations of African-American workers and have indicated that in a number of settings, African-Americans do not perform as

well as whites (Avolio and Waldman 1987; Waldman and Avolio 1991; Sackett and Dubois 1991; Pulakos et al. 1989).

Race and work-related attitudes. Although a significant body of research has examined a variety of social and psychological differences between African-Americans and whites (Levin 1997), relatively little of this research examines differences in work-related attitudes. Nonetheless, the assertion of racially associated differences in psychological attitudes in general justifies our belief that there may be racially associated differences in work-related attitudes as well.

African-Americans and whites appear to have different attitudes toward evaluative activities such as testing, with African-Americans sometimes reporting greater suspicion of the fairness of the evaluative instrument than whites (Chan 1997; Schmit and Ryan 1997). If this same suspicion of evaluative fairness is carried into the work environment, it may translate into lower perceptions of procedural or distributive justice, with subsequent impact on performance. Baugh and Graen (1997) note that among heterogeneous work teams, white males tend to devalue the team experience compared with their counterparts on homogeneous teams. Women and minority group members do not do so.

Cox, Lobel, and McLeod (1991) actually examined how racial differences in attitude affect team performance by examining the way that teams of African-Americans and whites responded to a performance challenge. In their study, racially homogeneous teams in competition with other teams could either (1) offer cooperative responses and ensure that both teams could succeed, but at a lower level of reward, or (2) offer competitive responses in anticipation of succeeding unilaterally at a higher level of reward. African-Americans more frequently chose the cooperative approach, which reduced their winnings but assured them of some level of reward. Cox, Lobel, and McLeod (1991) interpreted this choice as evidence of a greater collective impulse among African-American team members, in as much as African-American teams opted for a more integrative (but lower payoff) solution to their competitive challenge. Cox, Lobel, and McLeod also clearly indicate that whites are more performance-oriented and are willing to risk more on achieving higher levels of performance. Applied to the work environment, this may indicate that white teams have a greater performance orientation or place more value (valence) on potential rewards than do African-American teams. Since the work environment is frequently dominated not only numerically by white employees but also largely by white managers, there also would

seem to be a potential dissonance between the preferred work orientation of African-Americans and the dominant culture in their organizations.

Research questions. In our research design we have adapted the Harrison, Price, and Bell (1998) formulation of surface demographic (i.e., race) versus deep-level attitudinal differences to examine potential racial differences in actual team performance. For our purposes, Harrison, Price, and Bell (1998) provide a schematic for examining racial differences in performance; assuming that racial differences exist, we can examine whether or not race is actually a proxy for differences in deep-level attitudes that in turn explain differences in team performance.

We felt that two types of deep-level attitudes might prove relevant in exploring racial differences in performance in a teamwork environment, assuming such performance differences exist. At one level, we felt that there may be racial differences in the view of the team; thus we selected two team process variables that were associated with performance in other research. *Team commitment* has been associated with performance in a number of studies (see Bishop and Scott 2000; Erez and Arad 1986; Scott and Townsend 1994; Wang and Katzev 1990), as has *team cohesion* (Klein and Mulvey 1995; Mullen and Copper 1994; Podsakoff, MacKenzie, and Ahearne 1997; Prapavessis and Carron 1997). Given that both African-Americans and whites in our sample will be working in the same environment and on generally heterogeneous teams, racial differences in either of these variables should be of interest.

In a second category of deep-level attitudes, we selected *self-efficacy* and *valence for performance* measures to represent individual elements of motivation. *Self-efficacy* (Bandura and Cervone 1983; Earley and Lituchy 1991) provides the individual's sense of potential contribution to the team's performance, whereas *valence for performance* (Garland 1984, 1985) provides an indication of the value of performing well. We are not proposing a specific model here; our intent is simply to examine the differences in individual motivational attitudes and their relationship with team performance. All these attitudinal measures have been widely examined and provide a starting point from which to examine racial differences in work-related attitudes and the effect of the aggregation of these attitudes on team performance.

Given the information from our focus groups and our review of the literature, we will attempt to answer the following research questions:

1. What effect does a team's racial composition have on team performance?

2. Do African-Americans and whites have different perceptions of their team environment (i.e., *team commitment* and *team cohesion*)?
3. Do African-Americans and whites differ in attitudes toward performance (i.e., *self-efficacy* and *valence for reward*)?
4. When aggregated to the team level, do differences in team and performance attitudes explain differences in performance among teams with different racial composition?

Methods

Sample. The sample for this study consists of 122 self-directed work teams representing 1200 sewing machine operators employed in three plants operated by a large U.S. apparel manufacturer in the Mid-Atlantic region. The manufacturer itself is a subdivision of a very large multinational corporation based in the United States. Each plant that we studied had an administrative cadre consisting of a plant manager, assistant manager, and a human resources manager. All the plant managers and assistant managers were white males; one of the human resources managers was a white male, one a white female, and one an African-American female. In addition to these administrative personnel, there were a number of facilitators (approximately 8 to 10)² assigned to the shop floor; these facilitators had no managerial responsibility and reportedly worked with different teams at different times. Facilitators were trained primarily as support personnel for the teams; their primary role was to ensure that size assignments and color selections were sent out to the teams and to monitor the processing of completed garments once they left the individual teams. Facilitators were all female and predominantly white, although each facility had at least one African-American facilitator.

