Embedded Intergroup Relations in Interdisciplinary Teams

Effects on Perceptions of Level of Team Integration

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Many organizations are making a deliberate effort to use teams to carry out work as an alternative to more traditional, hierarchical approaches to defining jobs or supervising employees. The authors posit that structure and composition of work teams are likely to systematically affect group dynamics of such teams. Using the related frameworks of social identification theory and embedded intergroup relations theory, they examine the proposition that greater diversity of team member characteristics and larger team size negatively affect members' perceptions of team integration. Hypotheses were tested on 1,004 individuals working on 105 interdisciplinary treatment teams in a national sample of 29 Department of Veterans Affairs psychiatric hospitals. Five of six hypotheses received support for at least one of three dimensions of team integration examined in this article. The strongest support was found for the effects of diversity on perceptions of team functioning. Results are generally consistent with the basic premise of the embedded intergroup relations model: As teams become more diverse along most identity group and organizational group characteristics, intergroup relations among team members suffer and perceived level of team integration declines. The authors offer several suggestions about how managers and team leaders might use these findings to improve team integration.

Work teams are becoming an increasingly important, if not essential, part of organizational life. Many organizations are making a deliberate effort to use teams to carry

out work as an alternative to more traditional, hierarchical approaches to defining jobs or supervising employees (Guzzo & Shea, 1992). These changes are driven by societal, ideological, and technical forces. Concepts such as continuous quality improvement (CQI) and total quality management (TQM), which involve an explicit role for teams (e.g., quality circles), are increasingly being employed in a variety of organizations. Society is also less accepting of top-down management styles, and there is a new appreciation for the fact that "those who do, know best." Finally, as the nature of products and services grows increasingly complex and more dependent on different technologies, a greater variety of inputs is required to solve organizational and production problems.

The value of teams in dealing with complex organizational issues is largely predicated on the belief that diversity will enhance performance of the team. Diversity implies including not only individuals with different sets of skills or occupations on teams but also individuals who differ with respect to such characteristics as age, gender, race/ethnicity, and amount of experience. Ample research suggests that more diverse work groups are more effective at cognitive problem solving, produce creative solutions to problems, and generate decisions of a higher quantity and quality than groups composed of individuals who are similar to one another (Guzzo, 1986; Hoffman & Maier, 1961; Janis, 1982). Increasing racial or ethnic diversity has also become a corporate-level strategy for enhancing performance in many U.S. organizations, especially those that serve large minority populations. These firms believe that it is essential to include the perspective of members of minority groups in their management teams and in all aspects of decision making. Finally, in service fields such as health care, interdisciplinary teams are perceived to be superior to individuals in assessing and solving client problems and protecting against individual errors in judgment (Kaiser & Woodman, 1985).

Despite the many benefits that may accrue from the use of diverse work groups or teams, diversity also has its attendant costs. Important group processes such as effective communication, coordination, and consensus building among team members may be far more difficult to achieve in diverse groups than in groups composed of similar individuals, particularly if the team is not insulated sufficiently from the larger environment. Ironically, the very things that allow diverse groups to achieve more positive outcomes—different frames of reference and experiences among team members, differences in the paradigms used to define and solve problems, and differences in the types of skills and technical solutions available to members—also constrain

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effective group processes. Although dissimilar groups may eventually reach decisions or produce outcomes that are superior to those rendered by groups composed of similar people, they often experience greater difficulties in reaching those outcomes. Team members may exhibit competitiveness, conflict, and hostility toward one another rather than understanding, cooperation, and supportiveness (Sinclair, 1992). We call groups that experience such negative group processes *poorly integrated*. These characteristics have also been described as the syndrome of problems associated with organizational systems that are *underbounded*. Underbounded groups or organizations are those whose boundaries with the environment are so permeable that they "become totally caught up in their environmental turbulence and lose a consistent sense of their identity and coherence" (Alderfer, 1980, p. 269).

We view team integration as a multidimensional concept that concerns both how well individual team members function within the team and how well team members work with and relate to one another. We define a team as *well integrated* when its members understand and feel comfortable with their respective roles on the team, when they feel comfortable sharing their point of view with other team members and participate freely in team discussions and decision making, and when they feel positive about the team's overall goals and functioning (Kaiser & Woodman, 1985).

This article reports on a study of 105 interdisciplinary treatment teams working in a national sample of 29 Department of Veterans Affairs psychiatric hospitals. Using the related frameworks of social identification theory and embedded intergroup relations theory, we investigate the extent to which diversity in selected characteristics of underbounded teams affects individual team members' perceptions of team integration. Analytically, this study attempts to extend previous work in this area in several ways. First, we use embedded intergroup relations theory to examine the relationship between the mix of member characteristics on the team and team integration. Second, we investigate functioning work teams rather than the artificially constructed teams studied in previous research (e.g., McCain, O'Reilly, & Pfeffer, 1983; Tsui & O'Reilly, 1989; Wagner, Pfeffer, & O'Reilly, 1984). Third, we conceptualize and measure team integration as a multidimensional concept. Finally, we use multilevel modeling to examine both the embedded group memberships of individuals and the mix of such memberships on teams as they affect individual perceptions of team integration.

THEORETICAL FRAMEWORK

Two theories about how groups function, and particularly about how individuals function within groups, are relevant to understanding perceptions of team integration. The first is Tajfel's social identification or social categorization model (Tajfel, 1982; Tajfel & Turner, 1979) and the second is Alderfer's theory of embedded intergroup relations (Alderfer, 1987). The premise of this article is that the negative aspects of diversity emerge through interactions of members who do not share a common social identity. When people with different social identities are placed together on a team, particularly a team that is underbounded, their interactions may (perhaps unconsciously) parallel the conflicts that occur in larger social systems in which the teams

are embedded (Alderfer, 1980). Hence, the more diverse the team's members, the greater the likelihood of conflict and the less well integrated the team.

