

---

---

**INTERDISCIPLINARY HEALTH CARE TEAMS:  
PROCEEDINGS OF THE SIXTEENTH ANNUAL CONFERENCE**

**September 22-24, 1994**

**Chicago, Illinois**

**Editor**

**John R. Snyder**

**1994**

**School of Allied Health Sciences**

**Indiana University School of Medicine**

**Indiana University Medical Center**

---

---

**SOCIAL NETWORKS, TEAM DEVELOPMENT,  
AND THE QUALITY OF INTERDISCIPLINARY TEAM FUNCTIONING IN GERIATRIC CARE**

Michael P. Farrell  
University of Buffalo, SUNY  
Buffalo, NY

Madeline H. Schmitt  
University of Rochester  
Rochester, NY

Gloria D. Heinemann  
Buffalo Veterans Affairs Medical Center  
Buffalo, NY

Because of the complex mix of physical, psychological, and social problems older people bring to the health care system, interdisciplinary health care teams are becoming the preferred means of care for geriatric patients. In institutional settings, interdisciplinary teams in geriatrics usually consist of three or more disciplines that meet regularly to share information, develop care plans, and coordinate treatment for a defined set of patients. Such teams vary in the stage of team development they achieve and in the quality of their functioning. A fully developed team is one that is relatively low in anomie and has a less hierarchical structure, such that members are free to participate based on the relevance of their expertise (Farrell, 1976; Farrell, Heinemann, & Schmitt, 1986, 1992; Feiger & Schmitt, 1979; Tuckman & Jensen, 1977). The quality of team functioning is likely to be high in fully developed teams; that is, the teams are likely to be cohesive, have open communication, and be task effective (Bass, 1980). Team development and the quality of team functioning may influence patients' outcomes in geriatrics (Feiger & Schmitt, 1979). In addition, the quality of interprofessional relations may have effects on the experience of stress and burnout among team members (Browner, 1987; Steffen, 1980; Vachon, 1987). In this paper, making use of a national sample of 110 interdisciplinary teams in geriatrics from 34 Veterans Affairs Medical Centers, we examine the effects of team members' embeddedness in their team network and in their own discipline networks on the level of team development, the quality of team functioning, and the degree of burnout in team members. In addition, we examine the effects of team development on the quality of team functioning and the degree of stress and burnout in team members.

In the traditional model of the hospital organizational structure, the professional staff is portrayed as a set of positions linked in a vertical chain of command. The hospital director and chief of staff occupy the top positions, and below them are the positions of the chiefs of each service or discipline (e.g., medicine, nursing, social work, dietary). At the bottom of each discipline branch are the skilled professionals who carry out the daily tasks of the patient care. However, a discipline is more than a hierarchical army ready to carry out orders; it is also a loosely coupled network of professionals who share a common culture -- a body of knowledge and a set of skills that differentiate members from those in other disciplines. Indeed, disciplines have been described as a set of "tribes", each with its own language, folklore, and heroes (Diesing, 1971). Each discipline views the other "tribes" in the hospital sometimes as allies, sometimes as foes, but always as outsiders who do not fully appreciate the sacred traditions of their culture.

Within the contemporary model of the hospital's organizational structure, interdisciplinary teams are integrative networks that pull together parts of a highly differentiated system (Kaluzny, 1985). Rather than linking together specialists within the same discipline, the interdisciplinary team establishes links across disciplines and integrates the expertise of diverse professionals to more efficiently and effectively carry out diagnosis, treatment, and care of patients. If disciplines are tribes that sustain a narrow, fragmented orientation toward patient care, then interdisciplinary teams are confederations that create an "inter-tribal," comprehensive orientation.

Members of interdisciplinary teams vary in the degree to which their interactions are embedded in either their own discipline networks or their team networks. Members who are highly embedded in their discipline networks are those who predominantly socialize, consult with, and are supervised by others in their own discipline. When they have time to eat lunch or relax with someone, they do so with others in their own discipline. When they have work-related problems, they more frequently turn to colleagues in their own discipline. While this interaction pattern reinforces members' identification with the culture of their own discipline, it also may make it more difficult for them to communicate with and understand the perspectives of other disciplines on an interdisciplinary team. If embeddedness in disciplines encourages a more selective, discipline-focused orientation toward patient care, then it is likely to impede the more ecumenical orientation required for the development of interdisciplinary teams. Thus, we hypothesize that the more embedded members of an interdisciplinary team are in their own disciplines, the more difficulty the team will have getting beyond the early stages of team development, the poorer the quality of team functioning, and the more stress and burnout in the team members (Farrell, Schmitt, & Heinemann, 1988).