The participants are mostly female (over 99 percent) and average 34 years of age. The turnover rate among teams is approximately 13 percent, which is low for the apparel industry (which often ranges from 40 to 100 percent according to plant managers). Team-based work and pay systems were introduced at these plants over 2 years ago; the teams that participated in this study have been intact for at least 1 year.³

² We did not survey the administrative personnel or the facilitators; we also have no absolute count of the racial breakdown of the facilitators. We tried to meet with all the facilitators during our focus groups, and our notes indicate that one or two facilitators at each plant were African-American.

³ Although the teams have been intact for 1 year, the turnover rate does indicate that some teams must replace members who have left. When a vacancy occurs on a team, it can be filled by a member of another

Teams consist of 10 to 14 individuals who perform one of seven to eight different activities. Some activities inherently take longer to perform, and teams have multiple members performing these activities in order to balance the workflow. Cut garment pieces are supplied to the team to be assembled (sewn) into garments and packaged; teams are assigned sizes and colors when they pick up a new lot of cut pieces. Because size assignment affects productivity (big sizes take longer to make), facilitators are required to distribute sizes evenly among the teams.⁴ If the team performs at 100 percent (engineered standard), they will produce 34 dozen garments per hour (for large teams; one-half that for small teams), and each member of the team will earn \$7.05 per hour; 110 percent will produce 38 dozen garments and earn \$7.76 per hour, 120 percent will produce 41 dozen garments and earn \$8.46 per hour, and so forth. Although each team member is trained to specialize in one task (his or her regular activity), employees are also cross-trained to perform other tasks so that they can provide assistance if there is a bottleneck at a particular workstation. All members of the team are paid the same, based on the team's productivity; there is no hierarchy of positions within the team's structure.

Teams receive continuous feedback on their performance through an electronic performance scoreboard located in their immediate work area. Production results and team production goals are broadcast continuously on the system, and thus team members can see the team production level and how close they are to achieving their team goal at anytime. This scoreboard is visible to all team members, or anyone in the team's work area, including nearby teams. A history of each team's weekly production results is charted and posted in the room where team meetings are held. Because performance levels are posted in a common area, it is readily apparent to team members how their team's performance compares with other teams in the facility.

Data collection. As noted earlier, we conducted an extensive series of interviews and focus groups among plant employees and managers. Our aim in this was to determine what team members and management felt

team (who must then fill its vacancy) or by taking a new trainee. Between-team transfers are permitted only when there is a legitimate vacancy on a team. According to our focus-group participants, most between-team transfers are related to either social conflicts or a move to a team that is working toward a higher or lower level of performance.

⁴ When the sewing machine operators told us about the size issue during our focus-group work, we asked if there was any favoritism in size assignments; all respondents indicated that the assignments were fair but that they much preferred to work on smaller garments.

characterizes effective teams, as well as to better understand the team-sewing environment. Over 150 team members and managers were involved in this process. Following the focus groups and an extensive literature review, we developed a survey instrument and pilot tested it among employees at a facility that was not included in the final data collection. We then administered a revised survey instrument on site (the sponsoring organization paid the employees while they completed the questionnaire). During the survey administration, no managerial employees were present, and participants were assured that all individual responses were confidential.

*Variable measures.*⁵ *Demographic measures.* In addition to their race, we asked employees to report the following on the confidential questionnaire:

- *Age:* Age in years.
- *Education level:* 1 = some high school, 2 = high school graduate, 3 = some college, 4 = college graduate.
- *Marital status:* 1 = married, 2 = single.
- *Number of dependents:* Number of persons who they were responsible to care for.
- *Tenure:* Respondents gave date of hire, and we calculated tenure.

Since each respondent reported his or her team membership, we were able to calculate the proportion of African-Americans and whites on a team (*percent white*), as well as the teams' average age, education level, marital status, number of dependents, and tenure. Additionally, Bettenhausen (1991) and Guzzo and Dickson (1996) both note that team size may have an important impact on team performance and on the experience of team members. Our sample contained two sizes of teams, which we coded as 0 for the 7-member teams and 1 for the 13-member teams, which we include among the demographic variables.

Team performance measure. The team performance measure is the team's average sewing production relative to the firm's engineered standard. The sponsoring organization provided us with performance data for 3 months after the survey administration. The measure is reported as a percentage, with 100 percent representing the base standard, 110 percent as 10 percent above base, etc. Although there were three different

⁵ All scale items are available from the first author.

facilities participating in the study, teams at each facility worked in the same product, process, and technical context. Two plants used teams of 13, whereas a third used teams of 7; 13-member teams were expected to produce 34 dozen garments per hour, whereas 7-member teams were expected to produce 17 dozen to make the base rate of 100. As noted earlier, we include team size as a control variable in our analyses, which should control for any differences in productivity associated with efficiencies in the team size dynamic. Other than these controlled-for differences in team size, we know of no other reason for performance differences associated with the team being located in a particular plant.