Tajfel's social identification theory (Tajfel, 1982; Tajfel & Turner, 1979) helps to explain the cognitive process through which individuals form a self-concept and interact with other members of a group. Social identification is "the process of locating oneself or another person, within a system of social categorization" (Turner, 1982, pp. 17-18). In this process, the individual internalizes aspects of social categorization so that these become parts of the individual's self-concept. Social identity, then, is the set of social identifications used by a person to define him- or herself; it delineates to which groups an individual belongs and from which groups he or she is excluded (Tajfel, 1982).

In discussing the social forces that bind a group together, Turner (1982) rejected the notion that in order for individuals to become a group, they must like each other. Instead, he argues that group membership is based on individual perceptions—how the individual perceives him- or herself and others in the group. Turner argues that the same attributes that create social categorization are determinants of interpersonal attraction: "The first question determining group belongingness is not 'Do I like these people?', but 'Who am I?' " (p. 16). The similarities between people in common groups attract people to one another; group cohesion follows social identification.

Clearly, members of teams purposely composed of individuals from different social groups—occupations, age cohorts, genders, races, or ethnicities—for the purpose of increasing diversity and improving decision making are more likely to encounter problems when team members identify more strongly with these other groups than they do with the team itself. Alderfer (1987) argued that organizations are composed of multiple groups and that each individual in an organization represents some of these groups in every interaction with other individuals. He asserts, therefore, that any group's internal dynamics has a strong intergroup component.

Alderfer categorizes groups in an organization into two types: identity groups and organizational groups. Members of identity groups "share some common biological characteristic, have participated in equivalent historical experiences (or) currently are subjected to similar social forces" (Alderfer, 1987, p. 204). Identity groups, thus, include groups composed of individuals with the same gender, age, and so on. Members of the same identity group are thought to be more likely than members of different identity groups to hold consonant views about life. Organizational groups are employment related and contain members who share common organizational experiences such as work site, shift, department, team, length of service, profession, employment status, or job. Members of these groups are assumed to hold similar organizational views (Alderfer, 1987).

This perspective further argues that organizational groups such as teams are embedded in a larger social structure and that individuals on such teams represent, to some degree, other organizational and identity groups to which they belong, even while carrying out the team's business. Thus, all interactions among members of the same team also have the potential to be "intergroup events" (Alderfer & Smith, 1982). One of the conditions that affects the degree to which team members identify with groups outside the team is the permeability of the team's boundary with the environment. If

the boundary is too permeable, team members will identify more strongly with outside groups and less strongly with the team. Thus, a female nurse serving on an interdisciplinary team might function as a member not only of that team but also of other groups, such as the nursing department, a union, women in general, a racial and/or ethnic group, or an age cohort. If the team is not adequately bounded, the conflicts and relationships that exist in the larger system between occupational groups such as physicians and nurses, between newer and older organization members, between members of different generations, or between males and females may also be experienced by members of the same team who represent these groups.

HYPOTHESES

Based on Alderfer's model, we conceptualize treatment teams as being predominantly underbounded and composed of individual members who simultaneously represent a variety of other organizational and identity groups. We assert that the teams we studied were underbounded because, with only rare exceptions, the teams lacked any formal responsibility within their hospital's authority structure. Thus, such critical functions as evaluating and disciplining team members and setting their work schedules were not performed by the team leader; rather, in almost all cases, they were performed by the head of the members' professional department in the hospital.

Within such underbounded teams, the opportunity for conflict and intergroup dissension is increased as the mix of organizational and identity groups represented on the team increases. This will lead to perceptions of decreased team integration by team members. The group memberships we investigate include three organizational groups (occupation, tenure in the organization, and tenure in current position) and two identity groups (age and gender).

Organizational Groups

Occupation

The health care workforce is extremely specialized and encompasses a wide variety of occupational groups, many of which require separate licensure and professional accreditation. Although lessening somewhat, the health occupations are quite hierarchical, with wealth, power, and status concentrated among physicians. Further, the medical profession has historically been populated predominantly by highly paid White males, whereas most of the other health occupations are composed mostly of lower paid females, and the lowest paid positions in the industry are held largely by non-Whites. As a result, the health field is prone to interoccupational conflicts that are likely to reflect differences not only in professional power but in class, gender, and race. For example, much of the literature on the job satisfaction of nurses and other health workers identifies "poor relationships with physicians" as a key component of dissatisfaction and relates this to the subordinate position such workers occupy vis-à-vis physicians (Stamps, Piedmonte, Haase, & Slavitt, 1978).

There are other reasons to expect team members from different occupations to conflict on interdisciplinary teams, particularly those that are underbounded. Given the long period of training and socialization involved in becoming a professional, professionals from the same discipline are more likely to share common values and expectations with each other than with team members from different professions or occupations. Health professionals from the same discipline are also more likely to share a common "model" of diagnosis and intervention with respect to specific health problems. Furthermore, based on their training and socialization, some professionals (physicians, psychologists) are accustomed to making decisions autonomously and may have difficulty sharing decision making with members of other occupations in a team setting (Ridgeway & Berger, 1986; Rubin & Beckhard, 1972). In complementary fashion, members of lower status groups, such as LPNs (licensed practical nurses) and nurse's aides, are likely to feel subordinate to their higher status colleagues and, therefore, may be reluctant to participate actively in interdisciplinary team deliberations and decision making.