In interdisciplinary teams where members' interactions are highly embedded in their team network, members socialize with, consult with, and are supervised by one another. It is likely that this interaction pattern results in greater awareness and understanding of the perspectives of other disciplines on the team. Members who are highly embedded in their teams should be better able to "take the point of view" of the other disciplines and maintain collaborative relations across disciplines. Team-embedded members may be more likely to bend their professional roles to fit the perceived needs of the team. They have more opportunities to break through the stereotypes based on profession, gender, or ethnicity, so that the appropriate expertise is brought to bear on patients' problems. They have more opportunities to develop solidarity, overcome communication blocks, and negotiate a set of norms for working together. Based on this reasoning, we hypothesize that the more embedded members are in their interdisciplinary team network, the more developed the team, the better the quality of team functioning, and the less stress and burnout in team members.

It might be argued that the degree to which members are embedded in their teams is an indicator of team solidarity, so that it is a circular argument to propose that team embeddedness is related to team development and the quality of team functioning. However, although team members have some control over their decisions to consult or socialize with their own or other disciplines, the degree of embeddedness in a team or a discipline may be a consequence of factors that are not fully within the members' control. For example, team embeddedness is likely to be influenced by the percent of time that the members are assigned to a team, as well as by the location of team members' offices in the hospital. Team and discipline embeddedness also are influenced by the setting where the team carries out its work. Some types of interdisciplinary teams, such as adult day health care, have their workplace located in a separate building where team members work side-by-side and have minimal contact with their discipline networks. Other types, such as hospital-based home care teams, have work routines that carry them into the community away from the discipline networks. Such teams are like satellites outside the hospital bureaucracy. On the other hand, other structural factors encourage discipline embeddedness and discourage team embeddedness. For example, in some hospitals, members of disciplines such as physical therapy or pharmacy spend most of the day working alongside one another in the same large room. Thus, team embeddedness and discipline embeddedness are influenced by structural factors in the physical and organizational environment as well as by the motivations of members.

Although time constraints usually limit professionals to being embedded in either their interdisciplinary teams or their disciplines, the two types of embeddedness are not necessarily mutually exclusive. For example, a nurse on a nursing home care team may be highly embedded in both the team network and the nursing network. At the other extreme, a member could be weakly embedded in both networks. For example, a dietitian responsible for several units may be moving from network to network all day, and may consult and socialize with persons who are neither members of her own discipline nor members of one particular team. Thus, embeddedness in one's own discipline and embeddedness in a team network are variables that should be examined separately.

## Method

The research design, sample, and procedures are described in a companion paper in this volume by Heinemann, Schmitt, and Farrell (1994).

### Sample

Briefly, a national sample of 34 Veterans Affairs hospitals was obtained. Hospitals were selected on the basis of the number of geriatric teams present and on the basis of location in the four VA regions of the country. We selected all hospitals with four types of teams present, and then continued selecting hospitals with two or three types of teams present until we had enough hospitals to meet the number required by a power analysis for our study. The four types of teams were adult day health care (10%), hospital based home care (31%), nursing health care (32%), and geriatric evaluation and management teams (26%). The smaller percentage of adult day health care teams reflects the fact that there are fewer such teams in the VA system. All 111 teams sampled agreed to participate in the study, but one team was dropped from the team level analysis because only two team members completed the questionnaires. Because the team is the unit of analysis in this paper, the number of cases is 110 teams.

At the individual level, the sample consists of 973 individuals who were members of 111 interdisciplinary health care teams in geriatrics. Ninety-six percent (973 out of 1018) of the eligible individuals responded. Some individuals were members of more than one team, and many, but not all, of these overlapping members agreed to complete questionnaires for two teams. In one case a team member completed a questionnaire for three teams on which she was a member. Taking these overlapping memberships into account, the total number of questionnaires completed was 1033 out of 1088 eligible team members (95%).

The average size of the teams was 9 members. The average length of time in existence was eight years. The average number of disciplines represented on a team was eight, ranging from physicians, nurses, and social workers to kinesiotherapists, recreation therapists, and chaplains.

### Procedures

In a preliminary telephone interview with the team coordinator or program director of each team, we elicited team members' participation and identified the participating members of the team, defined as those who attended team meetings on a regular basis to plan patient care, and who delivered care to the team's patients. The coordinator also was asked to complete a team questionnaire that provided information on patient load, team life events, and other team characteristics.

One of the three co-investigators visited each of the 34 hospitals for two to five days and met with members during the team's weekly patient care meeting. All team members completed a questionnaire, taking an average of one hour, either during the meeting or before the researcher left the hospital. In addition to demographic information, questions were asked about each member's perceptions of the team's functioning, other team members' behavior, and their experience on the team. When questionnaires were returned, they were edited immediately and questions about the data were followed up and clarified before the researcher left the site.

