Order Number 8822804

Beyond the dyad: Interdependence in management networks

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BEYOND THE DYAD: INTERDEPENDENCE IN MANAGEMENT NETWORKS

A dissertation submitted to the

Division of Graduate Studies and Research
of the University of Cincinnati

in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY

in the Department of Management
of the College of Business Administration

1988

by

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May 18, ***19*** 88

I hereby recommend that the thesis prepared under my supervision by Terri A. Scandura

entitled Beyond the Dyad: Interdependence in Management Networks

be accepted as fulfilling this part of the requirements for the degree of Doctor of Philosophy

Approved by:

Abstract

Current trends in the United States' position in the world economy indicate that foreign competitors are gradually eroding markets which have been dominated by the U.S. since post WWII. This rapidly changing competitive environment poses a challenge to those who will be in managment positions in private sector organizations during the next few decades. The current emphasis in business education in the U.S. is based on models of individual effort and reward systems, which may not ensure the adaptibilty which will be necessary to compete in an international economy. This research investigates an alternative model of management development, which is based upon the concept of management networks. Three literatures were fused to develop the theoretical statement for the research. First, the literature on leader-member exchange was reviewed, revealing the importance of the direct reporting relationship in a manager's network. Second, the contributions of organizational mentors, as distinctly different than direct reporting relationships were considered. Third, the literature on social networks was reviewed, which provided an overall framework which includes the manager's relationships with supervisors, mentors, peers and others. Variables derived from these three perspectives on network relationships were hypothesized to be positively related to measures of managerial performance and career mobility.

Data were collected from 244 managers within a large manufacturing facility (response rate = 70%). Supervisor responses were obtained for 194 of these managers. Criterion measures of managerial performance, salary, salary growth and promotions were regressed onto mentorship, dyadic management development, and professional networking measures to determine the unique contribution of each to the criterion variance accounted for. Results indicated that dyadic managment development (including LMX) made unique contributions to performance, salary and promotions, whereas mentorship and professional networking did not. Controlling for rated performance clarified contributions of mentorship and networking on some of the criterion measures. These results suggest a phasic model of the development of management networks.

Acknowledgements

Quite early in the development of this project, I learned that professional networks do indeed exist, and have a powerful impact on the implementation of agendas. I would like to thank each of the nodes in my network for their role in the execution of this research. In essence, this project is one illustration of the outcomes of network interdependence.

First, I acknlowlege the contributions of my committee members for their patience and support in the development of this project. The insights of my committee chairman, Ralph Katerberg, are reflected in each page and I am appreciative of his attention to all apsects of this work. Gail Fairhurst made substantial contributions to the theoretical framework, particulary in the area of Mentorship. Steve Green forced "fuzzy" ideas into focus and made valuable suggestions for the research methods employed. And Irvine "Dusty" Anderson provided a necessary applied perspective to the work, bringing his expertise in Human Resource Development to bear on the concepts and measures. I cannot envision more suitable mentors than these four talented individuals.

In addition to my committee, others have contributed to the development of this project. George Graen was a significant influence in my professional development; his impact on this work is especially evident in the development of the Dyadic Management Development concept. Ann Welsh has also contributed to my development, as mentor, role model and friend. Her shaping of the network concept is apparent

and she made also made contributions to the measurement of Professional Networking and the statistical techniques employed. Rogert Hebert, Joe Mays and Mary Carmichael lent their assistance at the research site and Sandi Stallings and Amy Jackson provided word processing and graphics assistance. Deanne Stone and Kimberly Condit invested many tedious hours during the data collection effort. Roger Stuebing offered his statistical expertise, as well as his heart, humor and humility, which are all inspiration to those of us who admire him.

Dean E. Leonard Arnoff played a critical role in the development of the research site and Caroline Boyer, as department chair, provided support throughout. The research was funded by the American Assembly of Collegiate Schools of Business (AACSB) Dissertation Fellowship and Grants from the University Dean's Office and the Kelley Siddall Foundation.

Finally, I acknowledge the "star" of my friendship networks, Kimberly Condit for her infectuous positive outlook. And I thank my parents, Alfred and Nevilyn Scandura for their boundless love, and for showing me the conduct of inquiry by answering when I first asked them, "Why?"

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Really, universally, relations stop nowhere, and the exquisite problem of the artist is eternally but to draw, by a geometry of his own, the circle within which they shall happily appear to do so.

—Henry James

Roderick Hudson

CHAPTER 1

Introduction

As pointed out by Campbell, Dunnette, Lawler, and Weick (1970), one of the key occupational groups in an industrial society is management. Effective direction of human efforts -- whether in the public or private sectors of an economy -- is critical to the efficient and effective utilization of human and material resources. Looking to the future of our economy, perhaps our most important natural resource is our reservoir of potentially effective managers. However, current trends as the United States attempts to compete in world markets suggest that we may be facing a serious shortage of effective managerial leadership.

In an essay on "Educating managers for change," Johnston (1986) states that the trend is toward higher competitive interdependence in an international economy. He concludes that the United States' post World War II dominance of the world economy has ended and that Japan now enjoys industrial preeminence. Johnson points out that the Japanese have surpassed the U.S. in the automobile and steel industries and enjoys a more rapidly growing GNP. Naisbitt (1984) adds to this viewpoint by noting that other nations such as Germany and South Korea now offer keen and growing competition to both the U.S. and Japan. Products ranging from railroad equipment to textiles, appliances to

steel will continually make inroads into the traditionally dominated U.S. markets both here and abroad. Kotter (1988) notes that even American companies which achieve a level of success in the leadership area must do even better to match efforts of foreign competitors. Given these trends, it is clear that the leaders of private sector organizations will have to adapt to a rapidly changing world economy.

Many U.S. organizations do not appear to be engaged in practices which develop the reserve of effective management potential that is now (and will be in the future) required to maintain and improve our competitive position in many of our major industries (i.e., automobiles, steel, electronics and defense). Foreign competitors, such as the Japanese, are developing this reserve successfully (Abernathy, Clark, and Kantrow, 1983; Abegglan and Stalk, 1985), and to remain competitive, U.S. organizations must do so as well (Kotter, 1988). Johnston (1986) states that the selection and development of managers can clearly have influence on a firm's future, and they are within a business control. Hence, the development of effective managerial talent is imperative, if the U.S. is to remain competitive in world markets.

The idea of management development is not new, and much empirical research has been conducted on the correlates of managerial progress. However, most of this research assumes the viewpoint of those responsible for identification and selection of managerial talent (i.e., the personnel department) (Campbell, Dunnette, Lawler and Weick, 1970; Bray, Campbell and Grant, 1974). Because of the possibility of bias

due to the reliance on one source, research is needed in which other viewpoints are obtained with respect to career progress. The relevance of the contributions of the personnel department, supervisors and the managers themselves will be discussed in the following sections.

Traditional vs Dyadic Approaches to Management Development

Management development usually refers to the total, long-term, off-the-job and on-the-job educational process (Bass, 1981). Surveying the literature on management development, it is apparent that research in the area has focused on topics such as specialized leadership training for technical supervisors (Moon and Hariton, 1958; Carron, 1964), career effects of MBA education (Gutteridge, 1973; Herbert, 1972) as well as a large literature on training and development (see Bass, 1981 for review). The training and development literature primarily consists of research and prescriptive guidelines for the administration of formal in-house training programs. Examples of this type of research include examination of the effects of attributes of the trainees (Schein and Bennis, 1965), the composition of the training group (Harrison and Lublin, 1965), and the effects of the behavior of the trainer (Zigon and Canon, 1974).

The emphasis of the management development literature on formal training has led to the two being considered synonymous. When managers and researchers think of management development, they tend to think of formal training programs which take place in a seminar setting either at the workplace, a convention center or a university. The emphasis on this form of management development is evident in the amount spent by

corporations on training programs. Naisbitt (1984) reports that IBM spends approximately $500 million a year on employee training and education. One management organizational specialist has recently estimated that training costs in the services sector may, by the year 1995, approach 10% of a company's gross revenues (American Society for Training and Development, 1984). This view of management development, however, is somewhat limited in that it fails to take into account many of the developmental processes which take place on the job. The socialization literature suggests on-the-job learning equally important to formal training in management skills (Schein, 1968; Feldman, 1976, 1988). A broadened view of management development is offered in Figure 1. This figure shows the various "layers" of management development, starting at the top with the formal education that is acquired in professional schools. The MBA degree exemplifies the management development opportunity that takes place at this level, and is aimed at preparing students for general business leadership. Once the individual has joined the organization, he or she may have the opportunity to take part in various professional seminars. These seminars are usually conducted by someone outside the organization and range in content, but typically include leadership training (Argyris, 1969; House, 1962; Vroom and Yetton, 1973), creative problem solving training (Basadur, Graen and Green, 1982) and the motivation to manage (Miner, 1965).

At the next level of management development, there are various in-house programs. These are administered on site and may include the