Embedded intergroup relations theory suggests that members of interdisciplinary teams bring with them, as part of their self-concept, the social identity of their own profession or occupation. Given the state of interoccupational tension at the health system level, we would expect such tensions also to pervade intrateam interactions in teams that are not adequately bounded. Furthermore, to the extent that team members have undergone long periods of professional training in their own occupations, we would expect members to identify more with their profession or occupation than with the interdisciplinary team. Therefore, we hypothesize the following:

> H1: As the mix of occupations represented on an interdisciplinary team increases, the level of perceived team integration will decrease.

Tenure

People who enter an organization at the same time are more likely to share common experiences such as training or orientation programs, periods of expansion or retrenchment, and program start-ups or terminations. They are also more likely to share common networks of people in the organization and to have similar job values and orientations. Thus, tenure, or the amount of time individuals have spent in a particular organization or position, can form the basis for social categorization among organizational members. Employees with a great deal of tenure can be thought to constitute a different organizational group than members with little or moderate tenure. Hence, we would expect teams composed of members of a common tenure group to be more cohesive and to experience less conflict than teams composed of equal membership from several tenure groups (Finkelstein & Hambrick, 1990; Katz, 1982).

Although tenure in an organization and tenure in a specific position are likely to be correlated, they are not identical concepts. We assert that tenure in the organization and tenure in current position constitute two separate bases for the formation of organizational groups. For example, a nurse may have considerable tenure in a hospital yet may only recently have become a member of an interdisciplinary team in the burn

unit of that hospital. She would thus be quite familiar with how the hospital operates and might have an extensive network of colleagues in the facility. Yet, as a newcomer to her current position, this nurse might encounter a variety of problems adjusting to her role on the interdisciplinary team. By including both forms of social categorization, we intend to explore the effects of membership in each type of tenure group. We hypothesize the following:

H2a: As the mix of organizational tenure represented on an interdisciplinary team increases, the level of perceived team integration will decrease.

H2b: As the mix of position tenure represented on an interdisciplinary team increases, the level of perceived team integration will decrease.

Identity Groups

Age Cohort

The age cohort to which an individual belongs is a fundamental element of social categorization and is the basis for the formation of identity groups. For example, two members of the same age cohort, who have lived through the same significant historical events, such as wars or economic depressions, are more likely to share common values and attitudes than two people from different age cohorts (Elder, 1975; Rhodes, 1983).

There is substantial empirical evidence that membership in an age cohort is related to a wide range of attitudes, values, beliefs, and behaviors. Age has been found to be correlated with job satisfaction, turnover, risk-taking propensity, and cognitive processes used for solving problems (Cotton & Tuttle, 1986; Lichtenstein, 1984; Locke, 1976; Porter & Steers, 1973; Vroom & Pahl, 1971). Thus, to the extent that team members come from different age cohorts, we would expect members' attitudes, values, and beliefs to differ as well. Specifically, on teams in which members are equally represented in numerous age cohorts, we would expect there to be poorer communication, more conflict, and, hence, less team integration than on teams in which members are concentrated in few age cohorts. We hypothesize the following:

H3: As the mix of ages represented on an interdisciplinary team increases, the level of perceived team integration will decrease.

Gender

Gender is a basic element of social categorization and identity grouping. In the health care field, gender conflicts are embedded in the power struggles between occupational groups. This is due largely to the historical underrepresentation of women in the "dominant professions" (e.g., medicine and dentistry) (Friedson, 1970) and their overrepresentation in nursing and the other midlevel and ancillary health occupations (U.S. Department of Health and Human Services, 1993). Although the percentage of women in the dominant professions is changing dramatically in professional schools (U.S. Department of Health and Human Services, 1993), relationships between high-status, high-power males and females occupying subordinated roles in health care

have been strained. Given the status of "sexual politics" in the larger society, males and females in the health care environment may have particular difficulty working harmoniously on a team.

In addition, researchers have found that men and women tend to differ in their orientation toward group work (Eagly, 1987; Matthews et al., 1982; Mobley, 1982; Steckler & Rosenthal, 1985). Women, on average, are more likely to focus on group processes and interpersonal relationships and men, on average, are more likely to focus on achieving specific outcomes. Such differences in fundamental work values might cause friction and result in decreased cooperation and cohesiveness in teams in which gender representation is approximately equal. We hypothesize the following:

> H4: As the proportion of males and females on an interdisciplinary team approaches equality, the level of perceived team integration will decrease.

Team Size

Individual integration in teams is also thought to be related to the size of the team. As teams grow larger, they are more likely to experience problems with boundary formation, particularly with underboundedness (Alderfer, 1976). Large teams are also more likely to encounter problems with communication and coordination (Blau, 1970; Porter & Lawler, 1966; Sundstrom, DeMeuse, & Futrell, 1990) and have been found to be less cohesive than smaller teams (Shaw, 1976). Furthermore, as teams grow larger, the probability that members will be dissimilar in their organizational and identity group affiliation increases. Hence, we include team size in our model both for substantive reasons and as a control. We hypothesize the following:

> H5: As the size of an interdisciplinary team increases, the level of perceived team integration will decrease.

METHOD

Data and Sample

This analysis is part of a larger study whose purpose was to evaluate the U.S. Department of Veterans Affairs' (VA) Long Term Mental Health Enhancement Program (LTMHEP). The LTMHEP was created by Congress in PL 101-507, the FY 1991 Appropriation Act, and is intended to improve the quality of programming and medical care in the VA's 29 long-term psychiatric hospitals.