### Measures

**Embeddedness.** The independent variables of team embeddedness and discipline embeddedness were measured with self-report items in which respondents gave their subjective impressions of the amount of time they spent interacting with team members and discipline members. The team embeddedness scale consisted of three items answered using a seven point bi-polar scale on which

respondents indicated whether they socialized with, consulted with, and were supervised by "team members" (1=much more with team members) or "others at work" (7=much more with others at work). If they interacted with both team members and others equally, they indicated it by checking a "4" in the middle of the scale. For example, the item for "socializing" was structured as follows:

To what degree do you rely on team members versus others in your work setting for eating lunch, visiting together, or other forms of socializing within and outside the hospital?

|                      |              |   |   |         |   |   |              |                   |  |
|----------------------|--------------|---|---|---------|---|---|--------------|-------------------|--|
|                      | Much<br>More |   |   | Equally |   |   | Much<br>More |                   |  |
| Your team<br>members | 1            | 2 | 3 | 4       | 5 | 6 | 7            | Others at<br>work |  |

As an indicator of discipline embeddedness, we asked members to make judgments about the degree to which they usually socialized with, consulted with, or were supervised by people from their own discipline or other disciplines. For example, on a seven point scale they indicated whether they consulted with members of their own discipline (1=much more with your own discipline) or others at work (7=much more with other disciplines). The item for "consulting" was structured as follows:

To what degree do you consult with persons in your own discipline versus persons in other disciplines about work-related problems (e.g., a difficult patient care situation, an administrative problem or a problem with a co-worker)?

|                        |              |   |   |         |   |   |              |                      |  |
|------------------------|--------------|---|---|---------|---|---|--------------|----------------------|--|
|                        | Much<br>More |   |   | Equally |   |   | Much<br>More |                      |  |
| Your own<br>discipline | 1            | 2 | 3 | 4       | 5 | 6 | 7            | Other<br>disciplines |  |

Scores on each three-item scale can range from 3 to 21. After recoding, a high score on the team embeddedness scale means the person was highly embedded in the team, and a high score on the discipline embeddedness scale means the person was highly embedded in his or her own discipline. Alpha reliability for the three team embeddedness items was .78; for the three discipline embeddedness items it was .71.

In order to assess the concurrent validity of these new scales, we correlated scores on these subjective embeddedness scales with a set of objective network scales developed for this study. Based on techniques for measuring network properties (Fisher, 1982), the objective network scales consisted of three sets of questions that first asked members to list the initials of persons they socialized with, consulted with, or who supervised them over the previous month. After the respondent listed these persons, they were asked to indicate each person's occupation, whether or not they were a team member, and how frequently they socialized with them, consulted with them, or were supervised by them (1= less than monthly; 2 = monthly; 3 = weekly; and 4 = daily). Based on the answers to these questions, an index of embeddedness in the team was computed. For example, the index for team embeddedness is equal to sum of the percent of time spent socializing with, consulting with, and being supervised by team members. Alpha reliability for the objective team embeddedness scale was .77. For the objective discipline embedded scale it was .61. The correlation between the objective and the subjective team embeddedness scales was .79. The correlation between the objective and subjective discipline embeddedness scales was .61. The results suggest that these new scales have acceptable levels of validity and reliability. Analysis for this paper was carried out using both types of scales and the results were virtually identical. For this paper, we present the results using the subjective measures.

Team Development. Team development was assessed with two measures, the Team Anomie Scale (Farrell et al., 1992) and the degree of variation in prominence in team meetings. The Team Anomie Scale is a 20-item, single factor scale measuring how confused or uncertain members are about team members' roles, and the team's norms and goals. The psychometric properties of this scale are described in a companion paper in this volume (Schmitt, Heinemann, & Farrell, 1994).

The degree of hierarchy in a team was assessed with the distribution of scores on the Prominence (Up-Down) subscale of the SYMLOG adjective rating scale (Bales & Cohen, 1979). The Prominence subscale consist of 18 items that measure how active, dominant and assertive versus how passive, obedient, or submissive each member is perceived to be by other team members. Bales & Cohen (1979) reported reliability based on the Gulliksen formula = .77. To assess the validity of scores on the Prominence subscale as indicators of the degree of dominance versus submissiveness displayed by members of a group, Bales & Cohen correlated prominence scores with summary scores of group members based on observers' coding of verbal and nonverbal, dominant and submissive behavior. Correlations of prominence ratings and observed behavior ranged from .76 to .80.

Each member of a team was asked to rate each other member using the SYMLOG items. For each team member rated, we computed a mean score based on the other members' ratings of that member. We then examined the distribution of these mean scores. As an indicator of the degree of hierarchy in each team, we computed the standard deviation of the mean prominence scores. The higher the standard deviation, the more unequal the distribution of prominence and the more hierarchy in the team.

Quality of Team Functioning. The quality of team functioning is indicated by the levels of team cohesiveness, communication, and task effectiveness. To measure cohesion, we used Moos' (1986) 9-item Cohesion scale, modified with permission to be relevant to health care teams. To measure the quality of communication, we used Shortell and Rousseau's 10-item Communication Scale, which we also modified slightly, with permission, to be more relevant to teams. Finally, to measure team effectiveness, we used Shortell and Rousseau's 8-item Task Effectiveness scale (Shortell, Rousseau, Gillies, Devers, & Simons, 1991). These scales are also described in the companion paper (Schmitt et al., 1994).

Occupational stress and burnout. Two subscales of Maslach's Burnout Inventory (Maslach & Jackson, 1986) were used to measure emotional exhaustion and depersonalization. A description of these subscales also can be found in the companion paper by Schmitt et al. (1994).