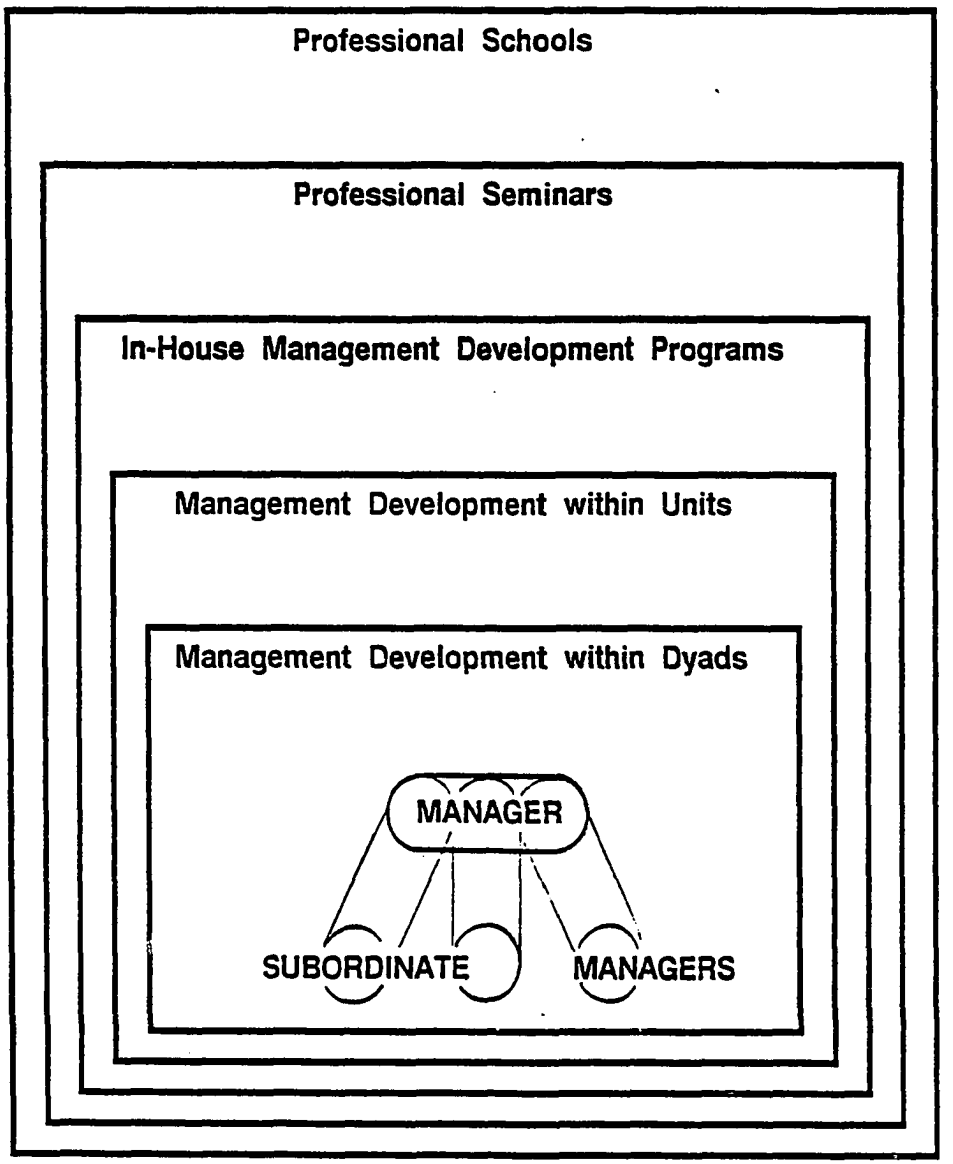

Figure 1. Levels of Management Development

topics listed above. A specialist from either inside or outside the organization may be employed. These programs, however, tend to differ from professional seminars in that they tend to be tailored to the specific needs of the organization. Hence, the manager acquires more focused knowledge and skill in the in-house program. At this point, it should be noted that the above types of training techniques are what managers typically list when they are asked to describe management development in their organizations. It is argued here that there are other developmental processes which are equally important. These processes involve the development that takes place within managerial units and, more specifically at the level of the managerial dyad.

The next level is that of the managerial work unit. Here, the focus is on the relationship of the manager and the members of the work unit, as a group. The manager is available to assist the group and, at this level, management development may take the form of weekly meetings or feedback sessions. At this level of analysis, the manager treats all of his or her subordinates alike, and the focus is on the management development activities of the group.

The final level is the level within which dyadic management development occurs. This level is concerned with the particularistic working relationship that develops between the manager and each subordinate. Some subordinates become "collaborators" or "in group" members whereas others remain "hired hands" or "out group" members (Hollander, 1978; Jacobs, 1970). At this level, management development takes place at a personal level as the more senior manager provides

specific feedback through one-on-one coaching. The relationship may later evolve into a relationship in which a more senior manager makes a significant investment in the career of the younger manager in return for collaboration on critical projects. These reciprocal relationships are based on the exchange of attitudes, behaviors and resources and have been referred to as leadership exchange (Jacobs, 1970).

This review of the literature on traditional approaches to management development reveals that such management development is typically considered to be the result of formal in-house or off-site training programs (Bass, 1981). The literature needs to be expanded to include the contributions of dyadic relationships to management development (Graen and Scandura, 1987). In the following section, distinctions will be made different types of network relationships as potential predictors of management development and mobility.

Initial Distinctions: LMX, Mentorship and Networks

Three perspectives, leader-member exchange (LMX), mentorship and social network, will be integrated to form the conceptual framework for this research. These perspectives were selected because they have a common theme: Each focuses upon the exchange relationships that emerge among actors within complex social structures. They differ in their choice of actors. The leader-member exchange perspective focuses on dyadic management development within superior-subordinate exchanges in exclusion of all others (Graen and Scandura, 1987). Similarly, the mentorship approach focuses on the impact of having (or not having) mentor (Kram, 1985). In contrast, the social network perspective

includes all exchange relationships a given focal actor is engaged in, including supervisory and mentorship ones. Thus, these perspectives are complimentary, and not necessarily competitive, explanations of the development of management talent.

Variance in leader member exchange within work units has been documented in the literature on organizational behavior (Dansereau, Graen and Haga, 1975; Graen, Liden and Hoel, 1982; Graen and Cashman, 1975), yet issues regarding the emergence and maintenance of management networks have not been directly addressed. However, before aspects of networks can be discussed, some initial distinctions must be made. high quality leader-member exchanges (LMXs) will be defined here as dyads in which managers exchange valued resources such as information, support and loyalty with one another. The supervisor may invest in the subordinate manager's career in return (Graen and Scandura, 1987) by sponsoring the manager's upward mobility within the organization. In contrast, lower quality leader member exchanges are defined as dyads in which superior managers are not engaging in the same level of exchange with subordinates, although the managers may show potential for development. These managers experience dyadic management development to a lesser degree than those with higher quality leader member exchanges. These managers perform within the written prescriptions of their organizational roles, but do not consistently collaborate with their superiors on challenging tasks (Dansereau, Graen and Haga, 1975).

One purpose of the present study is to examine possible developmental dyadic relationships that occur in addition to organizationally

prescribed superior-subordinate roles. The conceptualization of mentoring which will follow assumes that some developmental activities occur between the immediate supervisor and the subordinate but focuses on activities with other higher status individuals within the organization. The literature on mentorship suggests that more senior managers can be of direct assistance in the growth of junior managers. It is becoming clear that senior managers can play an important role in a manager's development in relation to a number of issues, including career plateauing, dual careers and promotion strategies (Sekaran, 1986).

Kram (1985) defines mentoring as relationships between junior and senior colleagues (or peers) that provide a variety of developmental functions. Drawing on earlier work by Levinson et al. (1978), Kram's research has identified two broad categories of these functions: career functions (e.g., sponsorship, exposure) and psychological functions (e.g., counseling, acceptance and confirmation). Hall (1987) reviewed the literature on mentorship and developmental relationships and concluded that it is generally recognized that having a mentor is an important aid in the development of a manager. What is not so obvious is how these relationships develop in terms of what is exchanged by mentors and junior managers (Hall, 1987).

Lindholm (1982) echoes this concern by stating that the major problem with the literature is that the term "mentoring" is used in such a broad based way that its meaning is lost. There is no definitional list of what an individual must do in order to be considered a

mentor, and there is no clear understanding of the specific ways in which a mentoring relationship differs from a sponsoring relationship or from a good supervisor-subordinate relationship. Although Lindholm (1982) was examining the mentoring relationship from the mentor's point of view, her "working definition" of mentorship is useful. She defined the mentorship relationship as (1) status differentiated, (2) exerts a positive influence on the "lower's" career, (3) considered "special" by the upper and (4) involves high personal attraction for the lower on the part of the upper (Note: A mentoring relationship usually requires high personal attraction on both parts; however, personal attraction on the part of the upper is the necessary condition in the Lindholm definition). The definition used in this research is based on the Lindholm (1982) definition, with the added stipulation that a mentor must be someone other than one's immediate supervisor. This distinction is necessary so that the unique contributions of the mentor and supervisor can be isolated.

The third stream of research in the development of the conceptual framework is the social network perspective described by Tichy, Tushman, and Fombrun (1979). This perspective is based upon conceptual and empirical analyses which represent social structure in terms of relationships (ties) between social objects (e.g., groups and people). Not all social objects are directly linked, and objects may be connected by multiple relationships. Furthermore, there is a variety of possible exchange links, e.g., affect, influence, information or goods and services. The social network approach deals with the types and

patterns of relationships and the causes and consequences of these patterns (Tichy and Fombrun, 1979; Brass, 1984; Sherman, Smith and Mansfield, 1986; Nelson, 1986).

The social network approach offers perhaps the greatest promise for the analysis of the emergent or informal system and its impact on other organizational processes. Research has thoroughly studied the formal structure of organizations (Blau, 1970; Blau and Scott, 1962; Pugh, Hickson, Hinings and Turner, 1968), but the elusive nature of the emergent system has resulted in only inadequate research on the impact of the informal or emergent structure on the organizational and individual outcomes (Tichy and Fombrun, 1979). This perspective shows promise of integrating the literatures of macro (organization level) and micro (individual level) organizational phenomenon. For example, Tichy and Fombrun (1979) apply the network perspective in a comparative analysis of two organizations. Data collected at the individual level was aggregated to network level characteristics for the two organizations. The structural properties were then graphed and comparisons were made between the two. Their results support their claim that advances can be made in organization theory and research using this approach. This suggests that perspective is a useful one in examining management development. From the preceding discussions of leader-member exchange and mentorship it is apparent that how networks form, which persons are in a network and the strength of the network relationships may all impact a managers development and career progress.

Some initial distinctions among three streams of research to be used in the conceptual framework have been made. The three perspectives are similar in their emphasis on the emergence of exchange relationships. Also, there is some degree of overlap in conceptualization. For example, a leader member exchange relationship may also be a mentorship relationship which is (of course) embedded in a larger network of exchange relationships. Given this overlap in conceptualizations, it is interesting that each perspective has employed sharply different research methods. The leader member exchange model has been validated using correlational and field experimental studies in the tradition of Industrial/Organizational Psychology. The mentorship literature has primarily used interview data and content analysis. Finally, the social network perspective has relied on the use of sociometric analysis in testing propositions. In summary, the three perspectives employed in this research have similar theoretical underpinnings (e.g., exchange theory and role theory), but have used very different methodological approaches. Given these initial distinctions, the literature on each of these perspectives will be reviewed in the following chapter.

CHAPTER 2

Review of the Literature

The literatures on leader member exchange, mentorship and social networks hold much promise for developing a comprehensive model of the development of management networks. The leader member exchange model brings a well developed empirical literature, which is enhanced by insights from the more practitioner oriented literature on mentorship. Both of these literatures are captured within the net of the social network perspective, which includes relationships with superiors, mentors, peers and others. The social network perspective, however, has been limited by the study of the presence or absence of network links and not the content of the interactions. The study of networks might be enhanced by the literatures on LMX and mentorship which address the content of interactions. Taken together, they should provide a more complete picture of management networks by triangulation of these three research perspectives.