Attitudes toward the team. We adapted the *team commitment* measure from Mowday, Steers, and Porter (1979), as had Bishop and Scott (2000), who discuss the validation of this scale in detail. The scale is designed to measure the degree to which team members invest loyalty and energy toward their team (rather than elsewhere). The 15-item scale used in our study had a Cronbach's $\alpha = 0.89$ and consisted of the following types of items to which respondents were asked to indicate their agreement level:

1. I am willing to put in a great deal of effort beyond that normally expected in order for the team to be successful.

<i>strongly disagree</i>	<i>disagree</i>	<i>slightly disagree</i>	<i>slightly agree</i>	<i>agree</i>	<i>strongly agree</i>
--------------------------	-----------------	--------------------------	-----------------------	--------------	-----------------------

2. I talk up this team to my friends as a great team to work on.

<i>strongly disagree</i>	<i>disagree</i>	<i>slightly disagree</i>	<i>slightly agree</i>	<i>agree</i>	<i>strongly agree</i>
--------------------------	-----------------	--------------------------	-----------------------	--------------	-----------------------

3. I feel very little loyalty to this team (reverse scored).

<i>strongly disagree</i>	<i>disagree</i>	<i>slightly disagree</i>	<i>slightly agree</i>	<i>agree</i>	<i>strongly agree</i>
--------------------------	-----------------	--------------------------	-----------------------	--------------	-----------------------

Our measure of *team cohesion* is adapted from Seashore's Group Cohesiveness Index (Miller 1991); it consists of five items with $\alpha = 0.82$. The Seashore scale is designed to measure the way people get along together, stick together, and help each other in their work. It consists of the following types of items:

1. Do you feel you are really a part of your team?
 Really a part of my team.
 Included in most ways.
 Don't feel that I really belong.

2. Compared with other teams, how does yours get along together?
 Better than most.
 About the same as most.
 Not as well as most.
3. Compared with other teams, how do your teammates stick together?
 Better than most.
 About the same as most.
 Not as well as most.

Attitudes toward performance. To measure efficacy, we asked respondents to assess the likelihood of they themselves making a contribution to the team sufficient to perform at ascending percentages of performances and to attach a probability of 1 to 100 for each of these assessments. We used the following format:

1. Can you personally sew at 100 percent? Yes No
 How certain are you of this (between 0 and 100 percent)?

2. Can you personally sew at 105 percent? Yes No
 How certain are you of this (between 0 and 100 percent)?

3. Can you personally sew at 110 percent? Yes No
 How certain are you of this (between 0 and 100 percent)?

The scale consists of a “magnitude component” (how much the employee anticipates accomplishing) and a “strength component” (the employee’s confidence in producing at high magnitude). The magnitude component, *anticipated efficacy*, is a summation of affirmative responses to a series of statements of “I can complete x units” that have ascending values of x . The scale is designed to measure how much the respondent believes he or she can accomplish (the range of values includes as a midpoint the performance average of study participants). The strength component, *efficacy confidence*, is the sum of the positive probabilities reported for each level of the scale; e.g., we summed the probabilities for each “I can” answer. The strength scale is designed to capture the respondent’s belief in the *probability* that he or she will perform as well as he or she stated in the strength measure.

To determine *valence for performance*, we chose a measure suggested by Garland (1984, 1985). In this measure, participants evaluate the value they place on successively higher levels of their own performance.

Garland (1984) notes that this method of measurement captures the entire set of rewards of performance rather than focusing solely on pay valence. This method also fits better with our focus-group data, which suggested that many things about performing well were important, including recognition and social standing. Ten items were constructed for this scale that asked, "How satisfied would you be if you sewed at 100 percent speed for a week?" Each item was identical for increasing levels of performance, ranging in 5 percent increments from 100 percent to a high value of "greater than 140 percent." We began the range calibration at 100 percent because this was the minimum level at which teams could perform and remain employed. Employees had the choice of responding to each item as (1) extremely dissatisfied, (2) very dissatisfied, (3) somewhat dissatisfied, (4) moderately satisfied, (5) very satisfied, and (6) extremely satisfied. The higher the score for this scale, the more attractive the individual found higher personal performance. We average the 10 items to compute a final metric between 1 and 6.

Analysis and Results

Table 1 summarizes the relevant individual-level means, standard deviations, and correlations for the measures used in this study; Table 2 summarizes the same for measures aggregated to the team level. In Table 2, the correlational analysis indicates a significant association between *team productivity* and *percent white* ($r_{\text{prod.} \times \text{race}} = 0.405$), as well as with *team commitment* ($r_{\text{prod.} \times \text{commitment}} = 0.432$), *team cohesion* ($r_{\text{prod.} \times \text{cohesion}} = 0.354$), *anticipated efficacy* ($r_{\text{prod.} \times \text{anticipated eff.}} = 0.373$), and *efficacy confidence* ($r_{\text{prod.} \times \text{efficacy conf.}} = 0.315$). In the following sections we present the analysis results relevant to each of our research questions.

Question 1: What effect does a team's racial composition have on team performance?