Control variables. Several variables may confound the effects of the embeddedness variables. In the regression analysis, we controlled for team stability, team size, and turnover of team membership. Team stability was measured by the average length of time that regular team members had been on the team. Team size was measured by the number of regular team members on each team, which were defined as members who met regularly with the team and were responsible for providing care to team patients. Membership turnover was measured by reports by the team coordinator on whether or not the team had lost or gained members in the six months prior to our visit.

## Analysis

Each team member completed the scales measuring team properties, such as anomie and cohesion. As can be seen in the companion paper (Schmitt et al., 1994), there is some variation in how members perceived their teams. To provide bias-free estimates of team properties, we computed the mean score for members' perceptions of team properties. Thus, for example, the level of cohesion in each team is indicated by the mean cohesion score of all members of the team.

## **Results**

Although we reasoned that team embeddedness and discipline embeddedness could be conceptualized as separate constructs, empirically we found a moderate inverse correlation between them. In other words, although a person theoretically could be low on both team and discipline embeddedness, empirically, if the person was low on one form of embeddedness, they were likely to be high on the other form. The correlation between the indicators of team and discipline embeddedness was  $r = -.56, p < .001$ . Such a correlation suggested potential multicollinearity problems if the two variables were included as

independent variables in the same analysis. For this reason, we examined effects of team embeddedness and discipline embeddedness in separate analyses.

To examine the effects of team embeddedness and discipline embeddedness on anomie, variation in prominence, cohesion, communication, effectiveness, emotional exhaustion, and depersonalization, we used MANOVA. The scores on the embeddedness scales were divided into four quartiles, so that there were four levels of team embeddedness and four levels of discipline embeddedness. Quartiles were used so as to examine whether the relationships were curvilinear, rather than linear, and also to look for interaction effects.

For both the multivariate and univariate tests, we find that team embeddedness has significant effects on cohesion, communication, and effectiveness (Table 1). The more embedded members are in their teams, the more cohesion, the better the communication, and the more effectively the teams functioned. In other words, the more members socialize with, consult with, and are supervised by team members, the better the team functions.

**Table 1**  
**Effects of team embeddedness on cohesion, communication,**  
**and effectiveness in teams**

|                    | Team Embeddedness |                 |                 |                 | Univariate Tests                         |      |
|--------------------|-------------------|-----------------|-----------------|-----------------|--|------|
|                    | LOW<br>1          | 2               | 3               | HIGH<br>4       | E  | p    |
| Cohesion           | 6.11<br>(1.53)    | 6.53<br>(1.67)  | 7.48<br>(.99)   | 8.07<br>(.87)   | 16.93                                    | .001 |
| Communi-<br>cation | 45.48<br>(4.36)   | 46.05<br>(4.69) | 48.32<br>(4.13) | 50.62<br>(3.54) | 8.52                                     | .001 |
| Effective-<br>ness | 36.79<br>(3.46)   | 37.78<br>(3.75) | 40.21<br>(2.72) | 42.13<br>(2.08) | 12.72                                    | .001 |
| N                  | 28                | 27              | 29              | 27              | Hotellings = .50<br>E = 5.80<br>p < .001 |      |

The multivariate effects of discipline embeddedness are significant, but the univariate effects are only significant for cohesion and task effectiveness (Table 2). As predicted, the more embedded members are in their discipline networks, the less cohesion and task effectiveness. The effects of discipline embeddedness on communication are not significant, but they are in the same direction. These findings imply that interdisciplinary teams with members who are more embedded in their own disciplines function less well than those with members who are less embedded in their own disciplines.

**Table 2**  
**Effects of discipline embeddedness on cohesion, communication and effectiveness**

|                    | Discipline Embeddedness |                 |                 |                 | Univariate Tests                             |        |
|--------------------|-------------------------|-----------------|-----------------|-----------------|--|--------|
|                    | LOW<br>1                | 2               | 3               | HIGH<br>4       | E  | $\rho$ |
| Cohesion           | 7.63<br>(1.40)          | 7.25<br>(1.62)  | 6.58<br>(1.50)  | 6.70<br>(1.28)  | 3.14   | .05    |
| Communi-<br>cation | 48.67<br>(5.12)         | 48.45<br>(4.36) | 46.43<br>(4.61) | 46.82<br>(4.13) | 1.66   | .18    |
| Effective-<br>ness | 40.85<br>(3.88)         | 40.06<br>(3.64) | 37.99<br>(3.05) | 37.94<br>(3.34) | 4.91   | .01    |
| <b>N</b>           | 28                      | 28              | 27              | 28              | Hotellings = .17<br>E = 1.92<br>$\rho$ < .05 |        |

Looking at the effects of the two types of embeddedness on emotional exhaustion and depersonalization, we find the same pattern (Tables 3 and 4). The more embedded members are in their teams, the less emotional exhaustion and depersonalization they report. Conversely, the more members are embedded in their own disciplines, the higher their scores on these indicators of burnout.