The treatment teams involved in this study participated in the evaluation of the LTMHEP. All teams operated in inpatient or outpatient units of the VA's long-term psychiatric hospitals and cared for patients with serious mental illness. One hundred twenty-four units in the 29 hospitals were initially selected for the study. These included specially funded inpatient and outpatient demonstration programs at 14 hospitals and 106 units treating similar patients, selected at random from all 29 VA

psychiatric hospitals. Data for this study were generated through a survey of team members from all 124 units. The procedures used to conduct the study were as follows. To develop the sampling frame, site coordinators at each facility provided us with a list of all clinical staff assigned to the sample units. We deleted from those lists any individuals who worked the night shift or who were not deemed to be direct patient care providers (e.g., clerical or housekeeping personnel). This reduced the number of potential respondents from 2,400 to 1,801.

Questionnaires, along with a videotape explaining the nature and purpose of the survey procedures employed to protect respondent confidentiality and descriptions of the questionnaire itself, were mailed to the site coordinator. Site coordinators set up group meetings with staff in the selected units during normal working hours, showed the video at the meeting, and distributed the questionnaires. Staff returned the questionnaires to the coordinators in sealed envelopes that had a control number on the front but no name identification. Staff had the option of returning the survey blank or marking it "refused" if they did not wish to complete it. Individuals who initially refused to complete the questionnaires were sent letters by research staff that asked them to reconsider their decision. Site coordinators were not used to convert nonrespondents in this study. To ensure confidentiality, once a staff member received the follow-up request to complete the questionnaire, the site coordinator never knew whether a potential respondent completed the questionnaire, and all subsequent contacts with nonrespondents were initiated by project staff in Ann Arbor. This process resulted in the return of 1,746 (97%) questionnaires, of which 1,696 (94%) were sufficiently complete for analysis.

Members of specific teams were identified based on responses to an item in the questionnaire. Each questionnaire contained a customized label on the front cover that specified the unit and team included in the study. Because there were sometimes more than one treatment team on a unit, we instructed respondents to indicate whether they were a member of the team specified on the questionnaire, and, if they were a member of the specified team, to answer a series of questions on team integration with regard only to that team. To reduce disproportionate effects of small numbers of respondents, we eliminated from the analysis any team smaller than three members. The final sample includes a total of 1,004 mental health treatment personnel working within 105 interdisciplinary treatment teams. The distribution of team sizes is as follows: 11 teams had 3 members, 46 teams had between 4 and 9 members, 44 teams had between 10 and 19 members, and 4 teams had 20 or more members.

Measures

Dependent Variables

The dependent variables in this study relate to an individual team member's perceptions about the level of integration achieved by the team. The use of team members' perceptions regarding integration, rather than objective measures of integration, is consistent with Tajfel's conception of social categorization theory (Tajfel, 1982). We argue that, from the individual member's perspective, integration in an

interdisciplinary team may vary on three dimensions: role clarity on the team, participation on the team, and perception of overall team functioning. Role clarity involves the degree to which an individual knows both what is expected of her by other team members and what she can expect of the other members. Individual participation includes both the frequency with which an individual contributes information and participates in team decisions and the degree of comfort she feels in doing so. Perceptions of overall team functioning involve the individual's assessment of the team on such issues as cooperation, coordination, quality of decision making, and quality of outcomes.

The three dimensions of perceived team integration were based on 19 questionnaire items (see Table 1) adapted from previous work on multidisciplinary teams in VA hospitals by Davis-Sacks (1991) and work of Price and Mueller (1989) and Hackman (1987). Responses were based on 7-point scales for all items. Scoring for some items was reversed so that 1 indicates the most negative assessment and 7 indicates the most positive assessment of team integration. Factor analysis was used to confirm the convergent and discriminant validity of the three measures. The principal components method with varimax rotation was employed. Items that constitute each of the three measures of perceived team integration, along with their corresponding factor loadings and Cronbach's alphas, are listed in Table 1. Each measure of perceived team integration is represented by the individual's mean score on the corresponding items. Means, standard deviations, and correlations of the resulting measures of perceived team integration are displayed in Table 2. Pearson rs between the three factors range between .38 and .55.

Independent Variables

Individual-level variables. Respondents were asked to indicate their age, gender, occupation, number of years in current position, and number of years in the VA system. The two tenure variables and age are measured as continuous variables in the analysis; gender is recorded as a dichotomous variable. Occupation was indicated by a series of dummy variables: physician, psychologist, social worker, registered nurse, and other occupation (a list of other occupations is included in Table 2). In our analysis, the omitted group is registered nurses. Identity group and organizational group characteristics of the 1,004 individuals who make up the teams and a correlation matrix for these variables are presented in Table 2.

Team-level variables. Two measures of team-level variation in identity group or organizational group attributes were constructed. The coefficient of variation (CV) was used for the continuous organizational group variables VA tenure and position tenure. The coefficient of variation is the standard deviation of the measure divided by its mean. The higher the value of the CV, the higher the level of diversity on the team for that characteristic.

A diversity index (DI) was calculated for each characteristic represented by a categorical variable (e.g., age cohort, gender, and occupation). Like the coefficient of variation, the diversity index is a measure of dispersion (Taagepera & Ray, 1977). The

TABLE 1

Items Measuring Perceived Team Integration and Factor Loadings and Cronbach's Alphas for Each Measure