To answer this question, we first determine the aggregate racial composition of each team (as the percentage of whites on the team) and then examine the relationship between *percent white* and team performance. African-American respondents were coded as 0, and white respondents were coded as 1. As noted earlier, the Pearson's correlation (see Table 2) between race and performance is positive ($r_{\text{prod.} \times \text{percent white}} = 0.38$), indicating that as the proportion of whites increases, so too does productivity. A simple bivariate regression also indicates that performance increases as the proportion of whites on a team increases ($R^2 = 0.14$, $F = 20.15$,

TABLE 1
 MEANS, STANDARD DEVIATIONS BY RACE, AND OVERALL CORRELATIONS OF
 INDIVIDUAL-LEVEL VARIABLES^a ($n_{\text{total}} = 1003$; $n_{\text{white}} = 715$; $n_{\text{AA}} = 288$)

	\bar{x}_{white}	δ_{white}	\bar{x}_{AA}	δ_{AA}	1	2	3	4	5	6	7
Team commitment	4.11	1.04	3.98	1.10							
Team cohesion	4.31	0.57	3.23	0.58	0.69*						
Anticipated efficacy	8.08	2.42	8.19	2.59	0.06	0.07*					
Efficacy confidence	771.80	234.08	724.00	290.50	-0.00	0.03	0.42*				
Valence	3.22	1.17	2.66	1.19	0.14*	0.15*	0.39*	0.31*			
Tenure	5.11	3.90	4.24	3.49	0.16*	0.16	0.11*	0.03	0.20*		
Education level	2.08	0.72	2.12	0.68	-0.06*	-0.03	0.01	0.10*	0.04	-0.09*	
Number of dependents	1.37	1.65	1.62	2.26	-0.00	0.01	0.02	-0.04	-0.02	-0.01	-0.08*

^aAt the individual level, race, team size, and marital status are dichotomous; as such, we do not report the Pearson's correlations for them.

*Significant at $p < 0.05$.

$p = 0.0001$; $\beta_{\text{percent white}} = 17.13$, $p = 0.0001$) and that, taken alone, *percent white* predicts about 14 percent of variance in team performance.

We also conduct a second regression, which includes the variables (aggregated at the team level) of *age*, *tenure* (in the plant), *marital status*, *number of dependents*, *education level*, and *team size* in order to determine if controlling demographic differences (and team size associations) between African-Americans and whites will reduce or eliminate the race effect. The addition of control variables increases the amount of variance explained but does not reduce the race effect ($R^2 = 0.50$, $F = 16.45$, $p = 0.0001$). An examination of the t values for the regression coefficients indicates that *race* ($\beta_{\text{percent white}} = 11.66$), *tenure* ($\beta_{\text{tenure}} = 3.81$), *age* ($\beta_{\text{age}} = -0.83$), *marital status* ($\beta_{\text{marital status}} = -15.36$), and *team size* ($\beta_{\text{team size}} = -17.42$) are significant independent predictors of performance. In summary, we find that a larger proportion of whites, more senior, older, single workers, on small teams results in higher levels of team performance.

Question 2: Do African-Americans and whites have different perceptions of their team environment, i.e., team commitment and team cohesion?

As noted earlier, both *team commitment* and *team cohesion* are correlated with performance (see Table 2). To determine if there are differences between individual African-American and white perceptions of *team commitment* and *team cohesion*, we conduct an analysis of variance (ANOVA) between the two groups for each variable. Our analysis (see

TABLE 2

ANOVA, MEANS, STANDARD DEVIATIONS, AND CORRELATIONS OF TEAM-LEVEL VARIABLES^a (*n* = 126)

	<i>F</i>	\bar{x}	δ	1	2	3	4	5	6	7	8	9	10
Productivity	—	115.80	0.38										
Percent white	—	0.84	0.37	0.38*									
Team commitment	5.15*	4.11	0.71	0.43*	0.03								
Team cohesion	6.49*	4.32	0.41	0.35*	0.01	0.89*							
Anticipated efficacy	0.13	7.98	1.36	0.37*	-0.16	0.25*	0.21*						
Efficacy confidence	18.70*	772.25	115.34	0.31*	0.21*	0.11	0.05	0.44*					
Valence	20.40*	3.02	0.80	0.78*	0.27*	0.39*	0.33*	0.59*	0.47*				
Tenure	—	4.83	2.28	0.46*	0.09	0.35*	0.34*	0.39*	0.19*	0.43*			
Education level	—	2.07	0.31	-0.01	0.24*	-0.05	-0.01	-0.06	0.24*	0.08	-0.16		
Married (1 = yes)	—	1.37	0.21	-0.36	-0.27*	-0.08	-0.09	-0.08	-0.15	-0.30*	-0.48*	0.01	
Number of dependents	—	1.37	0.61	-0.03	-0.04	-0.01	0.06	-0.08	-0.13	-0.09	0.01	-0.04	-0.19*

^aWe do not include team size here because it is a dichotomous variable.*Significant at $p < 0.05$.

Table 2) indicates that African-Americans report lower *team commitment* ($\bar{x}_{\text{African-American}} = 3.98$, $\bar{x}_{\text{white}} = 4.15$) and less *team cohesion* ($\bar{x}_{\text{African-American}} = 4.24$, $\bar{x}_{\text{white}} = 4.34$). According to this analysis, African-Americans see their teams as less cohesive entities and are less committed to their teams.