**Table 3**  
**Effects of team embeddedness on staff burnout:  
depersonalization of patients and emotional exhaustion**

|                         | Team Embeddedness |                 |                 |                 | Univariate Tests                              |        |
|-------------------------|-------------------|-----------------|-----------------|-----------------|---|--------|
|                         | LOW<br>1          | 2               | 3               | HIGH<br>4       | E   | $\rho$ |
| Deperson-<br>alization  | 5.11<br>(1.44)    | 4.47<br>(1.53)  | 4.21<br>(1.65)  | 2.99<br>(1.41)  | 9.33  | .001   |
| Emotional<br>Exhaustion | 20.46<br>(3.53)   | 19.38<br>(4.24) | 18.48<br>(3.75) | 17.21<br>(4.54) | 3.22  | .05    |
| <b>N</b>                | 28                | 27              | 29              | 27              | Hotellings = .26<br>E = 4.69<br>$\rho$ < .001 |        |

**Table 4**  
**Effects of discipline embeddedness on staff burnout:**  
**depersonalization of patients and emotional exhaustion**

|                         | Discipline Embeddedness |                 |                 |                 | Univariate Tests                         |      |
|-------------------------|-------------------------|-----------------|-----------------|-----------------|--|------|
|                         | LOW<br>1                | 2               | 3               | HIGH<br>4       | E  | p    |
| Deperson-<br>alization  | 3.70<br>(1.70)          | 3.41<br>(1.50)  | 4.75<br>(1.46)  | 4.98<br>(1.56)  | 3.86                                     | .01  |
| Emotional<br>Exhaustion | 17.51<br>(4.65)         | 17.92<br>(3.38) | 20.80<br>(3.74) | 19.39<br>(4.19) | 6.80                                     | .001 |
| N                       | 28                      | 28              | 27              | 28              | Hotellings = .24<br>E = 4.18<br>p < .001 |      |

Looking at the effects of team embeddedness on our indicators of team development, we find a significant multivariate effect, but in the univariate analysis only the effects on variation in prominence are significant (Table 5). The results suggest that prominence is more equal when discipline embeddedness is low and team embeddedness is high.

**Table 5**  
**Effects of team embeddedness on team anomie and variation in prominence**

|                           | Team Embeddedness |                  |                 |                 | Univariate Tests                        |     |
|---------------------------|-------------------|------------------|-----------------|-----------------|---|-----|
|                           | LOW<br>1          | 2                | 3               | HIGH<br>4       | E                                       | p   |
| Team<br>Anomie            | 44.77<br>(6.22)   | 45.29<br>(10.07) | 43.32<br>(7.86) | 41.73<br>(6.89) | 1.12                                    | .34 |
| Variance in<br>Prominence | 3.65<br>(.76)     | 3.23<br>(.57)    | 3.15<br>(.75)   | 3.32<br>(.54)   | 3.16                                    | .05 |
| N                         | 28                | 28               | 27              | 28              | Hotellings = .13<br>E = 2.24<br>p < .04 |     |

Examining the effects of discipline embeddedness on anomie and variance in prominence, we find that the effects are not significant (Table 6).

**Table 6**  
**Effects of discipline embeddedness on team anomie and variation in prominence**

|                        | Discipline Embeddedness |                 |                 |                 | Univariate Tests                        |     |
|------------------------|-------------------------|-----------------|-----------------|-----------------|---|-----|
|                        | LOW<br>1                | 2               | 3               | HIGH<br>4       | E                                       | p   |
| Team Anomie            | 42.28<br>(7.49)         | 44.71<br>(8.29) | 45.55<br>(8.46) | 42.64<br>(7.24) | 1.12                                    | .34 |
| Variance in Prominence | 3.21<br>(.76)           | 3.38<br>(.68)   | 3.31<br>(.68)   | 3.44<br>(.61)   | .57                                     | .63 |
| N                      | 28                      | 27              | 29              | 27              | Hotellings = .05<br>E = .92<br>p = <.48 |     |

### Regression Analysis

In later analyses, we will be testing a structural equation model of our theory of factors affecting the quality of team functioning and team members' burnout. As a preliminary step in testing this model, to assess the unique effects of the independent variables, we used ordinary least squares regression analyses in which the indicators of the quality of team functioning (cohesion, communication and task effectiveness) were regressed on the embeddedness and the team development indicators (anomie and the variation in prominence). In this analysis, we also controlled for the degree of membership stability, team size, and turnover of team membership (members leaving or joining the team), as it seemed likely that these variables would influence the dependent variables. Because of multicollinearity problems due to the correlation between team embeddedness and discipline embeddedness, we carried out separate analyses for each of these indicators.

Looking at the control variables in the regression (Tables 7 and 8), we see that the more stable the team membership, the better the team communication and the more effectively the team performed their tasks. In addition, the larger the size of the team, the less well the members communicated with one another. These findings are intuitively what we would expect. However, none of the effects of member turnover were significant in this analysis. Contrary to our expectations, when discipline embeddedness is included in the equation, the larger the team, the more task effectiveness (Table 8).