Leader-Member Exchange: An Historical Overview

The question of whether or not the unit differentiation process occurs (i.e., in group versus out group) was first investigated by Graen, Orris and Johnson (1973) in a longitudinal field investigation. Graen and his associates studied new hires from the first day on the job until four months later. They found that supervisors established effective LMXs with one group of newcomers and established ineffective

LMXs with another group of employees. The differentiation process within units occurred very early in the dyadic interaction process and had significant implications for job outcomes of members three months later.

Dansereau, Graen and Haga (1975) addressed the phenomena of unit differentiation in greater detail. In this study, an entire management hierarchy was investigated longitudinally over nine months. A company reorganization had left ninety percent of the direct reporting dyads containing at least one new manager. Hence, the study began at the beginning of the development of ninety per cent of the LMXs and followed this development for nine months. By systematically administering questionnaires and interviewing both members of each managerial dyad four times over the nine months (first, fourth, seventh and ninth month), the elaboration of unit differentiation was documented.

In sharp contradiction to conventional leadership theory (Stogdill, 1974) that managers treat all members reporting directly to them in the same manner and hence developed very similar relationships with all members in their unit, the results of this longitudinal study demonstrated the development of extremely dissimilar relationships within the same unit. Moreover, the unit differentiation process was the norm; different relationships were enacted for different members in all of the work units studied.

A study by Graen and Cashman (1975) focused on the issue of whether members can negotiate with managers on issues of unit function-

ing. In this longitudinal panel investigation, three entire managerial hierarchies were studied over a nine month period (again, questionnaires and interviews with both members of each dyad were conducted during the first, fourth, seventh and ninth month). The results demonstrated that within most units those members in higher quality LMXs spent more time on administrative duties and less time on routine functioning than those members in lower quality LMXs. Moreover, the managers and the members negotiated these differences in behavior around issues of unit functioning. Members in the higher quality value LMXs showed greater involvement in the more responsible administrative activities and lower involvement in the less responsible routine activities. This level of involvement was exchanged for greater resources from their managers compared to the members in lower quality LMXs.

This study raised the question of whether or not the quality of the LMX is visible to members outside of the dyad, i.e., whether or not peers within the same unit can accurately report the quality of the LMX. This was also investigated by Graen and Cashman (1975). They asked peers in the same unit as well as the manager of the unit and the focal member to estimate the value of the focal and manager LMX. All members of a unit were asked to indicate for each possible dyad involving the manager how effective the working relationship was in terms of (a) ineffective, (b) effective or (c) neither ineffective nor effective. The results were compared to the answers to four questions (called leader member exchange, LMX, and including two negotiating

latitude questions and two new questions). Results demonstrated that the peer's assessments of the quality of the LMX agreed with managers' perceptions of the leader-member exchange concept. The research finding that LMX is visible to those outside the dyad was replicated by Duchon, Green and Taber (1986).

Although agreement between the manager and the member about the quality of the LMX is related to the perceptions of the manager and the member regarding the effectiveness of the dyadic working relationship, the question remained as to whether or not the quality of the LMX is related to agreement between manager and member concerning aspects of the job situation (e.g., severity of job problems facing the member). Schiemann and Graen (1978) investigated this question and found that agreement between managers and members was related to the quality of the LMX. Those members with lower quality LMXs showed much less agreement than those with higher quality LMXs. Moreover, the threshold for this agreement was rather low. Apparently, above a certain minimal level, the manager and the member shared enough in common to develop adequate agreement about the job situation.

In a study of communications within leader member exchanges, Schiemann (1977) found that those members with relatively higher quality LMXs communicated more frequently with their managers about administrative and technical matters than did members with relatively lower quality LMXs. These results were cross-validated on a holdout sample of managers. Apparently, there is much more communication in the higher quality LMXs than in the lower quality LMXs. Thus, effec-

tive communications are an important aspect of the development of high quality LMXs.

The question of whether vertical dyad relationships generate different flows of resources was investigated by Graen, Cashman, Ginsburgh and Schiemann (1978). They found that the value of the upper dyad in this "linking pin" was related to the resources available to members a level below. Those managers who developed higher quality LMXs with their boss produced greater resources for their members than those managers who developed lower quality LMXs. Hence, linking pins were found to vary in amount of resources flowing to members a level below.

A study by Liden and Graen (1980) addressed LMXs at the level of the first line supervisor in a longitudinal investigation comparing these processes for managerial units and foreman units. The results showed no evidence of truncation for the foreman dyads. Hence, the development of high quality LMXs appears to occur at various levels in the organization.

A number of studies have investigated between unit and within unit variation in LMX as predictors (Dansereau, et. al., 1975; Graen and Cashman, 1975; Schiemann, 1977; Katerberg and Hom, 1981; Vecchio, 1981). For example, a study by Graen, Liden and Hoel (1982) used turnover as the criterion. In this investigation of information systems professionals, they found that the quality of within-unit LMX predicted employee turnover eighteen months later. The lower the quality of within-unit LMX (measured eighteen months before), the

higher the proportion of members who left the organization. The average (mean) value of all LMXs in the unit did not predict turnover. Thus, turnover was not related to the managers's average (mean) LMX. All predictable turnover was due to within unit variation and not between unit variation. In addition, measures of satisfaction (Job Descriptive Index (JDI) measures of work, supervisor, coworker, pay and promotion) taken 18 months before failed to predict turnover. Hence, the quality of LMX (within units) predicts organizationally relevant outcomes.

Ferris (1985) replicated the Graen, Liden and Hoel (1982) results. He found that the quality of the within unit LMX predicted turnover and that the average unit LMX did not. Those persons in dyads with lower LMXs relative to the average of their respective units tended to leave the organization while those with higher quality within the LMXs tended to remain.

The Graen, Novak and Sommerkamp (1982) study was a field experiment in which managers of information processing technicians were trained (experimental condition) or not trained (placebo control condition) in the theory and procedures of the role making model. During the 26 weeks of the experiment, the managers were trained to use the model specifically with their members and were required to meet with each of their members individually and complete a script that they had role-played many times in training. By the end of the 14th week, all individual role making interviews were completed for the

experimental group and the treatment was in effect from week 15 to week 26.

The results of this field experiment supported the validity of the LMX model. The experimental group (those under the LMX training condition) demonstrated large improvements in all areas tested from the 14 weeks before the treatment to the 12 weeks after the treatment compared to the placebo control condition. The areas tested for change from before to after the treatment were (a) hard productivity (quantity and quality work produced on the computer), (b) work itself measures (motivating potential of the job, preferred work load, role conflict, role ambiguity and career relevance of the job), (c) role-making (leader-member exchange from both points of view, dyadic loyalty and superior support, and (d) job satisfaction (overall and facets: Leader, work, pay, social and security). All of the above measures demonstrated significant improvements for the experimental over the control group with the exception of the satisfaction measures which only showed significant gains for overall and security satisfaction.

Another question that arises concerns the longer term implications of leader-member exchange. In a 13-year panel study of all of the college graduates who joined one large corporation, Wakabayashi and Graen (1984) found that the quality of LMX taken during the first three years of employment predicted career progress measures taken after the seventh year. This study demonstrated the importance of dyadic management development for career progress.

Despite numerous studies on the predictive validity of the LMX model, there have been few studies that have examined predictors of high quality leader member exchange (Duchon, Green and Taber, 1986). One example of this type of research is Novak (1984), in which supervisors' sources of power were explored as determinants of leader member exchange. In this study, the criticality of resources available to the supervisors were related to higher quality LMXs with subordinates.

In a study of 49 Junior Achievement companies, Duchon, Green and Taber (1986) found that demographics of the sample, specifically sex and class status were related positively to in group and negatively to out group membership. The findings for the out group prediction held across two time periods. These findings supported Graen and Cashman's (1975) contention that the compatibility of member and leader characteristics were important to the emergence of different types of exchange. Studies on the determinants of LMX have just begun, however, identifying the sources of high quality exchanges appears to be a necessary area of investigation for future research.

Summary. The leader-member exchange (or vertical dyad linkage) model has recently been critically examined. Miner (1980) reviewed the literature on VDL/LMX and concluded that the consistency of the findings associated with the model is suspect. For example, the predicted results for the dependent variable of turnover have not always been replicated, and the dependent variables (e.g. self-reports of subordinate satisfaction) have not been measured independently of

prediction variables. A further shortcoming of previous studies in this area has been the lack of attention to measures of actual performance. Typically, supervisors' subjective assessments of performance (i.e., ratings) have been used. This reliance on subjective measures is primarily due to the frequent study of managerial-level personnel, for whom "hard" measures of job performance are difficult to identify (Vecchio and Gobdel, 1984).

Both objective and subjective measures of subordinate performance are necessary for LMX research. Because past LMX research has relied on supervisor's ratings of performance, there is a possibility that the reported correspondence between LMX status and rated performance may largely reflect a social reciprocity phenomenon (Bernardin, 1980). A social reciprocity phenomenon could be responsible for the reported correlation of LMX and the rated performance because managers are often provided with feedback from supervisors during periodic performance appraisal reviews (Vecchio and Gobdel, 1984).

Both Vecchio and Gobdel (1984) and Dienesch and Liden (1986) call for the study of leader member exchange in more diverse organizational settings. Dienesch and Liden (1986) note that the majority of studies have been conducted in service or government organizations. There is a continuing need to ascertain the generalizability of prior LMX findings for business organizations. Also, these leadership processes at lower levels of organizations have only recently been examined (Graen, Liden and Hoel, 1982; Graen, Novak and Sommerkamp, 1982; Wakabayashi, Minami, Sano, Graen and Novak, 1980). Because situational attributes of lower

level settings may limit the applicability of LMX principles, it is necessary for additional studies to be conducted which are relatively diverse in order to determine empirically the boundaries of the LMX model (Vecchio and Gobdell, 1984).