Measure	Factor Loading	Alpha
Individual participation with team[a]		.90
I frequently contribute information.	.82686	
I frequently interpret information.	.82091	
I can comfortably disagree with others.	.79233	
I feel free to participate actively.	.78011	
I usually propose alternatives.	.88285	
I usually evaluate alternatives.	.86468	
I frequently participate in making decisions.	.76937	
Role clarity in team[b]		.90
How often are you certain about what others on your treatment team expect of you?	.74954	
How often are you certain about what others on your treatment team are going to do?	.79164	
How often can you predict what others on your treatment team will expect of you?	.84410	
How often can you predict what others on your treatment team will do?	.83137	
Individual assessments of team functioning[c]		.91
Members of our team depend on each other to do our job.	.67479	
Overall, our team has done its work well this last month.	.80552	
In general, our patients receive high quality care.	.73960	
There is a great deal of joint-planning for patients on our team.	.76415	
We clearly are a team of people with a shared task—not a collection of individuals who have their own particular jobs to do.	.64753	
In general, members of our team would agree that we have worked well as a team this last month.	.80843	
Overall, the different patient-related jobs and activities that everyone does on this team fit together very well.	.80764	
In general, our team makes good decisions for our patients.	.80470	

NOTE: A minimum factor loading of ≥.60 was employed as the fit criterion for inclusion of an item in any of the above factors.
a. Responses based on a 7-point scale from *agree* to *disagree*.
b. Responses based on a 7-point scale from *never* to *always*.
c. Responses based on a 7-point scale indicating how *accurate/inaccurate* the statement is about the team.

higher the DI, the broader the mix on a given attribute. The DI for each team characteristic is calculated as follows:

$$DI = -\Sigma \, P_i \log P_i,$$

where P is the fraction of population in a particular category (i).[1]

Finally, team size was measured as a count of the number of individuals on each team.

Appropriate diagnostic tests of all variables included in the analysis were conducted. Based on these tests, no transformations or imputations of the data were performed.

TABLE 2
Descriptive Statistics and Pearson Correlation Matrices for Variables Used in Hierarchical Linear Modeling Analyses

Individual-Level Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Participation	5.54	1.15	—											
2. Role clarity	4.73	1.16	.49	—										
3. Team functioning	5.20	1.24	.38	.55	—									
4. Position tenure	6.65	7.26	.01	.03	.04	—								
5. VA tenure	11.43	8.31	.10	.10	.10	.59	—							
6. Age	45.24	10.40	.15	.19	.17	.28	.41	—						
7. Male	.40	.49	.04	.11	.12	.09	.06	.15	—					
8. Physician	.08	.27	.18	.19	.18	-.03	-.06	.28	.24	—				
9. Psychologist	.04	.19	.02	-.02	-.03	-.08	-.05	-.01	.16	-.06	—			
10. Social worker	.15	.35	.17	.17	.12	-.01	.05	.08	.13	-.12	-.08	—		
11. Other occupation[a]	.39	.49	-.33	-.17	-.08	.16	.03	-.23	.07	-.23	-.15	-.33	—	
12. Nurse/nurse practitioner	.34	.48	.10	-.05	-.10	-.11	-.01	.03	-.36	-.21	-.14	-.31	-.59	—

NOTE: $N = 1,004$. Correlation $\pm$ .06 significant at $p < .05$.
a. Other occupations include licensed practical nurse; nurse aide; occupational, recreational, and physical therapists; clinical pharmacist; dietitian; chaplain; physician assistant; psych tech; social work tech; occupational therapist tech; recreational therapist tech; other tech; and other.

Team-Level Variable	Mean	SD	1	2	3	4	5	6
1. Diversity of position tenure	.90	.34	—					
2. Diversity of VA tenure	.69	.23	.23	—				
3. Diversity of age	1.22	.24	.25	.15	—			
4. Diversity of occupation	.98	.36	.07	.23	.36	—		
5. Diversity of gender	.58	.17	.13	-.05	.20	.45	—	
6. Team size	10.48	6.38	.18	.04	.58	.29	.26	—

NOTE: $N = 105$. Correlation $\pm$ .20 significant at $p < .05$.

Analysis Strategy

We are interested in both the embedded group memberships of individuals on teams and the mix of such group memberships on teams as they relate to individuals' perceptions of team integration. This involves studying two different units of analysis—individuals and teams. To assess the impact of variables at both levels of analysis, we use hierarchical linear modeling (HLM) as our primary analytical technique (Bryk, Raudenbush, & Congdon, 1994). HLM is a multilevel analytic method that is specifically designed to handle data at different levels of analysis. HLM allows for adjustment of varying team-level characteristics by appropriately separating out within-team variance from between-team variance (Bryk & Raudenbush, 1992). HLM is particularly appropriate for situations such as this, where the data have a nested configuration (e.g., individuals nested within teams).

The first step in multilevel modeling is to estimate the intraclass correlation among groups on the response variable. The intraclass correlation reveals the amount of variance in the dependent variable within and between groups. The next step involves estimating the within-group parameters of interest that best explain the within-group variance in the dependent variable. Based on chi-square statistics, these within-group or individual-level parameters can be treated as random (allowed to vary randomly across groups) or fixed (set as control variables with zero parameter variance across groups). The final step involves investigating the explanatory power of between-group or group-level variables on the within-group random parameters (intercepts and slopes) produced as part of the first stage of analysis.

RESULTS

HLM was used first to partition the total variance explained in each of the three dimensions of team integration into within- and between-team components. These components were estimated by fitting the HLM model using an unconditional, between-team model (Bryk & Raudenbush, 1992, pp. 60-64). The fully unconditional model is represented as two additive equations: (1) a within-team model

$$Y_{ij} = \beta_{0j} + r_{ij}$$

and (2) a between-team model

$$\beta_{0j} = \gamma_{00} + u_{0j},$$

where Y_{ij} is the response variable, β_{0j} is the within-team mean value on the response variable, r_{ij} is the level-1 random effect, γ_{00} is the grand mean across teams on the response variable, and u_{0j} is the level-2 random effect. Results are displayed in Table 3.