Team embeddedness, anomie, and variation in prominence each have unique effects in the expected directions (Table 7). After introducing the controls, team embeddedness has positive effects on all three dependent variables, while anomie and variation in prominence both have negative effects on the outcomes. The effects of anomie on the outcome variables are particularly strong. Only the effect of variation in prominence on task effectiveness fails to reach significance.

**Table 7**  
**Regression of cohesion, communication, and effectiveness on**  
**team embeddedness and team development indicators (anomie and variation in prominence),**  
**controlling for stability, size and member turnover**  
**(unstandardized B and standard deviation)**

|                         | Cohesion         | Communication     | Effectiveness    |
|-------------------------|------------------|-------------------|------------------|
| Membership Stability    | .0006<br>(.005)  | .02<br>(.01)      | .03*<br>(.01)    |
| Team Size               | .007<br>(.05)    | -.24*<br>(.11)    | .06<br>(.04)     |
| Member Turnover         | -.006<br>(.12)   | .32<br>(.31)      | .28<br>(.06)     |
| Team Embeddedness       | 1.27***<br>(.28) | 2.68***<br>(.72)  | 3.15***<br>(.68) |
| Team Anomie             | -.11***<br>(.01) | -.41***<br>(.03)  | -.26***<br>(.03) |
| Variation in Prominence | -.35*<br>(.15)   | -1.36***<br>(.39) | -.43<br>(.37)    |
| Constant                | 11.84<br>(.78)   | 68.74<br>(1.98)   | 47.22<br>(1.87)  |
| Adjusted R <sup>2</sup> | .59              | .72               | .60              |

\*p<.05 \*\*p<.01 \*\*\*p<.001

Discipline embeddedness has effects that are exactly the opposite of team embeddedness (Table 8). The more discipline embeddedness, the less cohesion, the less well the members communicate, and the less task effectiveness.

**Table 8**  
**Regression of cohesion, communication, and effectiveness on discipline**  
**embeddedness and team development indicators (anomie and variation in prominence),**  
**controlling for stability, size and member turnover**  
**(unstandardized B and standard deviation)**

|                         | Cohesion          | Communication     | Effectiveness    |
|-------------------------|-------------------|-------------------|------------------|
| Membership Stability    | .004<br>(.005)    | .03*<br>(.01)     | .04**<br>(.01)   |
| Team Size               | .06<br>(.04)      | -.11<br>(.11)     | .20*<br>(.04)    |
| Member Turnover         | -.006<br>(.12)    | .30<br>(.32)      | .27<br>(.30)     |
| Team Embeddedness       | -1.54***<br>(.41) | 2.66**<br>(1.06)  | 3.88**<br>(.99)  |
| Team Anomie             | -.11***<br>(.01)  | -.41***<br>(.04)  | -.27***<br>(.03) |
| Variation in Prominence | -.36*<br>(.16)    | -1.43***<br>(.40) | -.45<br>(.38)    |
| Constant                | 13.96<br>(.89)    | 72.59<br>(2.29)   | 52.50<br>(2.15)  |
| Adjusted R <sup>2</sup> | .56               | .69               | .58              |

\*p<.05 \*\*p<.01 \*\*\*p<.001

Looking at the effects of the model on emotional exhaustion and depersonalization, we see that the more team embeddedness, the lower the team members scored on both measures of burnout (Table 9).

**Table 9**  
**Regression of depersonalization and emotional exhaustion on team embeddedness**  
**and team development indicators (anomie and variation in prominence),**  
**controlling for stability, size and member turnover**  
**(unstandardized B and standard deviation)**

|                         | Depersonalization | Emotional<br>Exhaustion |
|-------------------------|-------------------|-------------------------|
| Membership Stability    | -.003<br>(.008)   | -.03<br>(.02)           |
| Team Size               | .09<br>(.07)      | -.11<br>(.17)           |
| Member Turnover         | -.15<br>(.18)     | -.14<br>(.46)           |
| Team Embeddedness       | -1.64***<br>(.43) | -2.28**<br>(1.08)       |
| Team Anomie             | .05*<br>(.01)     | .21***<br>(.05)         |
| Variation in Prominence | .42*<br>(.23)     | -.71<br>(.58)           |
| Constant                | 1.68<br>(1.18)    | 14.89<br>(2.96)         |
| Adjusted R <sup>2</sup> | .24               | .22                     |

\*p<.05    \*\*p<.01    \*\*\*p<.001

The more anomie in a team, the higher the scores on the burnout scales. The more variation in prominence on the team, the more depersonalization of patients. Discipline embeddedness has significant effects only for depersonalization: the more embedded members are in their disciplines, the more depersonalization of patients (Table 10).