Dienesch and Liden (1986) reviewed 21 empirical papers using the LMX approach that have been published since 1972. Based upon this review, they identify methodological problems in the study of LMX. However, their main criticism is the different operationalizations of LMX across empirical studies. Their review indicated that LMX had been measured with 2-item (Dansereau, Graen and Haga, 1975), 4-item (Graen and Schiemann, 1978; Liden and Graen, 1980), 7-item (Graen and Novak, and Sommerkamp, 1982; Scandura, Graen and Novak, 1986), 10-item (Ridolphi and Seers, 1984) and 12-item (Wakabayashi and Graen, 1984) scales. The authors contend that none of these scales is based on either systematic psychometric study or explicit construct validation. In addition, in several studies (Dansereau et al., 1975; Liden and Graen, 1980) some of the dependent measures appear to be alternative measures of LMX rather than true dependent variables (Miner, 1980). Dienesch and Liden (1980) also call for the development and validation of a standardized, psychometrically sound measure of LMX to be used in future research. Graen and Scandura (1987) present the various measures of LMX in a developmental framework. That is, the different measures of LMX really reflect the construct's development over time in the literature.

Problems with the construct validity of the LMX measure stem, in part, from the conceptualization of leader member exchange. Dienesch and Liden (1986) contend that no clear conceptual or empirical justification has been presented for the transition from role theory to LMX, which is one narrowly defined aspect of the role making process as described by Graen (1976). Leader member exchange is probably a multidimensional construct and an additional task for future studies on LMX will be to develop measures of additional aspects of the leadership exchange process.

The literature on LMX addresses a gap in leadership research by emphasizing differences in the manner in which a supervisor perceives different subordinates. A variety of research methods have been used to test propositions derived from the model (Graen and Scandura,1987) and an interesting body of empirical work has emerged. The model has gained recognition and is cited in texts which are wholly or partially devoted to leadership (Miner, 1980; Yukl, 1981; Baron, 1985). Thus, despite the criticisms of the model reviewed here, the LMX model has important implications for the education and development of managers. The issues raised in this section will be important in the future development of the LMX model. In particular, further elaboration of the construct appears to be needed, that is, different aspects of LMXs need to be measured. Also, the LMX model needs additional work in specifying its relationship to career mobility in U.S. organizations. The predictive power of the model has been demonstrated in corporations in Japan, one of the United States' toughest international competitors

(Wakabayashi and Graen, 1984; 1987). Future research on LMX should focus on the effects of LMX (and related concepts) in U.S. organizations.

Mentorship: The Impact of Other Relevant Dyads

Mentoring has been described as the current fad in organizations (Lindholm, 1982). As noted by Roche (1979), there has been "much ado about mentors." Articles describing the importance of having a mentor appear regularly in the popular press, but there is little conceptual clarity about what is meant by the term mentoring (Lindholm, 1982; Kram, 1985). Fairhurst (1985) suggests that mentor relationships are seen as more intense, hierarchial (with an accompanying age difference), parental and of longer duration than other interpersonal relationships. According to Boster, Collofello and Wigand (1984), "mentoring speeds up the socialization into the work role, encourages social interaction, provides an opportunity for high quality interpersonal interaction and enhances identification with and commitment to the organization." Although words like sponsor or coach are used interchangeably with mentor, the term seems to be used most frequently to describe an individual with higher status in a relationship assumed to be beneficial to one with lower status in the organization. In hierarchical organizations, these benefits appear to be career advancement and promotions; having a mentor has been correlated with higher salary and greater satisfaction with one's career (Roche, 1979). These findings have led some authors to conclude that "everyone who makes it has a mentor" (Collins and Scott, 1978).

Most of the research on mentorship is based on post hoc interviewing of individuals who reported they have experienced a mentoring relationship (Bowen, 1985; Kram, 1980; Kram and Isabella, 1985). These studies usually indicate that successful individuals report having had a significant mentor relationship which contributed to their career development. The trend in this literature suggests that mentoring enhances job success (Cook, 1979). These studies are retrospective and research designs have not included comparison groups, i.e., those who have not had mentors. Shelton (1982) found that persons with mentors were seen by management as more promotable and most corporate presidents have had mentors who were vital to their success (Jennings, 1971). In agreement, Roche (1979) reported that nearly two-thirds of the prominent executives studied had mentors and that these executives received higher salaries, bonuses, and total compensation than did executives who did not have mentors. Mentors also have an important influence on promotion decisions. Stumpf and London (1981) note that some organizations have formalized the mentor role and subsequently expect the mentor to suggest and advise new "fast track" recruits on career success strategies. In a review of the literature on mentorship, Hunt and Michael (1983) conclude that mentorship is an important tool for upward professional progression in organizations.

The studies reviewed thus far have generally viewed mentorship as a dichotomy or "state" that a person is in at a given time. Either one has a mentor or one does not. Others have argued for a view of mentorship as a process. Shapiro, Haseltine and Rowe (1978) employed

the concept of the patron relationship in their definitions, because they felt that the role of mentor was too restrictive. Instead they envisioned a continuum of patrons including mentors ("the most intense and paternalistic"), sponsors ("guides") and peer pals ("helpers" at the same organizational level). Missirian (1980) also placed the mentoring relationship on a continuum of supportive relationships distinguished by the degree of power the mentor commands, the level of identification with the mentor, and the intensity of the emotional involvement with the mentor. Kram and Isabella (1985) conducted biographical interviews and further categorized types of help mentors provide. Their findings are in agreement with Shapiro, et. al. (1980) that help exists on a continuum, with the peer relationship at one end and the mentoring relationship at the other. Other studies which viewed mentorship as a continuum were investigations of superior-subordinate relationships (Alleman, 1982; Clawson, 1980). While these studies examined mentorship as part of superior-subordinate relationships, this definition confounds the role of mentor with others, such as performance appraiser. The immediate superior mediates many outcomes of importance to the subordinate (e.g., performance appraisal, work assignment, promotion recommendations). Daniels and Logan (1983) conclude that mentor relationships differ from conventional superior-subordinate relationships by having higher levels of perceived influence, supportiveness and communication activity. Thus, there appears to be a need for separation of the mentor role from the supervisor role if both are investigated in the same study (no such

studies were found in this literature review). Rather, the studies fell into two classes: (1) studies of mentors, some of which were mentors and some of which were not and (2) studies of supervisors who acted as mentors. In the present research, new conceptualization will be offered which examines both relationships and operationalizes them separately.

Summary. In sum, the research on mentorship has employed the research strategy of the post hoc, in depth interview. The richness of this qualitative data has provided numerous insights into mentorship, most notably, that the process appears to emerge as a continuum with relationships ranging from peers to sponsors. This research has also pointed out deficiencies in the definition of mentorship (Lindholm, 1982) and the need to separate mentorship relationships from superior-subordinate ones (Daniels and Logan, 1983). In terms of the development of managerial networks, a mentor may be the key person in a junior manager's upward mobility within the company. As evidenced by this literature review, mentors can have a profound effect on management development. Any discussion of management networks would, therefore, be incomplete without the inclusion of mentorship relationships. The critical issue for this research is the distinction made between supervisory and mentorship relationships. It will be necessary to determine the unique contribution of mentorship as part of management networks and therefore, the two concepts will be conceptualized and operationalized separately.

The Social Network Perspective: An Integrative Framework

Within organizational constraints, managers are constantly choosing with whom they will begin, continue or cease to interact (Fischer, 1977; Kaplan, 1984). In defining social networks, Mitchell's (1969) view is a useful starting point: A network is "a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved" (p.2). In addition, the social network approach views organizations as a system of objects (e.g. people, groups, organizations) joined by a variety of relationships.

Research and theory employing the social network approach has roots in a variety of areas including sociology (Mitchell, 1969), anthropology (Malinowski, 1922; Blau, 1964) and role theory (Katz and Kahn, 1966). Although the combination of theory and research shows that there has been interest in a network approach, there has yet to emerge a comprehensive model capable of guiding understandings of organizational processes.

Tichy, Tushman and Fombrun (1979) addressed this lack of a comprehensive model based upon the network approach by reviewing the literature and categorizing network concepts. They state that three sets of social network concepts are particularly important:

1. Transactional content: What is exchanged by the social objects (e.g., two employees may exchange information).

2. Nature of the links: This property refers to the strength and qualitative nature of the relation between two social objects.
3. Structural characteristics: This property refers to the overall pattern of relationships between the system's actors (e.g., clustering, or network density).

Hence, measures of network properties should attempt to assess these attributes. One objective of the present research is to develop new measures of professional networking in organizations, which will reflect the network attributes listed above.

Tichy and Fombrun (1979) further develop what they term "an emerging paradigm" of social network analysis (Aldrich, 1980). These authors believe that this perspective has the potential for filling a major gap in the study of organizations, because methods are needed which better tap ongoing organizational changes. Network analysis may be one tool which will enable this type of research. Still, the authors maintain that network analysis is not a theory. It is, rather, an approach or emerging paradigm, with a theoretical basis in role theory (Katz and Kahn, 1978) exchange theory (Homans, 1968) and structural/functional theory (Weber, 1947). Tichy and Fombrum (1979) also point out an important implicit concern in this perspective: That network structure be linked to organizational outputs. There is a clear need to begin formulating propositions which go beyond merely mapping the types of emergent networks. Researchers and theorists must begin to specify the importance of different network structures on

decision making, policy, and performance (as examples) if the emergent paradigm is to develop.

Researchers in the field of organizational communication have studied the effects of network roles (for example, isolates, liasons, "stars") on job satisfaction and work group effectiveness (Monge and Eisenberg, 1987). Yet there have been few attempts to empirically demonstrate that linkages between network structure and other organizational outcomes in the literature on organizational behavior. Two such studies were located in the literature, one examined the effects of network structure on adoption of quality of worklife programs (Nelson, 1986) and the other examined the effects of network structure on the organizational socialization process (Sherman, Smith and Mansfield, 1986). Both of these studies demonstrate that emergent network structures can significantly affect organizational processes and outcomes, which will be an important point in the development of the conceptual framework for this research.

The theoretical work of Tichy, Tushman and Fombrun (1979) and Tichy and Fombrun (1979) on the social network perspective has encouraged applications of network analysis (sociometric) techniques in organizational research (see Rice and Richards, 1985 for review of sociometric techniques used in network analysis). Nelson (1986) examined the social network structure of the key actors in an area-wide labor management committee to determine why some community leaders supported organizational development/quality of worklife interventions whereas others did not. Professional and informal ties of the commit-

tee members with important members of the community. Based upon Granovetter's (1974) "strength of weak ties" assertion it was hypothesized that persons with weak ties to the community would favor OD/QWL interventions, because they would be less vulnerable to local public opinion. From this analysis, the author concluded that people with weak ties (i.e., professional only) or no ties to the community were more likely to support OD/QWL interventions than those with strong informal ties and/or professional ties who prefer programs that do not threaten organizational norms.