The results for the fully unconditional HLM model (without predictor variables) indicate that two of the dependent variables—role clarity and overall team functioning—exhibit significant variation both within and between teams. Based on these unconditional results, we would expect role clarity and team functioning to be explained by both individual- and team-level factors. In contrast, the dependent

TABLE 3
**Summary of Variance Components and Variance
Explained by Fully Unconditional and Final Models**

	Individual Participation	Role Clarity	Team Functioning
Fully unconditional model without predictor variables			
Individual-level variance	1.29182	1.25865	1.33134
Team-level variance	0.02112	0.08770	0.20795
Total variance	1.31294	1.34635	1.53929
% variance between teams	1.6	6.5	13.5
Final model with predictor variables			
Individual-level variance	1.11355	1.17221	1.25128
Team-level variance	0.00426	0.02396	0.10173
Total variance	1.11781	1.19617	1.35301
% variance explained by final model	14.9	11.2	12.1

variable "participation on the team" exhibited significant variation only for the within-team component. Based on this unconditional model, we would expect individual-level factors, rather than team-level factors, to explain individual participation on teams.

The next modeling step involved estimating three individual-level models, one for each team integration factor, as follows:

Level-1 Model

Team Integration Factor, $Y_{ij} = \beta_{0j} + \beta_{1j}(\text{position tenure})_{ij} + \beta_{2j}(\text{VA tenure})_{ij} + \beta_{3j}(\text{age})_{ij} + \beta_{4j}(\text{male})_{ij} + \beta_{5j}(\text{physician})_{ij} + \beta_{6j}(\text{psychologist})_{ij} + \beta_{7j}(\text{social worker})_{ij} + \beta_{8j}(\text{other occupation})_{ij} + r_{ij}$.

Results from the level-1 model indicate that only the within-team mean value on the response variable (β_{0j}) varies significantly across groups. None of the relationships between the individual-level variables and the dependent variables varied significantly across groups as determined by chi-square statistics. Accordingly, only the variance in the group mean (β_{0j}) was modeled in the final stage of the analysis (Bryk & Raudenbush, 1992, pp. 85-91).

The final modeling stage involves estimating a level-2 model that incorporates group-level variables as represented by the following nine separate equations:

Level-2 Model

$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{diversity of position tenure})_j + \gamma_{02}(\text{diversity of VA tenure})_j + \gamma_{03}(\text{diversity of age})_j + \gamma_{04}(\text{diversity of gender})_j + \gamma_{05}(\text{diversity of occupation})_j + \gamma_{06}(\text{team size})_j + u_{0j}$

$\beta_{1j} = \gamma_{10}; \beta_{2j} = \gamma_{20}; \beta_{3j} = \gamma_{30}; \beta_{4j} = \gamma_{40}; \beta_{5j} = \gamma_{50}; \beta_{6j} = \gamma_{60}; \beta_{7j} = \gamma_{70}; \text{ and } \beta_{8j} = \gamma_{80}.$

TABLE 4

Final Hierarchical Linear Modeling Model: The Effects of Team-Level and Individual-Level Variables on Level of Perceived Team Integration

Predictor Variable	Individual Participation		Role Clarity		Team Functioning	
	Effect	(SE)	Effect	(SE)	Effect	(SE)
Overall intercept	6.644**	(.300)	5.832**	(.325)	6.738**	(.387)
Team-level variables						
Diversity of occupation	−.261	(.144)	−.108	(.157)	−.380*	(.191)
Diversity of position tenure	−.162	(.117)	−.238	(.130)	−.333*	(.163)
Diversity of VA tenure	−.056	(.188)	−.462*	(.207)	−.313	(.256)
Diversity of gender	.524	(.307)	.714*	(.332)	1.051**	(.397)
Diversity of age	−.561**	(.211)	−.475*	(.232)	−.725*	(.288)
Team size	−.016**	(.006)	−.019**	(.006)	−.022*	(.009)
Individual-level variables						
Organizational groups						
Position tenure	−.004	(.007)	−.004	(.007)	−.002	(.007)
VA tenure	.014*	(.006)	.011	(.006)	.011	(.007)
Physician	.705**	(.161)	.725**	(.165)	.751**	(.170)
Psychologist	.126	(.204)	−.136	(.210)	−.090	(.217)
Social worker	.176	(.131)	.500**	(.134)	.396**	(.138)
Other occupation	−.658**	(.093)	−.129	(.096)	.002	(.099)
Identity groups						
Gender	−.039	(.084)	.037	(.087)	.082	(.089)
Age	−.001	(.004)	.008	(.005)	.009*	(.005)

NOTE: Registered nurses and nurse practitioners constitute the occupational reference group.
*$p < .05$. **$p < .01$.

The above equations defining β_{1j} through β_{8j} represent the average slope across groups because no significant variance across teams was obtained for any of the relationships between the individual-level variables and the dependent variable.

The full multilevel model can be represented by a simple algebraic substitution of the level-2 equations into the level-1 equation (Bryk & Raudenbush, 1992, pp. 84-87). Results based on the full combined model are shown in Tables 3 and 4. The common set of predictors explained between 11% and 15% of the variance in the individual integration factors.

Hypothesis 1 posited that as the mix of occupational groups on an interdisciplinary team (a team-level characteristic) increased, individual perceptions of team integration would decrease. HLM results supported this hypothesis for one dimension of integration, team functioning, but not for role clarity or individual participation. At the individual level, physicians and social workers perceived team functioning and role clarity to be significantly better than did nurses. In addition, physicians were significantly more positive than nurses with respect to their perception of participation on the team.