Question 3: Do African-Americans and whites differ in attitudes toward performance?

All three of the performance attitude measures are correlated with performance (see Table 2). To determine if there are differences between individual African-American and white perceptions of *valence*, *anticipated efficacy*, and *efficacy confidence*, we conduct a second, individual-level ANOVA between the two groups for each of these variables. Our analysis (see Table 2) indicates that African-Americans reported lower *valence* ($\bar{x}_{\text{African-American}} = 99.77$, $\bar{x}_{\text{white}} = 100.09$) and *efficacy confidence* ($\bar{x}_{\text{African-American}} = 723.97$, $\bar{x}_{\text{white}} = 797.91$) and do not differ with respect to *anticipated efficacy*. According to this analysis, African-Americans expect to perform at the same level as whites (*anticipated efficacy*) but are less confident of this prediction (*efficacy confidence*). African-Americans also place less value on the level of their personal performance (*valence*).

Following Tsui, O'Reilly, and Egan (1992), we also examine the correlation between the individual team member's degree of difference from each of his or her individual team members.⁶ We present the correlation matrix from this analysis in Table 3. Only one significant effect emerged from the analysis: Whites were more likely to report higher valence when they were on teams with more whites.

Question 4: When aggregated to the team level, do differences in team and performance attitudes explain racial differences in team performance?

⁶Tsui, O'Reilly, and Egan (1992) operationalize the impact of diversity on the individual as the sum of the differences between the subject and all team members, following the following formula, where S_i represents the race of each of the subject's team members and S_j represents the race of the subject:

$$\left[(1/n) \sum_{i=1}^n (S_i - S_j)^2 \right]^{1/2}$$

A second way of examining the issue of the impact of the makeup of the group on individual team member attitudes is to examine the correlation between the groups' racial profile within each racial group (e.g., examine how differing percentages of whites and African-Americans affect each race separately). Because there are only two races in this study, both analyses yield virtually identical results; we present the Tsui, O'Reilly, and Egan (1992) analysis in the text.

TABLE 3
RESULTS OF INDIVIDUAL DIFFERENCES ANALYSIS (TSUI, O'REILLY,
AND EGAN 1992)

Variable	\bar{x}	δ	1	2	3	4	5
Correlations among African-Americans ($n = 288$)							
Ind. difference level	0.75	0.24					
Anticipated efficacy	2.22	0.67	-0.01				
Efficacy confidence	8.19	2.59	0.08	-0.07			
Team cohesion	3.23	0.59	-0.04	-0.63*	0.02		
Valence	2.66	1.19	0.02	-0.03	0.27*	0.14*	
Team commitment	3.99	1.10	-0.04	-0.64*	0.02	0.64*	0.10
Correlations among whites							
Ind. difference level	0.14	0.18					
Anticipated efficacy	2.10	0.73	-0.01				
Efficacy confidence	8.07	2.30	-0.03	-0.08			
Team cohesion	3.33	0.56	0.02	-0.69*	0.07		
Valence	3.22	1.16	-0.11*	-0.17*	0.48*	0.14*	
Team commitment	4.15	1.02	0.03	-0.72*	0.09	0.73*	0.14*

*Significant at $p < 0.05$.

To explore this question, we conduct a stepwise regression using *team productivity* as our dependent variable and all our attitudinal and control variables as potential independent variables. The stepwise procedure indicates a five-variable solution at a 0.10 level of significance, including *percent white*, *valence*, *team commitment*, *tenure*, and *team size* as independent variables. We report the regression data for these variables in Table 4. With the addition of attitudinal and demographic variables to the simple race/performance regression, we reduce the $\beta_{\text{percent white}}$ by about 63 percent.⁷

Although $\beta_{\text{percent white}}$ is substantially decreased with the addition of the attitudinal variables, it nonetheless remains a significant independent predictor of performance. Thus our answer to Question 4 is equivocal; differences in the attitudes we examined explain only part of the racial effect on performance.

⁷ Although we did not hypothesize effects related to a team's overall level of homogeneity/heterogeneity, we did conduct a post hoc analysis to determine if relative levels of homogeneity/heterogeneity affected other independent variables. This variable (computed as $|\text{percent white} - 0.5|$) was not significant in our stepwise regression. We also examined the impact of this variable in an OLS regression using productivity as the dependent variable, with *percent white* and *homogeneity/heterogeneity* as predictors; again, the estimate for the homogeneity/heterogeneity variable was nonsignificant.

We conducted one additional post hoc analysis to examine performance differences based on the groups' dominant racial makeup; we created five classes of teams, all African-American ($n = 4$), all white ($n = 40$), balanced (one-half African-American and one-half white, $n = 4$), African-American dominated ($n = 20$), and white dominated ($n = 54$). Our GLM analysis of the differences in means (using a Duncan's post hoc test) indicates that all-white, white-dominated, and balanced teams significantly outperform all African-American and African-American dominated teams ($R^2 = 0.2$, $F = 7.51$, $p = 0.0001$).