Sherman, Smith, and Mansfield (1986) studied the level of connections within social networks based on information flow, effort, influence and the exchange of goods or services in a sample of 44 Protestant churches. Types of networks were related to individual reports of knowledge, desire for growth, personal development, attendance rates and outreach. The results of his analysis indicated that informal systems greatly affect socialization, especially when network connections are based on information flow. In a similar study, Jablin and Krone (1987) describe organizational entry and assimilation as at least partly one of establishing linkages with a number of relatively stable networks (authority, friendship, information and status).

Much of the research on the social network perspective has been conducted in the area of emergent communication networks (O'Reilly and Roberts, 1977). This research is grouped in what is termed the "relational tradition," or analysis of the emergent interactions between people. Monge and Eisenberg (1987) review this body of literature and

conclude that theory on the social networks has not kept pace with methodological developments in network analysis. Theorizing to date has been bounded by the limits of computer software, rather than the literature or organizational realities. Hence, the most promising literature from which insights into managerial networks (as social networks) can be drawn might be practitioner-oriented literature which squarely deals with the existence and consequences of networks as "trade routes" of effective managers (Kaplan, 1984).

Kotter (1988) notes that effective general managers (GMs) allocate significant time and effort when they first take their jobs to developing a network of cooperative relationships among those people they feel are needed to satisfy their agendas. Managers develop cooperative relationships with and among peers, outsiders, their bosses' bosses and their subordinates' subordinates. Today, a seasoned executive may have thousands of inter- and intra-organizational contacts (Kaplan, 1984). In these large networks, the nature of the relationships varies significantly in intensity and in type; some relationships are much stronger than others and some much more personal than others. As described by Kotter (1982), managers develop these networks of cooperative relationships by using a wide variety of methods. They try to make others feel legitimately obliged to them by doing favors or stressing their formal relationships. They act in ways to encourage others to identify with them and carefully nurture their professional reputations. Some may even maneuver to make others feel more dependent on them for resources, career advancement, or other support (Pfeffer

and Salancik, 1977). Kotter (1982) also points out that all managers use the network building process, but the best performers do so more aggressively and more skillfully. Excellent performers, for example, create networks with many talented people in them with strong ties to and among their subordinates. Good or fair performers tend to use fewer network-building methods, employ them less aggressively and, in the process, create weaker networks (Gabrarro, 1979). These studies suggest that the development of professional networks is a critical aspect of managerial careers.

One study directly addressed the linkage between networks and career mobility. Brass (1985) investigated the interaction patterns on men and women in an organization and the relationship of these patterns to (1) perceptions of influence and (2) promotions to supervisory positions. The results of this study indicated that individuals positions in workflows and interaction networks related strongly to measures of influence (peer nominations, and supervisor's ratings). A follow-up to this research indicated that promotions were significantly related to centrality in departmental, male's and dominant-coalition interaction networks. Supervisor ratings of performance were also included, but were not related to the network properties assumed. This study, particularly the followup on promotions, directly addresses the question of how networks affect career mobility. It is important to note that this study included only nonsupervisory personnel. The author states that whether a managerial population would yield similar results is an area for future research.

The dyadic organizing model (Graen and Scandura, 1987), also addresses social networks. Any manager can participate in a large number of different dyads. Each engages only a part of the focal actor's personality and comprises only a part of his or her environment. The total set of all relevant dyads for a manager is called a dyadic network (Graen and Scandura, 1987). Networks involve dyads of vertical (superior-subordinate), horizontal (peer-peer) and diagonal types. One type of dyadic relationship (i.e., mentor-protege) being examined in this paper would possibly be diagonal. With respect to diagonal dyads, the parties to the dyad have unequal power and status but the legitimate exercise of this power and status is not exercised. The mentor relationship is often one of friendship or sponsorship and legitimate authority is not necessary for the manager to influence the junior manager.

The diagonal description is consistent with the definition of mentorship assumed in this paper. Graen and Scandura (1987) hypothesize that diagonal dyads are characterized by the exchange of valued resources by both parties. These resources include information, influence, tasks, support and sensitivity. These are similar to the resources discussed in mentorship models (Hunt and Michael, 1983). Therefore, the concept of the dyadic network is a useful one in conceptualizing the nature of mentoring relationships, in that both parties to the dyad stand to gain from the exchange of valued resources. For example, a protege gains expertise, visibility, and

perhaps a promotion recommendation in exchange for valuable information, support and loyalty provided to the mentor.

Summary. The social network perspective was given rise to a number of interesting research propositions, as shown by this review of the literature. Its major strength lies in its ability to link micro organization behavior processes (e.g., socialization) to the emergent structure of the organization, a macro organizational behavior topic. As an integrating framework, social networks include both the direct reporting and mentorship relationships. With the addition of peers, outside ties and subordinates, a conceptualization of management networks can be formulated (Kotter, 1984). A major criticism of the social network perspective is that the computer analysis techniques have run ahead of the development of social network theories. The following section will attempt to integrate LMX and mentoring research within the framework of social networks.

Research is needed in the area of how patterns of social network exchange relate to the career mobility of managers (Brass, 1985). In the conclusion of their article outlining the social network perspective, Tichy, Tushman and Fombrun (1979) present a research agenda for studies based on the social network approach. Among the areas where research is needed is the following: "Career patterns and succession: Studies of the role and functioning of networks in career mobility." This research will address this specific area in the proposed research agendas of Tichy, Tushman and Fombrun (1979) and Brass (1985). Professional networks will be viewed as being comprised of mentors,

supervisors, peers and others inside (and outside) of the organization.

CHAPTER 3

Conceptual Framework

Beyond the Dyad: Interdependence in Management Networks

Social networks in management can be conceptualized as aggregations of two party dyadic contacts (Graen and Scandura, 1987). The preceding literature review on social networks provides a framework through which mentorship and dyadic management development (i.e., LMX) relationships may be conceptualized. That is, there are similarities among superior-subordinate, mentorship, peer, subordinate and outside network ties that provide the basis for an integrated perspective on management networks. How the domains of social networks, dyadic management development, and mentorship relate to each other, where they overlap and where they differ will be discussed in this chapter.

The overall theoretical framework is shown in Figure 2. In general, the model specifies the unique contributions of mentorship, dyadic management development and professional networking to career mobility variables (performance, promotions, salary). The three empirical relationships implied by the arrows in Figure 2 are suggested by the literatures reviewed in the preceding chapter. The largest body of research evidence exists for the dyadic management development to outcomes linkage (Graen and Scandura 1987). However, it is important to note that the contributions of other network ties were not assessed in most studies which have used the LMX measure (see Graen, Cashman,

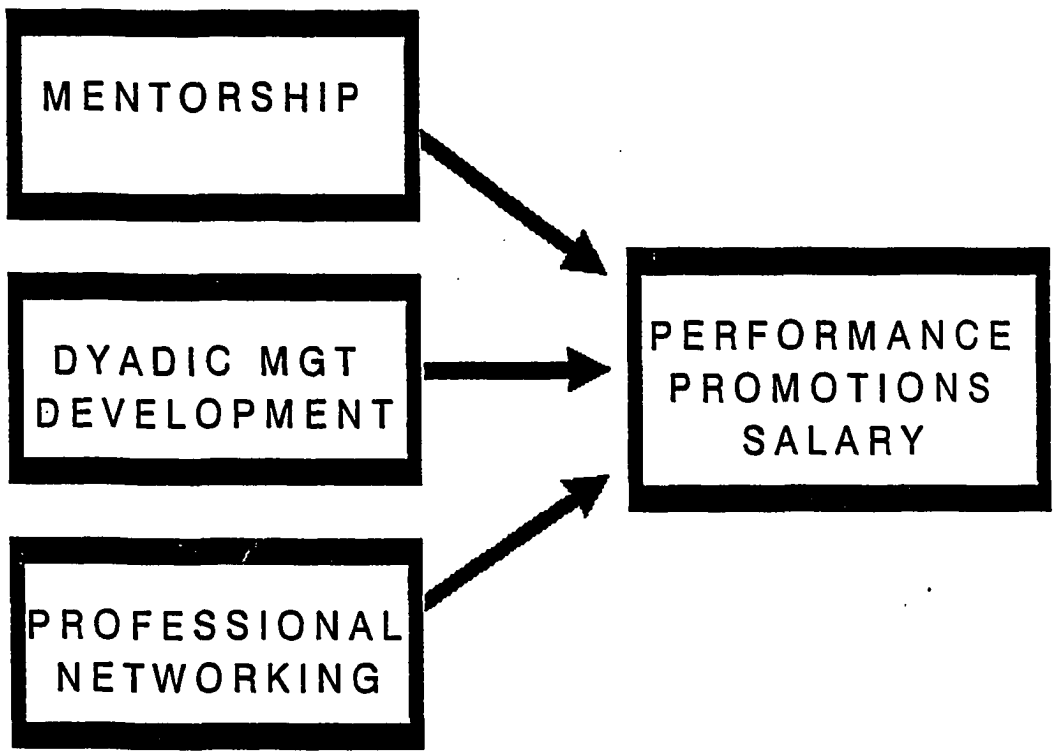

Figure 2. Network Contributions to Performance and Career Mobility.

Ginsburgh and Schiemann [1977] for one notable exception). Therefore, the impact of other relevant dyads in managers' networks is not known. The literature on mentorship suggests that at least one other important developmental relationship can be mentorship (other than direct reporting mentorship) (Hunt and Michael, 1983) and perhaps peers, also, can act as mentors (Kram, 1985; Kram and Isabella, 1985). When these research findings are combined with the research on dyadic management development, it is clear that the leader-member exchange measure, although a strong predictor, offers only a partial view of the management development process.

Educational background, formal training programs (off site and on site) and many aspects of on-the-job socialization can be controlled for by (a) the use of a single research site, (b) the random sampling of one organizational level resulting in (a) a relatively homogenous sample of managers in terms of demographics, education and training. The purpose of this conceptual framework is to isolate interpersonal (i.e., network) effects on managerial performance and career mobility, given education and training similarities among managers. Each of the components of this model will be discussed in the following sections (the numbers in parentheses indicate the boxes shown in Figure 2).