In Hypothesis 2a, we stated that as the mix of organizational tenure on the team increased, perceptions of team integration would decrease. We found the mix of

organizational tenure to be a significant predictor of one of the three dimensions of integration: role clarity. The broader the mix of VA tenure on the team, the more negative were team members' perceptions of role clarity. Results were not significant for the other two dimensions of team integration. At the individual level, a team member's tenure in the VA was significantly related (positively) only to the individual's assessment of participation on the interdisciplinary treatment team.

Hypothesis 2b indicated that a negative relationship exists between the mix of position tenure on a team and perceptions of team integration. This hypothesis received only partial support in the analysis. As predicted, mix of position tenure was negatively and significantly related to the team functioning dimension of integration. Although the direction of the effect of the mix of position tenure on the team was also negative for the other two dimensions of integration, they did not achieve statistical significance. Position tenure at the individual level was not significantly related to team integration in any of the three models.

Hypothesis 3 posited that the greater the mix of members' age cohorts on a team, the more negative would be members' perceptions of team integration. HLM results supported this relationship for all three dimensions of team integration. In each model, the coefficient for the team's age cohort mix was negative and statistically significant. At the individual level, the identity group variable age was positively related to team functioning but was not related significantly to either participation or role clarity.

Hypothesis 4 held that as the proportion of males and females on an interdisciplinary team approached equality, members of the team would perceive the level of integration more negatively than would members of teams composed largely of a single gender. By contrast, the HLM results suggest that a gender mix closer to 50-50 was associated with more positive perceptions of team integration. These findings obtained for two of the three dimensions of integration: role clarity and team functioning. At the individual level, the identity group variable gender was not a significant predictor of any of the three dependent variables.

Finally, consistent with Hypothesis 5, team size was significantly related to all three dimensions of team integration. The greater the size of the treatment team, the more negative were members' perceptions of the team's integration.

Several general observations can be made regarding the relationship between embedded group characteristics, measured at both the team level and the individual level, and perceptions of team integration. First, two team-level variables—the team's mix of age cohorts and its size—had consistent and significant effects across all three dimensions of team integration. Likewise, membership in one organizational group—physicians—had consistent effects across the three integration variables. For all of the other team-level measures and the other organizational and identity group characteristics of individuals, the effects were specific to particular dimensions of team integration. Third, several measures of the team's mix of members' embedded group characteristics had significant effects on team members' perceptions of team functioning and role clarity. In contrast, only two team-level attributes (the team's mix of member age cohorts and team size) were related to members' perceptions of individual participation on the team. Thus, whether an individual contributes to team discussions seems to be more related to the size of the team, the individual's organizational group

characteristics (occupation and tenure), and, perhaps, the member's personality than it is to the mix of characteristics on the team.

LIMITATIONS

Three aspects of the study design may limit the generalizability of our findings. First, 18 of the teams we studied were not chosen randomly; instead, they were selected based on their receipt of funds from the VA's Long Term Mental Health Enhancement Program. Although our ultimate sample of 124 units includes 106 units selected at random, and the overall sample represents the full range of teams operating in these hospitals, there may be some bias, of which we are unaware, in the composition of our sample of patient care units. Second, our focus was on treatment teams working in Department of Veterans Affairs psychiatric facilities. The extent to which our findings are relevant to teams working in other health care settings, or to teams in other firms or industries, is open to empirical speculation. Third, due to matters beyond our control,[2] we were not able to investigate race and ethnic group memberships of team members, or the racial and ethnic mix of members on teams, as they relate to team integration. We believe these embedded groups are extremely important, and they will become even more important as organizations become more racially and ethnically diverse.

DISCUSSION

Five of our six hypotheses received support for at least one of the three dimensions of team integration examined. The strongest support was found for the effects of team mix on the team functioning dimension. Moderate support was found for the role clarity dimension, and only limited support was observed for the individual participation dimension.

Taken as a whole, our results are generally consistent with the basic premise of the embedded intergroup relations model. Among these underbounded groups, we found that as teams become more diverse along most identity group and organizational group characteristics, intergroup relations among team members suffer and perceived level of team integration declines. Both social identification theory (Tajfel, 1982) and embedded intergroup relations theory (Alderfer, 1987) account for the lower levels of integration found in more diverse teams.

Hypothesis 4 held that integration would decline as the mix of genders on a team approached equality. Although statistically significant, the relationship between gender mix and team integration was opposite to the one we hypothesized. Although this finding is inconsistent with our other findings, it is consistent with previous findings indicating that mixed-gender groups outperform same-gender groups (Jackson et al., 1991; Jackson, May, & Whitney, 1995; Levine & Moreland, 1990; Tsui, Egan, & O'Reilly, 1992; Watson, Kumar, & Michaelsen, 1993; Wood, 1987). Thus, the fact that members of mixed-gender teams give higher ratings of team integration than members

of teams dominated by one gender may reflect a higher sense of collective efficacy in the mixed-gender teams.

It is also possible that this finding is peculiar to psychiatric units in the VA. In these settings, the overwhelming majority of patients on these units is male. Members of mixed-gender teams may feel more effective in role modeling appropriate behavior for these patients, or they may feel safer than members of female-dominated teams in dealing with these sometimes-agitated patients. Additional research is needed to examine this relationship in a wider variety of organizational settings.

Among the organizational and identity group characteristics we studied at the individual level, the most notable findings involve the consistent, positive relationship between age cohort and perceptions of level of integration, and the relatively poor perceptions of team integration by registered nurses. Older team members rate the level of team integration significantly more positively than younger members. This finding is consistent with other research, which has found other job-related attitudes and behaviors such as job satisfaction and turnover to be correlated with age (Lichtenstein, 1984; Locke, 1976; Porter & Steers, 1973). This may be a function of selection whereby only employees who can tolerate the job remain until they reach older age. Alternatively, it may indicate that older workers have adapted to situations that might prove unacceptable to younger employees. In an organization such as the Department of Veterans Affairs, which has excellent system rewards related to job security and retirement benefits, older workers may experience strong incentives to accommodate to difficult conditions.