**Table 10**  
**Regression of depersonalization and emotional exhaustion on discipline embeddedness**  
**and team development indicators (anomie and variation in prominence),**  
**controlling for stability, size and member turnover**  
**(unstandardized B and standard deviation)**

|                         | Depersonalization | Emotional<br>Exhaustion |
|-------------------------|-------------------|-------------------------|
| Membership Stability    | -.01<br>(.008)    | -.04**<br>(.02)         |
| Team Size               | .02<br>(.07)      | .01<br>(.17)            |
| Member Turnover         | 0.14<br>(.19)     | -.12<br>(.46)           |
| Discipline Embeddedness | 1.26*<br>(.64)    | 1.45<br>(1.56)          |
| Team Anomie             | .05*<br>(.02)     | .21***<br>(.05)         |
| Variation in Prominence | .50*<br>(.25)     | -.59<br>(.60)           |
| Constant                | .29<br>(1.39)     | 12.44<br>(3.37)         |
| Adjusted R <sup>2</sup> | .16               | .19                     |

\*p<.05    \*\*p<.01    \*\*\*p<.001

### Discussion

Some researchers have suggested that the tension between the more traditional "vertical" discipline hierarchies and the "horizontal" matrix structure of interdisciplinary teams limits team members' abilities to work together (Kaluzny, 1985; Temkin-Greener, 1983; Wise, Beckhard, Rubin, & Kyte, 1974). To a varying extent, team members are caught in a dilemma of conflicting loyalties – loyalty to the team versus loyalty to their respective disciplines. When they work well, interdisciplinary teams share and analyze information in synergistic ways that result in innovative solutions that more effectively meet the needs of patients. However, these integrative solutions sometimes place demands on the time and energy of the members that conflict with their responsibilities toward their disciplines. Team members may be

pressured to take on responsibilities that are ordinarily outside their professional roles; or they may be pressured to allow other disciplines to take on responsibilities that are ultimately within their domain. For example, a licensed practical nurse may take on the responsibilities of a registered nurse; or a physician may relinquish responsibilities to a nurse practitioner. How the members resolve these issues of conflicting demands has implications for how well teams develop and function.

We hypothesized that the more embedded members are in their team network and the less embedded they are in their own discipline networks, the more likely their team is to develop, the better the quality of team functioning, and the less burnout of team members. We found that a high degree of member embeddedness in interdisciplinary teams has positive effects on the quality of team functioning and the degree of burnout in members; and a high degree of member embeddedness in their own disciplines has negative effects on these variables. However, we found that while team embeddedness is associated with lower levels of variation in prominence, all other effects of team and discipline embeddedness on team development indicators are not significant.

Because discipline embeddedness has negative effects and team embeddedness has positive effects on the quality of team functioning, one might be tempted to infer that the more isolated teams are from their discipline networks, the better the quality of team functioning. However, it should be remembered that, although there was variation in the degree to which members were embedded in their disciplines, members of these teams existed within the constraints of hospital bureaucracies. None of the teams consisted of members who were totally isolated from their own disciplines. It is only within a "normal" range that these findings hold. The nearness of the discipline networks, and the accountability to authorities in those networks sets constraints on how isolated a team can be. If members became totally isolated from their disciplines, it is possible that the group pressure in the team could erode the expertise of members. As an isolated team develops its own unique culture with its own values and priorities, it may devalue the contributions of some disciplines and overvalue the contributions of others. This culture could have negative consequences for team members and for patient care. As members bend their roles to take into account the decisions of the team, they may expand their roles into areas that are outside of their expertise. If the members become detached from their disciplines as reference groups, their self-concepts as professionals may be distorted because they are dependent on feedback from team members who are not experts in their fields. The findings here can only be generalized to interdisciplinary teams that are constrained within the larger network of the hospital bureaucracy. Nevertheless, within the normal range of embeddedness in discipline networks within the hospital, that teams with members who are more embedded in their own disciplines did not function as well as those with members who were at lower levels of discipline embeddedness.

Within these same constraints, we found that the more embedded the members were in their teams, the better the teams functioned and the less burnout in team members. The finding has important implications for practice. The more the structure of the work setting encourages consulting and socializing among team members, the better the team functions, and the less burned out the members are. The more the team members interact on social occasions outside of the work setting, the better the team functions. The more team members are supervised by a team member, the better the team functions. Of course, there may be exceptions to these generalizations, such as when persons who have extremely negative feelings toward one another are forced to interact. But within the normal range of interpersonal relations, the more embedded members are in the team network, the better it is for the team and for the members.

In addition to examining the effects of embeddedness on team properties and team member burnout, we also examined the effects of indicators of team development on the quality of team functioning and member burnout. After controlling for the embeddedness indicators, team size, team stability, and membership turnover, we found that the team development indicators each had unique impacts on the quality of team functioning and the level of burnout in members. Specifically, we found that anomie has strong effects on cohesion, communication, and task effectiveness, as well as members' levels of emotional exhaustion and their depersonalization of patients. In addition, we found that the more variation in prominence, the less cohesion, the worse the communication, and the more depersonalization.

Of course, none of our teams are completely egalitarian; the distribution of prominence is never completely flat. Some members are always more active and influential than others. Ideally, the more prominent members are those whose expertise is most relevant to the tasks of the team, such as medicine in geriatric evaluation teams and nursing in nursing home care teams. A team that is compulsively egalitarian may not function well, but within the normal range of hierarchy, those teams that have lower variation in members' prominence are more cohesive and have better communication than those that have higher variation. function better than those that have higher variation.