Career Progress Outcomes (1). This part of the model is discussed first, because each of the other domains will be linked to these outcomes. This domain represents the types of dependent variables used in analyses. These variables were selected, based on the literature on

management progress. Hall (1987) summarizes the dependent variables used in management career progress research as salary, promotions, and supervisor performance ratings. To be consistent with this body of research, these three classes of variables were selected for study in the present research. These variables were operationalized using data collected from company compensation records and the supervisors of the managers sampled.

Managerial Performance. For this research, managerial performance was operationally defined as distinctive competencies exhibited by managers which were specified in the company's published material on managerial growth. These areas of distinctive competence were also reflected in the company's formal performance appraisal instruments. Thus, the definition captures the explicitly stated expectations of managerial behavior for the level of management studied.

Despite the problems associated with the use of supervisor ratings (Bernardin, 1980; Vecchio and Gobdel, 1984), these ratings were included in this study for two reasons. First, most studies of management progress have included supervisor's ratings (Hall, 1976) and it is important to compare the present research with the existing literature on career mobility, given the dependent variables. Second, supervisor performance ratings best represents the "process" component of managerial effectiveness. That is, this outcome aspect deals with the behaviors exhibited by managers, whereas as salary and promotion variables are "hard" outcome measures (i.e., not behavioral, inter-

personal or attitudinal). In a sense, performance ratings are first level outcomes which lead to the second level outcomes of salary and promotions (Vroom, 1964). For these reasons, supervisor ratings of managers' performance will be included in the set of dependent variables examined in this research.

Salary. The second class of dependent variables involves the assessment of management effectiveness in terms of compensation. Freedman and Montanari (1980) stress the importance of this area by stating that managerial reward allocations, especially compensation decisions, play a vital role in organizations because of their effects on managerial behavior and organizational effectiveness. The absolute level of salary and percentage increases over time sends a powerful message to managers regarding their value to the organization. Despite criticisms of merit pay (Deci, 1971; 1972, Hamner, 1975), it remains an important variable to managers personally and to the organizations which design and administer managerial reward systems. As noted by Hall (1976), most studies of management progress include one or more measures of salary or salary growth.

The development of management networks measured in this study may be related to both current and longer-term compensation patterns. Here, it is assumed that dyadic management development, mentorship and professional networking measures assess processes which have developed over the managers' careers. This is an important assumption, and merits a brief digression into a developmental perspective on manage-

ment networks. For the present study, the focus was on management networks that were already formed. That is, the managers had been with the company long enough to establish direct reporting, peer, subordinate and one (or more) mentorship relationships. Thus, they had experienced most of the network ties being investigated. However, these networks develop over time, and early in a managers career not all network ties may be represented. Therefore, a developmental perspective on management networks is warranted.

When a manager first enters an organization, the most important relationship to develop is most likely with his/her immediate superior. In fact, research has shown that these relationships stabilize in a short period of time (usually three months from the start of employment) (Graen, Orris and Johnson, 1973). Hence, the three boxes of predictors shown in Figure 2 (dyadic management development, mentorship and professional networking) can be thought of as stages in network development, with the development of the dyadic relationship with the supervisor (i.e., LMX) representing Stage I. Once the manager has been initiated by the immediate superior, he/she begins to develop relationships with others in the organization (many of these contacts are introduced by the immediate superior). During the second stage, the manager's network of professional network ties is elaborated to include peers, clients, contractors, managers from other units (lateral & diagonal) and the manager's own subordinates (as he/she is promoted to higher levels of responsibility). From this network of professional relationships, a mentor relationship may develop. A higher level

manager may begin to sponsor the manager's career through coaching and further network development. At this stage of network development, a manager's network includes the direct reporting relationship (LMX), relationships with others (social networks) and an organizational mentor. The outcomes at each stage are performance, salary and promotions. Salary and promotion outcomes enter in at the two later stages of network development. From this discussion, it is evident that the development of management networks is a career process and, therefore, dependent measures which assess compensation (i.e., promotion record and salary growth) over time are necessary, in addition to the assessment of current performance and salary.

Promotions. The number of promotions received by the manager offers the strictest test of the variables' ability to account for criterion variance in career mobility. Promotions represent organizational events regarding the manager. Salary increases may be kept secret, but everyone knows when a manager is promoted. The act of promotion serves to validate the manager's effectiveness as well as to reward his/her accomplishments. Also, promotions usually carry increased responsiblity in the company — larger budgets, more direct reports, with higher levels of power and influence as one result. Promotions happen less frequently than salary increases, and therefore, the number of promotions received over time is the strongest test of the relationships between mentorship, dyadic management development and networking and career mobility in this data base.

Career mobility measures were selected and designed to assess longer term effects of the development of management networks. It is assumed that these processes occur over the span of careers and current measures of dyadic management development, mentorship and professional networking reflect the culmination of network development practices as a career strategy.

Mentorship (2) The literature on mentorship explicitly states that having a mentor can affect upward mobility in organizations (Hunt and Michael, 1985; Kram, 1985). In terms of the three classes of outcome variables discussed in the previous section, the degree of mentorship experienced in managers' careers should be positively related to the performance, salary and promotion variables measured in this study. Positive correlations between mentorship and salary and promotions have been reported in the existing literature (e.g., Roche, 1979), however, the literature reviewed did not indicate this relationship for managerial performance ratings. Given the operationalization of managerial performance in this study (e.g., managing others, adaptability, allocation of resources and goal setting), it is possible that many of these activities are learned through coaching by mentors. Thus, the linkage between mentorship and managerial performance is hypothesized, although it may be somewhat more tenuous than that for salary and promotions. This may be due to the special operationalization of mentorship in this research. Managers were asked to rate persons other than their immediate supervisors on the mentorship scale.

Hence, supervisors ratings of performance may be more independent of mentorship than salary and promotions (the longer-term measurements in particular). Given the developmental perspective on management networks presented in this conceptual framework, it is possible that mentors provide performance-relevant coaching to managers, which is reflected in supervisory ratings.

Recalling the purpose of this research, which is to isolate the unique contributions of dyadic management development, mentorship and professional networking to management progress (in terms of performance, salary and promotions), it is necessary to develop a special conceptualization of mentorship. The role of mentor must be conceptually separated from that of the immediate supervisor. This confound has created conceptual ambiguity in the literature on mentorship (Lindholm, 1981), and there appears to be a need for separation of these roles in conceptual frameworks. Not that supervisors are not mentors. They certainly can be. However, it is suggested here that mentorship relationships are qualitatively different from superior-subordinate relationships in two major respects. The first is that in direct reporting relationships, the role of mentor is confounded with the role of evaluator, via the performance appraisal process. Thus, the presence of the organizationally required feedback process clearly affects the development of the mentor role in supervisor-subordinate relationships. Second, it is usually part of the supervisors role to develop his/her subordinates and the supervisor is often evaluated as a developer of talent. Mentor relationships, on the other hand, have far

more latitude in terms of the patterns of exchange which develop. Mentors choose protege and these protege can either accept or reject the offer of sponsorship. In contrast, superior-subordinate relationships are formalized, and explicit guidelines for the feedback function exist. Due to these distinctions, it is clear that these roles need to be separated and this is reflected in this operational definition of mentorship: Relationships between junior and senior managers that are (1) status differentiated (2) exert a positive influence on the junior manager's career and (3) does not involve the manager's immediate superior (mentoring activities by the supervisors were measured separately). This separation is necessary in this operational definition, because one purpose of this research is to determine the unique contribution of mentorship to management development and career progress.

Dyadic Management Development (3). Conceptually, the LMX model is based on the concept that role development will inherently result in differentiated role definitions and, therefore, in varied leader member exchanges. The leader (i.e., supervisor) develops a close relationship with only a few key subordinates and relies mainly on formal authority, rules, and policy to ensure the adequate performance of others.

Leader member exchange, however, is probably not the only measurable aspect of dyadic exchange. This has been a major criticism of the research on LMX (Vecchio, 1984; Dienesch and Liden, 1985). LMX is

robably a multidimensional construct and research studies have seldom included measures of other dyadic concepts. In this study, the LMX concept will be expanded and labeled, "dyadic management development". Leader-member exchange is encompassed by this concept, but other aspects of dyadic managerial development will be included in addition to LMX. From the literature review, it is apparent that LMX contributes significantly to management development (Graen, Cashman, Ginsburgh and Schiemann, 1977) and career mobility (Wakabayashi and Graen, 1984; 1987). The present study will measure additional aspects of dyadic (supervisor-subordinate) management development suggested by Clawson (1979). One of these aspects is the degree of job challenge experienced by the managers as provided by their supervisors.

The degree of challenge on the job is a key variable to the development of managers (Bray, Campbell & Grant, 1974). Challenging tasks can be considered to be somewhat more unstructured, and hence, provide more opportunities for new learning on the job (Berlew and Hall, 1966; Schein, 1967; Hall and Lawler, 1969). The AT&T management progress studies show clearly that initial job challenge is very important to the way a person's career develops. This research was a study of young male managers (Berlew and Hall, 1966) and followed managers for five years and for seven years. Performance was evaluated by salary scale and ratings from supervisors and other persons who were in a position to evaluate the managers. Results of this study showed that the more challenging a person's first job, the more effective and successful he was even five or seven years later. Moreover, these

predictive relationships between job challenge and career progress were significant after ability differences were controlled. Thus the challenge found in tasks was an important aspect of the development of this group of managers. In the present study, job challenge is conceptualized as the degree of challenge managers report receiving in task assignments from their immediate superior. This concept is based on the "interest" and/or "challenge" the manager experiences in task assignments and the supervisor's willingness to delegate appropriate tasks.

This fusion of task and leadership variables is suggested by Seers and Graen (1984). Since the supervisor is often responsible for task assignments, the connection between dyadic management development and job challenge is an important one. Thus, this research will include a special measure of job challenge, operationalized as the supervisor's willingness to delegate challenging tasks that are appropriate to the manager's level of development.

There is a large body of empirical evidence which has tested the linkages between LMX and the outcomes of performance, salary and promotions (see Graen and Scandura, 1987 for review). A positive relationship is hypothesized, as shown in Figure 2. Other dyadic management development concepts, including dyadic job challenge, are also hypothesized to be positively related to the career progress outcomes specified in the model. This portion of the model is basically a replication of previous studies on LMX with three additional features: (1) variables in addition to LMX will be used as predictors of career

progress, including dyadic job challenge (2) the dependent variables include "hard" measures of salary and promotions, in addition to supervisor performance ratings and (3) the research was conducted in a private sector organization, a research agenda posed by both Vecchio and Gobdel (1984) and Dienesch and Liden (1985). Thus, as a "study within a study" this portion of the model extends the research on LMX in three important ways.