TABLE 4
REGRESSION RESULTS WITH TEAM PERFORMANCE AS THE DEPENDENT VARIABLE

Regression 1: Team performance × racial composition

$F = 20.15, p = 0.0001, R^2 = 0.14$

$\beta_{\text{percent white}} = 17.13, T = 4.49, p = 0.0001$ (intercept = 101.24)

Regression 2: Team performance × percent white with control variables

$F = 16.45, p = 0.0001, R^2 = 0.50$

β_{variable}	β value	T	p
$\beta_{\text{intercept}}$	136.42	7.95	0.000
$\beta_{\text{percent white}}$	11.66	3.24	0.001
β_{tenure}	3.81	6.10	0.000
β_{age}	-0.83	-2.85	0.005
$\beta_{\text{education}}$	5.35	1.25	0.213
$\beta_{\text{marital status}}$	-15.36	-2.18	0.031
$\beta_{\text{dependents}}$	0.26	0.14	0.888
$\beta_{\text{team size}}$	-17.42	-6.23	0.000

Regression 3: Team performance × percent white, attitudes, and controls (after stepwise procedure)

$F = 79.43, p = 0.0001, R^2 = 0.77$

β_{variable}	β value	F	p
$\beta_{\text{intercept}}$	60.42	143.88	0.000
$\beta_{\text{percent white}}$	6.23	8.79	0.004
β_{valence}	13.16	141.86	0.000
$\beta_{\text{team commitment}}$	2.73	5.09	0.025
β_{tenure}	1.36	15.50	0.000
$\beta_{\text{team size}}$	-11.73	51.67	0.000

Discussion

This study supports research (Pfeffer 1983, 1985; Tsui and O'Reilly 1989) that documents the impact that demographic differences, specifically race, can have on organizational outcomes. It also addresses the need for additional research on the effect of team composition/demographics on team outcomes, as identified by Guzzo and Shea (1992). Our findings in summary form are

1. The racial composition of teams does have a significant impact on team performance. Based on our analysis, an all-white team can be expected to sew about 3 dozen more garments per hour than a team composed of half whites and half African-Americans.
2. There are racial differences in individually held attitudes (*team cohesion, team commitment, valence, and efficacy confidence*); whites report more positive scores on each dimension. When

these attitudes are aggregated to the team level, they are significantly associated with team performance.

3. The racial composition of teams affects team performance even when other demographic factors are controlled. Teams that have more whites perform better than teams that have fewer whites and more African-Americans.
4. Differences in attitudes help explain the effect of racial composition on team performance and reduce the “unexplained” impact of racial composition by about 63 percent.

As Cox, Lobel, and McLeod (1991) indicated, African-Americans and whites have different attitudes toward their team and toward the value of achievement; we found that these attitudes affect the team’s performance. While we cannot determine all the factors associated with these differences between African-Americans and whites within the context of this exploratory study, we believe that the information presented here will be of interest to those exploring issues in race, diversity, and performance.

Our analyses indicate that performance differences attributed to racial composition may be attributed to some extent to deep-level attitudinal differences for which race is only a proxy. We believe that this demonstration of the attitudinal differences between African-American and white respondents potentially changes the dialogue on racial differences in performance; race is reduced from a biologic attribute into a descriptor of common experience⁸ that affects people’s attitudinal calibration. We also must note that although there are racial effects on work-related attitudes and compositional effects on performance, both African-Americans and whites report generally positive attitudes toward their teams and their performance, and almost all teams are performing above the performance minimums that the organization has set. Thus the differences that we describe are affecting levels of performance among people who are all working successfully for the organization.

This research is bounded by certain limitations. First, we conducted this research entirely within plants located in small towns within the Mid-Atlantic states, and our results may not generalize to other regions. Our respondents live in close proximity to each other and share the same schools, supermarkets, etc. We suspect that the magnitude of difference between races would be substantially greater if we moved to settings more characterized by urban African-Americans and suburban whites.

⁸ It is important to note, again, that the performance-related attitudes that we describe here do not necessarily cause differences in performance but are only associated with them. Attitudes such as team cohesion and team commitment may *derive* from a subject’s performance experience with a given team.

The second limitation in our research is the fact that all our respondents are female; this may influence the way that racially different experiences affect attitudes and performance (Baugh and Graen 1998; Johnson and Marini 1998). Third, we collected our data in a specific industry; thus our data may not generalize to other manufacturing or service organizations. We would be particularly hesitant to generalize our findings to teams of knowledge workers, given the Watson, Kumar, and Michaelson (1993) demonstration of the benefits of workgroup heterogeneity in a knowledge-based task. In knowledge-based teamwork, diversity of thinking, background, and experience can be associated with the generation of a broader range of solution ideas; in the work environment that we report on here, the repetitive and manual nature of the task tends to minimize the value of any intellectual diversity associated with differences in race. Fourth, because of the nature of the task environment, no individual-level performance data were available; this means that we cannot identify racial (or other) differences in individual activity within the teams' aggregate performance. Fifth, we do not have data that indicate the level of within-team turnover in the year proceeding our study; although the turnover rate for these plants is small (13 percent), the cross-team exchanges that occur with turnover may have some impact on individual team productivity. Finally, we developed this study largely within the context of the work environment we were studying; we believe that this suggests effects that may be seen in other environments, and we are cognizant that other environments may raise other questions and other answers.