These findings are consistent with team development theories, which argue that development exerts an independent effect on team functioning. That is, regardless of the effect of external factors such as the degree of embeddedness, teams can develop into well functioning groups. Effective leadership and team training that reduces anomie and creates a more open, egalitarian structure can have positive effects of team functioning.

The findings from the regression analysis are a preliminary step toward testing a structural equation model of factors that affect team development, the quality of team functioning, and stress and burnout in team members. For a presentation of the full model, see the companion paper by Heinemann et al., 1994. The results of our test of the full model will be presented in a later paper.

### References

- Bales RF and Cohen SP (1979). SYMLOG: A System for the Multiple Level Observation of Groups. New York: Free Press.
- Bass BM (1980). Team productivity and individual member competence. Small Group Behavior, 11:431-504.
- Browner CH (1987). Job stress and health: The role of social support at work. Research in Nursing and Health, 10:93-100.
- Diesing P (1971). Patterns of Discovery in the Social Sciences. Chicago: Aldine Atherton.
- Farrell MP (1976). Patterns of group development. Journal of Applied Behavioral Science, 12:524-542.
- Farrell MP, Heinemann GD and Schmitt MH (1986). Informal roles, rituals, and styles of humor in interdisciplinary teams: The relation to stages of team development. Internal Journal of Small Group Research, 2:143-162.
- Farrell MP, Schmitt MH and Heinemann GD (1988). Organizational environments of interdisciplinary health care teams: Impact on team development and implications for consultation. International Journal of Small Group Research, 4:31-54.
- Farrell MP, Heinemann GD and Schmitt MH (1992). A measure of anomie in health care teams in Snyder JR (ed), Proceedings of the 14th Annual Conference on Interdisciplinary Health Care Teams, Indianapolis, IN: Indiana University, 168-197.
- Feiger SM and Schmitt MH (1979). Collegiality in interdisciplinary health teams: Its measurement and its effects. Social Science & Medicine, 13A:217-229.
- Fisher C (1982). To Dwell Among Friends: Personal Networks in Town and City. Chicago: University of Chicago Press.

- Heinemann GD, Schmitt MH and Farrell MP (1994). The quality of geriatric team functioning: Model and methodology. Proceedings of the 16th Annual Conference on Interdisciplinary Health Care Teams, Indianapolis, IN: Indiana University.
- Kaluzny A (1985). Design and management of disciplinary and interdisciplinary groups in health services: Review and critique. Medical Care Review, 42:77-112.
- Maslach C and Jackson SE (1986). Maslach Burnout Inventory Manual, Second Edition. Palo Alto, CA: Consulting Psychologist Press.
- Moss RH (1986). Group Environment Scale Manual, Second Edition. Palo Alto, CA: Consulting Psychologist Press.
- Schmitt MH, Heinemann GD and Farrell MP (1994). Discipline differences in attitudes toward interdisciplinary teams, perceptions of the process of team work, and stress levels in geriatric teams. Proceedings of the 16th Annual Conference on Interdisciplinary Health Care Teams, Indianapolis, IN: Indiana University.
- Shortell SM, Rousseau DM, Gillies RR, Dever KJ and Simons TL (1991). Organizational assessment in intensive care units: Construct development, reliability, and validity of the ICU Nurse-Physician Questionnaire. Medical Care, 29:709-726.
- Steffen SM (1980). Perceptions of stress: 1800 nurses tell their stories. In Klaus KE and Bailey JT (eds), Living with Stress and Promotion Well-Being: A Handbook for Nurses, St. Louis: CV Mosby, 38-58.
- Temkin-Greener H (1983). Interpersonal perspectives in teamwork in health care: A case study. Milbank Memorial Fund Quarterly, 61:638-641.
- Tuckman BW and Jensen MAC (1977). Stages of small group development revisited. Group and Organizational Studies, 2:419-427.
- Vachon M (1987). Occupational Stress in the Care of the Critically Ill, the Dying, and the Bereaved. Washington: Hemisphere Publishing Corporation.
- Wise R, Beckhard R, Rubin L and Kyte AL (1974) Making Health Teams Work. Cambridge: Ballinger Publishing Company.

#### Acknowledgement

Preparation of this paper was supported in part by Grant 1R01AGO8957-03 from the National Institute on Aging and in part by the Department of Veterans Affairs. Its contents are solely the responsibility of the authors and do not necessarily represent the views of the National Institute on Aging or the Department of Veterans Affairs. The authors gratefully acknowledge the assistance of Sharon Fish, Carol Crane, Rachael Eberle, Sara Brallier, Laurie Krupski, Marina Belaya, Nancy Reynolds, and Alice Wilkinson. In addition we wish to recognize facilitation of this research by three consultants, Klaus Roghmann, Ruth Ann Tsukuda and Theresa Drinka, the VA Central Office, the local investigators at the 34 VAMC's, and all the participating team members.