Professional Networking (4). The final part of Figure 2 to be discussed is labeled "professional networking". This concept is based on the social network perspective. In addition to providing an integrative framework for this research (social networks include mentors and supervisors), the social network perspective also suggests operationalizations of other network ties (e.g., peers, clients and/or subordinates). Several authors have specified theoretical relationships between social network measures and career mobility variables (Kotter, 1984; 1988; Kaplan; 1984), and Tichy et al. (1979) identify the area of the effects of networking on career advancement as a direction for future empirical research. In the present research, the set of network variables will be labelled professional networking and are defined as the amount of time spent in network contacts, the strength of the contacts and who these contacts are. As with the mentorship concept, professional networking must be separated from the other concepts shown in Figure 2 (mentorship and dyadic management development) so that the unique contribution of network activities can

be determined. Thus, managers were asked to exclude mentors and supervisors in their responses to the professional networking measure. Operationally, professional networking reflects the activities of the managers and their organizational peers and subordinates.

These network activities should contribute to a manager's career progress. Kotter (1982) stresses that the development of networks of professional contacts is essential to the implementation of managers' agendas and these agendas are an important aspect of a manager's performance. Only one study was found in the literature review which tested this linkage, are therefore, it is the most tenuous of the linkages shown in Figure 2. The work of Granovetter (1974) demonstrated the importance of network ties to an individual's ability to locate employment opportunities. It stands to reason that the constellation of relationships in a manager's work life would continue to positively affect his/her managerial career. It is hypothesized that the more time spent in network contacts, the higher the managers' performance ratings, salary and number of promotions. Also, the more elaborate the managers' network (in terms of strength of ties, and who is in the network), the higher the level of salary, promotions and performance. These hypotheses are exploratory in that they have not been tested in previous research. However, they are a logical extension of the research on social networks (Tichy, Tushman and Fombrun, 1979) and careers (Hall, 1976; Kram and Isabella, 1985).

Kram and Isabella (1985) examined the purposes, types and functions of peer relationships in an exploratory study of managers in a

manufacturing company. In this study, mentors and supervisory relationships were compared to peer relationships in a biographical interview study of 25 peer relationship pairs. The study determined that peers offer important alternatives to those with conventionally defined mentors. Various career enhancing functions provided by peers were identified across career stages. Although sociometric network analysis techniques were not used in this study, content analyses of the interview data supported the idea that relationships other than mentorship and/or superior-subordinate relationships.

In the Brass (1985) study, network variables accounted for 22% of the variance in promotions received by nonsupervisory personnel. These findings provide empirical support for the linkage between professional networking and career mobility (i.e., salary growth and promotions). The performance linkage is more tenuous, given that this relationship was not supported in the Brass (1985) study. However, in this study, the ratings included effort, quality and quantity of work, which reflects the nonsupervisory level of relevant performance appraisal variables. Since the present study involves a managerial sample, it is maintained that the linkage between networking and performance ratings would be stronger than that for nonsupervisory personnel. Managers are usually rated on a wider range of behaviors than effort and the quantity/quality of work. In fact, they are often rated on their abilities as coordinators and/or service on cross-functional task forces. Thus, a positive relationship between professional networking

is hypothesized for this research, despite the Brass (1985) findings for nonsupervisory personnel.

Summary. The preceding discussion of the linkage between professional networking and career outcomes completes the conceptual framework for this research. Three streams of research, mentorship, dyadic management development and the social network perspective have been integrated into a model of the development of management. This model extends research on management development beyond the dyads of direct reporting relationships by including a variety of network ties from which a manager learns how to manage. If the organizational reward system is operating effectively, management excellence will be reflected in performance ratings, salaries and the number of promotions received.

Figure 3 shows the same conceptual linkages as Figure 2, but elaborates conceptual definitions of the three sets of independent variables used in this research. Given the preceding discussions of each part of the model, conceptual definitions of the constructs are provided in each block. It is also suggested (see diagrams at left, Figure 3) that mentorship links would most likely be diagonal links, dyadic management development would be vertical links and that professional networking would most often involve horizontal links. These three types of links encompass the linkages discussed by Graen and Scandura (1987) in their model of dyadic networks. This research constitutes a test of this model, in that all three network links are operationalized.

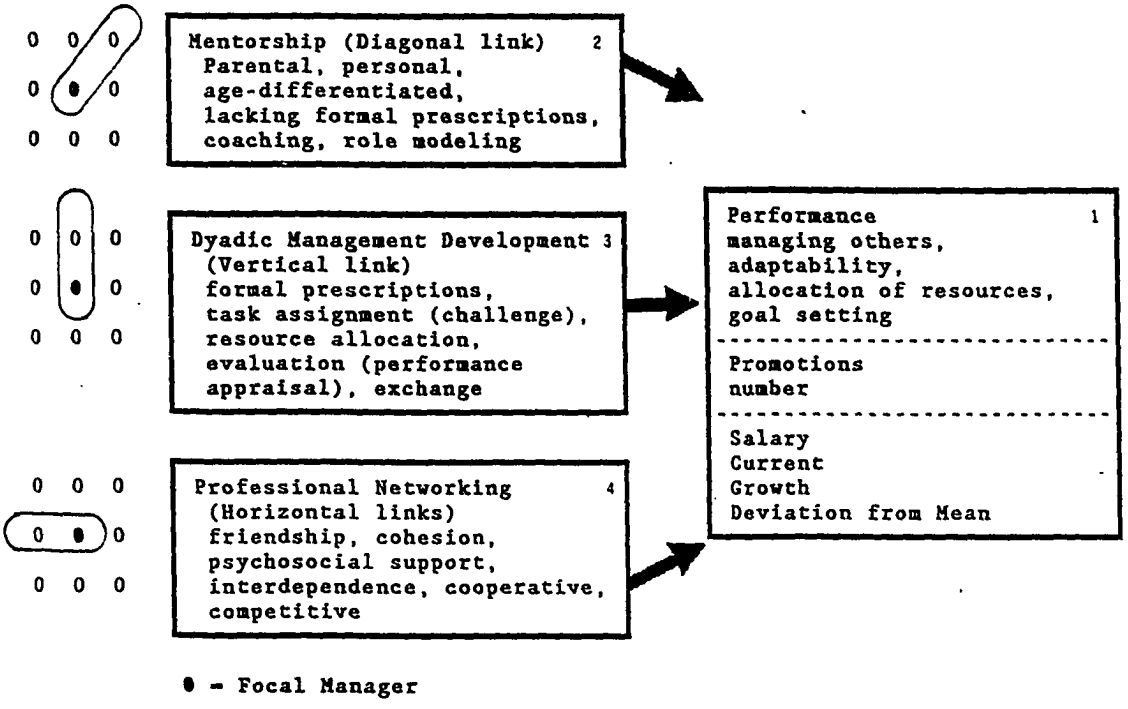

Figure 3. Conceptual Definitions of Constructs

The outcome box in Figure 3 (1) includes performance, promotions and salary. As previously stated, managerial performance was based on the company's formal performance appraisal and included the broad categories of managing others, adaptability to change, allocation of resources, and goal setting for individuals and groups. In addition to this supervisory rating scale, company records were obtained for the number of promotions received by the manager and current salary as well as career salary growth in dollars.

These outcomes are hypothesized to be positively related to these three sets of predictors shown in Figure 3. The mentorship set (2) contains the conceptual definition for this research. Based on the literature reviewed are mentorship, these dyadic relationships are defined as parental, personal, age-differentiated and lacking formal prescription. That is they are not defined as hierarchical (supervisor-subordinate) relationships. These relationships also involve coaching by the mentor and role modeling of the manager by the protege. The dyadic management development set includes the exchange that develops in direct reporting relationships and is also conceptualized as having formal prescriptions, involving task assignment (job challenge) and resource allocation and evaluation (performance appraisal). Due to these formal prescriptions, the relationship may be on a less personal level than a mentorship one. The professional networking set involves the managers relationship(s) with his/her peers. This conceptualization involves both positive and negative aspects. Peer relationships are often beneficial to the manager by providing friend-

ship, cohesion, psychosocial support, and cooperation. They can also be competitive, which should also positively be related to career mobility. This linkage is the most tenuous in the model due to the lack of previous research on the effects of professional network contributions to career progress.

The models shown in Figures 2 and 3 are recursive in the sense that the outcomes specified (performance, salary, and promotions) may feed back into mentorship, dyadic management development, and professional networking. This may be due to the "success breeds success" career phenomena (Hall, 1976); mentors and others in a manager's professional network may be motivated to develop stronger ties with managers who are perceived to be moving along the "fast track". This reverse association is plausible, however, it cannot be addressed using the cross-sectional research design employed in this research. The linkages between mentorship, dyadic management development, professional networking and career progress are, therefore, not assumed to be causal ones. Positive relationships are hypothesized and future research on this model will be necessary to determine the directionality of the causal relationships implied by the figures.

There are also relationships implied among the three classes of predictors in the model. Generally, a manager who has a high quality superior-subordinate relationship should also be able to establish high quality mentorship and network relationships. This assumes that exchange skills are transferable across dyads, however, this assertion has not been demonstrated empirically. Thus, the pattern of relation-

ships among dyadic management development, mentorship and professional networking are of interest. Although they are not the focus of this research, exploratory analyses of these linkages will be presented.

The purpose of this research is to determine the unique contributions of each set of predictors (mentorship, dyadic management development, professional networking) to career progress. Although the stage is set for a "horse race" (McGrath, 1981) between the three classes of independent variables, quite the opposite is the case. Each is hypothesized to be related to career progress, and they might even be combined in a compensatory fashion. For example, a high quality superior-subordinate relationship may compensate for a lack of strong network ties or vice versa. These combinations, and their relationship to career progress is the focus of this research. Thus, the literature on managerial development will be extended by the inclusion of the contribution of mentors, and professional network ties, as well as direct reporting relationships (LMX). Specific research hypotheses to be tested in the research are presented in the following section.