Although this is not a limitation of the study per se, we feel that we must note that our subjects and work environments are very typical in the sense that they are staffed predominantly by white workers and white managers. We believe that it would be very useful to examine performance, either experimentally or in the field, among subjects working in predominantly African-American organizations with predominantly African-American management. It is possible that part of what influences African-American attitudes and performance are both implicit and explicit stereotypes formed by white culture, which function to shape self-attitude and performance expectations among African-Americans (Jost and Banaji 1994; Steele 1997; Steele and Aronson 1995). In an environment significantly dominated by African-Americans, the instrumentality of these stereotypes would be reduced, and we would expect attitudes and performance to level between races.

Because we are unable to successfully identify a set of attitudinal factors that remove *all* the race effect on performance, we believe that future research should focus on identifying a body of attitude and value

differences that more fully explains racial differences. In addition to identifying these factors, research also should investigate the *antecedents* of these attitudinal differences and explore mechanisms that could ameliorate the effects of racial differences on workplace performance.

More specifically, research should be directed toward comparisons between African-American and white subcultural values with regard to the role of work, family, community, etc., as well as toward subcultural differences as to what constitutes reward. In work environments that are dominated numerically and culturally by white managers and white values, one can reasonably question whether current reward structures and management style apply to African-Americans as effectively as to whites. To the extent that such differences may exist, the challenge to both managers and researchers is to identify ways to modify the status quo so as to maximize the productivity of *both* African-American and white workers.

REFERENCES

- Avolio, Bruce J., and David A. Waldman. 1987. "Personnel Aptitude Test Scores as a Function of Age, Education and Job Type." *Experimental Aging Research* 13(Spring-Summer):109-13.
- Bandura, Albert, and Daniel Cervone. 1983. "Self-Evaluative and Self-Efficacy Mechanisms Governing the Motivational Effects of Goal Systems." *Journal of Personality and Social Psychology* 45(November):1017-28.
- Baugh, S. Gayle, and George B. Graen. 1997 "Effects of Team Gender and Racial Composition on Perceptions of Team Performance." *Group and Organization Management* 22(September):366-83.
- Bettenhausen, Kenneth L. 1991. "Five Years of Group Research: What We Have Learned and What Needs to Be Addressed." *Journal of Management* 17(June):345-82.
- Bishop, James W., and K. Dow Scott. 2000. "An Examination of Organizational and Team Commitment in a Self-Directed Team Environment." *Journal of Applied Psychology* 85(June):439-50.
- Chan, David. 1997. "Reactions to Cognitive Ability Tests: The Relationship Between Race, Test Performance, Face Validity Perceptions, and Test-Taking Motivation." *Journal of Applied Psychology* 82(April):300-11.
- Cox, Taylor H., Sharon A. Lobel, and Poppy L. McLeod. 1991. "Effects of Ethnic Group Cultural Differences on Cooperative and Competitive Behavior on a Group Task." *Academy of Management Journal* 34(December):827-47.
- Earley, P. Christopher, and Terri R. Lituchy. 1991. "Delineating Goal and Efficacy Effects: A Test of Three Models." *Journal of Applied Psychology* 56(February):81-98.
- Erez, Miriam, and Revital Arad. 1986. "Participative Goal-Setting: Social, Motivational, and Cognitive Factors." *Journal of Applied Psychology* 71(November):591-8.
- Garland, Howard. 1984. "Relation of Effort-Performance Expectancy to Performance in Goal-Setting Experiments." *Journal of Applied Psychology* 49(February):79-84.
- _____. 1985. "A Cognitive Mediation Theory of Task Goal and Human Performance." *Motivation and Emotion* 9(December):345-67.
- Greenhaus, Jeffrey H., Saroj Parasuraman, and Wayne M. Wormley. 1990. "Effects of Race on Organizational Experiences, Job Performance." *Academy of Management Journal* 33(March):64-87.
- Guzzo, Richard A., and M. W. Dickson. 1996. "Teams in Organizations: Recent Research on Performance and Effectiveness." *Annual Review of Psychology* 47:307-38.