The relatively low assessments of team integration provided by registered nurses may be due to their particular role in patient care. Nurses in these psychiatric institutions are in contact with patients almost continuously while they are on the job in contrast to physicians, social workers, and others, who see patients only intermittently. Perhaps nurses bear, disproportionately, the negative consequences that team decisions may have on patient behavior and, therefore, are less sanguine about team functioning and decision making. Alternatively, and consistent with social identification theory and embedded intergroup relations theory, the low ratings of team integration provided by nurses might be a reflection of this occupational group's uncertain sense of professional identity or its continuing struggle for greater parity with physicians in the health care system.

As noted previously, mix of member characteristics on a team had only a small effect on individual members' participation on the team. Organizational group characteristics such as occupation and tenure in the VA system were better predictors of team members' participation than their identity group characteristics or the mix of team member characteristics. These two organizational group characteristics can be viewed as indicators of the team member's relative position in the social or professional hierarchy of the team. Perhaps those who are lower in the medical hierarchy and those who are relative newcomers to the VA system feel more inhibited about participating in the team's work. Embedded intergroup relations theory would suggest that based on their experience with higher status professionals outside of the team setting, members in the lower ranking occupations may feel that their contributions would not be respected by these professionals in the team setting.

Several points are relevant to assessing the implications of our findings. First, we measured members' perceptions of team integration, not actual team performance or effectiveness. Our measures of integration pertain to how well members fit into the team and how cohesively and harmoniously the team operates; they are fundamentally measures of team processes. Team performance, on the other hand, is concerned with whether the team achieves positive results; it deals with outcomes. Thus, it would be erroneous to conclude from our findings that teams with a more varied mix of member characteristics are associated with lower levels of team performance. In fact, although more diverse work groups may be noncohesive, fraught with conflict, and incapable of reaching a decision quickly, the very qualities that induce such troublesome processes may create positive outcomes (O'Reilly & Flatt, 1986). More empirical work needs to be done on the relationship between team members' perceptions of integration and the team's actual effectiveness.

Second, this article set out to investigate factors associated with the negative aspects of group or team work and diversity, not to deny the utility of groups or the benefits of diversity. Regardless of their more harmonious group processes, homogeneous teams may no longer be appropriate for most organizations. Such teams might violate the normative diversity goals that many organizations have set for themselves and may become very difficult to construct as tasks and technology become increasingly complex and as the U.S. population becomes increasingly diverse.

Third, although we assumed that the teams examined in this study were underbounded, we did not measure the teams' boundary relationships directly. Rather, we inferred underboundedness from the marginal position these teams held within the formal organizational structure of their respective hospitals.

Organizational managers and/or team leaders who are faced with the task of creating interdisciplinary or diverse work teams are confronting issues that go beyond the fundamental tasks of effectively training, motivating, and supervising teams. According to the embedded intergroup relations model, so long as these teams are underbounded, these managers and team leaders also face all of the strife and conflict that exists in society and in the workplace. Thus, they must contend with conflicts between the genders, races, generations, and ethnic groups on the one hand, and discord between members of different occupations and disciplines on the other.

Some simple prescriptions might help managers and team leaders deal with these conflicts. For example, they might vary team membership characteristics along certain key dimensions while also attempting to maintain homogeneity in group members' other characteristics. Thus, an effective manager or team leader might try to include members of different occupations or disciplines and different races on a team while trying to restrict members to those of similar age cohort, tenure, or corporate division.

More importantly, knowing that conflicts in the larger environment may extend onto the team unless the team has sufficient insulation from the outside environment, managers and team leaders may need to take steps to decrease the permeability of the team's boundary. A major step in this direction would be the establishment of a common mental health treatment model that unifies all members of the interdisciplinary team and a set of role definitions for all members that is consistent with that model. This would reduce boundary permeability by addressing two common problems in

underbounded systems: (a) the dysfunctional, unconscious basic assumptions made by team members about members of other organizational and identity groups and (b) the existence of multiple personal beliefs or theories that team members use to understand and explain what occurs within the group (Alderfer, 1976, 1980). Managers and team leaders should also address other elements of the team's operation that would reinforce the team's boundary. Thus, team leaders should be given the formal authority to evaluate and discipline team members and to set their schedules. Team leaders should also attempt to increase the clarity of the team's goals and to facilitate communication between all team members (Alderfer, 1976, 1980).

Because good leadership facilitates team integration, we believe that the identity and organizational group characteristics of team leaders take on added significance to the membership. According to Tajfel (1982), group members will magnify both similarities and differences between themselves and team leaders. Consequently, it would be important to establish leaders who represent many of the organizational and identity groups from which team members come. Having a team leader who comes from the same identity or organizational group may enable members to overcome many of the barriers to effective integration. Thus, for teams like those we studied in the VA psychiatric hospital setting, it might make good sense to have leaders who are not physicians, but rather who come from the nursing field or the "other" occupations, because many of the intergroup conflicts in the health care system are likely to be related, in part, to the subordinate role that individuals in these other occupations have had to play vis-à-vis physicians.

NOTES

1. Diversity indices were constructed for age (five categories = < 30, 31-39, 40-45, 46-52, > 53), occupation (five categories = physician, psychologist, social worker, nurse, other), and sex.

2. Due to concerns about confidentiality, the labor union officials representing many of the VA staff, whose authorization was necessary for us to conduct the study, did not permit us to include questions on race and ethnicity in the questionnaire.

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