- _____ and Gregory P. Shea. 1992. "Group Performance and Intergroup Relations in Organizations." In *Handbook of Industrial and Organizational Psychology*, edited by Marvin D. Dunnette and Leatta M. Hough, pp. 269–313. Palo Alto, CA: Consulting Psychologists Press.
- Harrison, David A., Kenneth H. Price, and Myrtle P. Bell. 1998. "Beyond Relational Demography: Time and the Effects of Surface- and Deep-Level Diversity on Work Group Cohesion." *Academy of Management Journal* 41(February):96–107.
- Johnson, Monica Kirkpatrick, and Margaret Mooney Marini. 1998. "Bridging the Racial Divide in the United States: The Effect of Gender." *Social Psychology Quarterly* 61(September):247–59.
- Jost, John T., and Mahzarin R. Banaji. 1994. "The Role of Stereotyping in System-Justification and the Production of False Consciousness." *British Journal of Social Psychology* 33(March):1–27.
- Klein, Howard J., and Paul W. Mulvey. 1995. "Two Investigations of the Relationships among Group Goals, Goal Commitment, Cohesion, and Performance." *Organizational Behavior and Human Decision Processes* 41(January):44–53.
- Levin, Michael. 1997. *Why Race Matters: Race Differences and What They Mean*. Westport, CT: Praeger.
- Lichtenstein, Richard, Jeffery A. Alexander, Kimberly Jinnett, and Esther Ullman. 1997. "Embedded Intergroup Relations in Interdisciplinary Teams: Effects on Perceptions of Level of Team Integration." *Journal of Applied Behavioral Science* 33(December):413–34.
- McLeod, Poppy L., Sharon A. Lobel, and Taylor H. Cox. 1996. "Ethnic Diversity and Creativity in Small Groups." *Small Group Research* 27(May):248–64.
- Miller, Delbert C. 1991. *Handbook of Research Design and Social Measurement*. Newberry Park, CA: Sage Publications.
- Mowday, Richard T., Richard M. Steers, and Lyman W. Porter. 1979. "The Measure of Organizational Commitment." *Journal of Vocational Behavior* 14(October):224–47.
- Mullen, Bryan, and Carolyn Copper. 1994. "The Relation between Group Cohesiveness and Performance: An Integration." *Psychological Bulletin* 115(March):210–28.
- O'Reilly, Charles A., David F. Caldwell, and William P. Barnett. 1989. "Work Group Demography, Social Integration, and Turnover." *Administrative Science Quarterly* 34(March):21–37.
- Pfeffer, Jeffery. 1983. "Organizational Demography." *Research in Organizational Behavior* 5:299–357.
- _____. 1985. "Organizational Demography: Implications for Management." *California Management Review* 27(Fall):67–87.
- Podsakoff, Phillip M., Scott B. MacKenzie, and Michael Ahearne. 1997. "Moderating Effects of Goal Acceptance on the Relationship between Group Cohesiveness and Productivity." *Journal of Applied Psychology* 62(December):974–83.
- Prapavessis, Harry, and Albert V. Carron. 1997. "Cohesion and Work Output." *Small Group Research* 28(May):294–301.
- Pulakos, Elaine D., Leonard A. White, Scott H. Oppler, and Walter C. Borman. 1989. "Examination of Race and Sex Effects on Performance Ratings." *Journal of Applied Psychology* 74(October):770–80.
- Riordan, Christine M., and Lynn M. Shore. 1997. "Demographic Diversity and Employee Attitudes: An Empirical Examination of Relational Demography within Work Units." *Journal of Applied Psychology* 82(June):342–58.
- Sackett, Paul R., and Cathy L. Z. DuBois. 1991. "Rater-Ratee Race Effects on Performance Evaluation: Challenging Meta-Analytic Conclusions." *Journal of Applied Psychology* 76(December):873–7.
- Schmit, Mark J., and Ann Marie Ryan. 1997. "Applicant Withdrawal: The Role of Test-Taking Attitudes and Racial Differences." *Personal Psychology* 50(Winter):855–77.
- Scott, K. Dow, and Anthony M. Townsend. 1994. "An Examination of Factors Affecting Team Performance." *HRMagazine* 39(August):62–8.

- _____, _____, and W. Kevin Baker. 1995. "Determinants of Team Effectiveness in Three Apparel Plants." Abstract published in *1995 Academy of Management Best Papers Proceedings*, pp. 572, Vancouver, British Columbia.
- Steele, Claude M. 1997. "A Threat in the Air: How Stereotypes Shape Intellectual Identity and the Production of False Consciousness." *The American Psychologist* 52(June):613-29.
- _____ and Joshua Aronson. 1995. "Stereotype Threat and the Intellectual Test Performance of African-Americans." *Journal of Personality and Social Psychology* 69(November):797-811.
- Thomas, Kecia M., Layli D. Phillips, and Stephanie Brown. 1998. "Redefining Race in the Workplace: Insights from Ethnic Identity Theory." *Journal of Black Psychology* 24(February):76-92.
- Tsui, Anne S., and Charles A. O'Reilly III. 1989. "Beyond Simple Demographic Effects: The Importance of Relational Demography in Superior-Subordinate Dyads." *Academy of Management Journal* 32(June):402-23.
- _____, _____, and Terri D. Egan. 1992. "Being Different: Relational Demography and Organizational Attachment." *Administrative Science Quarterly* 37(December):549-79.
- Waldman, David A., and Bruce J. Avolio. 1991. "Race Effects in Performance Evaluations: Controlling for Ability, Education, and Experience." *Journal of Applied Psychology* 76(December):897-901.
- Wang, Theodore H., and Richard D. Katzev. 1990. "Group Commitment and Resource Conservation: Two Field Experiments on Promoting Recycling." *Journal of Applied Social Psychology* 20(March):265-76.
- Watson, Warren E., Kamalesh Kumar, and Larry K. Michaelson. 1993. "Cultural Diversity's Impact on Interaction Process and Performance: Comparing Homogeneous and Diverse Task Groups." *Academy of Management Journal* 36(June):590-602.
- Zenger, Todd R., and Barbara S. Lawrence. 1989. "Organizational Demography: The Differential Effects of Age." *Academy of Management Journal* 32(June):353-76.