Research Hypotheses

Based upon the literature reviewed and the conceptual framework, the following research hypotheses will be tested. (Note: These tests refer to the variable sets described in the conceptual framework).

H1: Mentorship will be positively related to salary growth, after controlling for dyadic management development and professional networking.

H2: Mentorship will be positively related to number of promotions, after controlling for dyadic management development and professional networkng.

H3: Mentorship will be positively related to managerial performance, after controlling for dyadic management development and professional networking.

H4: Dyadic management development will be positively related to salary growth, after controlling for mentorship and professional networking.

H5: Dyadic management development will be positively related to number of promotions, after controlling for mentorship and professional networking.

H6: Dyadic management development will be positively related to managerial performance, after controlling for mentorship and professional networking.

H7: Professional networking will be positively related to salary

growth, after controlling for mentorship and dyadic management development.

H8: Professional networking will be positively related to number of promotions, after controlling for mentorship and dyadic management development.

H9: Professional networking will be positively related to managerial performance, after controlling for mentorship and dyadic management development.

Hypothesis 3 through 9 were also evaluated using independent variables from the supervisor's point of view (i.e., supervisor's perceptions of dyadic management development and professional networking - PRONET). These tests were performed to minimize response bias by triangulation of the data collection methods (McGrath, Martin and Kulka, 1985). Also, prior research using these variables from both viewpoints has indicated that superiors and subordinates can have very different perceptions of the dyadic exchange process and its relationship to outcome variables (Scandura, Graen and Novak, 1986). These analysis will be run over the same criterion variables (salary growth, number of promotions and managerial performance).

A number of exploratory hypotheses will also be tested. The first set of these will address the issue of performance bias in the analyses. It could be argued that significant differences in salaries and number of promotions could be attributed to the performance of the manager, as rated by the supervisors. This problem is especially true

for the independent variables measured from the supervisor's viewpoints. These hypotheses will test the same relationships specified in hypotheses H1 through H9 above, but will control for supervisors' ratings of managers' performance:

H10: Mentorship will be positively related to salary growth, after controlling for performance and dyadic management development.

H11: Mentorship will be positively related to promotions, after controlling for performance and dyadic management development.

H12: Dyadic management development will be positively related to salary growth, after controlling for performance.

H13: Dyadic management development will be positively related to promotions, after controlling for performance.

H14: Professional networking will be positively related to salary growth, after controlling for performance and dyadic management development.

H15: Professional networking will be positively related to promotions, after controlling for performance and dyadic management development.

Combinations of mentorship, dyadic management development and professional networking variables were also examined to address the question of whether managers combine these relationships in compensatory or noncompensatory ways. For example, does a high quality mentorship relationship compensate for a low quality relationship with

the supervisor? Or, do professional network activities compensate for low quality supervisor-subordinate relationships? These combinations of activities probably reflect the day-to-day lives of managers in organizations better than looking at the variables separately. In general, it is hypothesized that these variables will combine to predict salary growth, promotions, and performance in a compensatory fashion, as suggested by Kotter (1982, 1988) and Kaplan (1984):

H16: LMX x mentorship will be positively related to performance.

H17: LMX x mentorship will be positively related to salary growth.

H18: LMX x mentorship will be positively related to promotions.

H19: LMX x other dyadic management development will be positively related to performance.

H20: LMX x other dyadic management development will be positively related to salary growth.

H21: LMX x other dyadic management development will be positively related to promotions.

H22: LMX x professional networking will be positively related to performance.

H23: LMX x professional networking will be positively related to salary growth.

H24: LMX x professional networking will be positively related to promotions.

This set of exploratory hypotheses tests the contributions of specific multiplicative interaction terms. The variables used in these analysis were based upon the results of the hierarchial regressions performed in evaluating hypotheses H1 through H9. If a variable was found to account for significant criterion variance in the hierarchial models, it was then considered to be a potential interaction term. Based on previous research on leader member exchange, the LMX measure was used in all moderated regressions.

CHAPTER 4

Research Methods

Site and Participants

Manager Sample. Data on dyadic management development, mentorship and professional networking was collected as part of an investigation of management development within a large manufacturing organization in the Midwest. Participants were a random sample of subsection heads (middle level managers) and were contacted by interdepartmental mail. Of the 350 that were sent questionnaires, 244 returned them to the researchers by postage-paid envelopes (response rate = 70%). All participants signed a waiver form, indicating agreement to the researcher's access to compensation data and to have results published in aggregate form. The mean age of the manager sample was 47 and the mean job tenure was 14.4 years. Eighty-two percent held bachelors degrees and 45% of those had completed advanced degrees. The sample was predominately male (97%).

Supervisor Sample. Each of the 244 managers in the sample described above provided the name of their immediate supervisor. These managers were contacted by interdepartmental mail and asked to participate in the study. Of these 244 contacts, data were obtained for 194 usable dyad pairs (response rate 80%). The mean age of the supervisor sample was 49. Eighty seven percent held bachelor's degrees

and 52% of those had advanced degrees. All managers in the supervisor sample were male.

For both samples, the procedure for missing data was as follows. If a manager missed a question or page of the survey, he or she was contacted by phone. First, the reason for the omission was ascertained. Explanations of misunderstood questions were provided as necessary. Second, the manager was asked to complete the missing pages. If the manager agreed, the pages were sent with a postage-paid envelope. This procedure resulted in a very small proportion of missing data in both samples.

Research Design

A cross-sectional study was conducted to evaluate the hypotheses about management development and career progress. As summarized in H1 through H9, the unique contributions for dyadic management development, mentorship and professional networking were tested. This design is postdictive, in the sense that career progress variables were regressed onto the independent variable sets (dyadic management development, mentorship, networking). This design enabled the assessment of long-term, as well as current outcomes of these management development processes.

Data were collected from multiple points of view, including supervisors, managers and the organization's personnel department (compensation data). This triangulation of data collection methods should reduce the problem of response bias in statistical findings. Also, the

use of a variety of perspectives should provide a more comprehensive view of the management development process than previous studies.

Procedure

The data were collected from superior and subordinate managers within the same units and from company records and the human resources staff using the following procedure. First, a sample of subsection managers was randomly selected and questionnaires were administered to these managers. The managers were asked to identify their supervisor. Second, questionnaires were administered to the supervisors. Third, information on the managers' careers was gathered from company records.

Instrumentation

Table 1 shows the data collection performed. The questionnaires used to collect the data are provided in Appendix B.

Demographic data. Information on the demographic characteristics of the sample was collected for descriptive purposes and also to compare this sample to other research on dyadic management development (LMX), mentorship, networking and career progress. These data included sex, age, education level, university ranking, position tenure, manager tenure, and company tenure.

Dyadic management development. Leader member exchange (LMX) was assessed using the 7-item measure developed by Graen, Novak, and

Table 1

Data Collection

MEASURE	MANAGER	SUPERVISOR	FILE
DEMOGRAPHICS	X	X	
MENTORSHIP	X		
LEADER MEMBER EXCHANGE	X	X	
DYADIC MANAGEMENT DEVELOPMENT	X	X	
PROFESSIONAL NETWORKING	X	X	
NETWORK GRAPHIC	X	X	
MANAGERIAL PERFORMANCE		X	
COMPANY TENURE			X
SALARY HISTORY			X
NUMBER OF PROMOTIONS			X
NUMBER OF SUPERVISORS			X
NUMBER OF JOBS			X
JOB ASSIGNMENTS			X

Sommerkamp (1982). Other dyadic management development was measured using a revision of a 25-item scale developed by Clawson (1979). In addition to the 7-item LMX measure, other dyadic management development activities were measured, in an effort to expand dyadic exchange as it pertains to management development. The Clawson (1979) measure was chosen to represent this domain of dyadic management development because it was designed to assess managerial development taking place between superiors and subordinates. As part of this section manager perceptions of dyadic job challenge were assessed using a scale developed for this research. Managers were also asked three questions regarding less subjective aspects of their working relationship with their boss. These questions dealt with how long the managers reported working with their boss, how often the manager talked with the boss and what percentage of the time the manager initiated contact with the manager. These items were included for use as comparisons to the other dyadic management development scales in terms of agreement between managers and their bosses. In addition, managers were asked to write a brief essay about their personal theory of career progress in the department in which they work. In other words, managers will be asked to describe in their own words, "how one gets ahead in this organization." This information was used to aid in the interpretation of the results of the statistical analyses.

Mentorship. Before constructing the mentorship instrument, the literature was reviewed to determine if a suitable instrument was available. None of the self-report, open-ended instruments used in

various studies were appropriate for this study due to their format (the research methodology employed in this study was survey data collection and not structured interviews). One study was located in the communication literature which developed a measure of mentorship as a "communication support system" in academia. (Hill, Rouner and Bahniuk, 1987). These authors content analyzed the literature on mentorship and developed major areas, such as giving advice, counseling, teaching, and working with proteges on important projects. Pilot testing produced a 25 item version of the scale. Using a sample of full-time tenure track professors (N=224) the authors report a 3-factor solution (orthogical rotation) for the scale: (1) mentor/protege, (2) collegial social and (3) collegial task. Although the reliabilities of the subscales were not reported, this study did more to examine the psychometric properties of a mentorship scale than any other located. This, combined, with the use of mentorship behaviors identified in the literature made it a suitable prototype for the present study.

First, 7 items were dropped from the Hill et. al. (1987) scale that were inappropriate for the managerial/manufacturing sample being used in the present study. These items referred to scholarly behaviors, such as "co-authoring articles." The remaining 18 items were pilot tested on a sample of 25 managers at the research site.

During pilot testing, it was decided that managers would be asked to consider mentors other than their boss in the instructions for the measure. These behaviors were generated from the rich base of anecdotal literature on mentorship. They ranged from mentors taking a

personal interest in the proteges career to the protege socializing with the mentor after work. Both work and non-work issues were included. The work-related behaviors included mentors giving advice on the proteges present job as well as advice on career progress and promotional opportunities. In order to assess this conceptualization of mentorship, items were generated which focused on the behaviors and learning that are exchanged by mentors and their protege.

Professional Networking. Two different types of measures of professional networking were employed. The first was 7-point Likert scale which asked managers to report the frequency of their network activities. The items employed were developed specifically for this research and were pretested on a sample of 25 subsection managers, at the research site. Based upon their responses, a revised, 12 item version was deemed appropriate for the sample (see Appendix A).

The second measure of professional networking was a graphical representation of networks provided by the managers. Managers were given a template including designations for their boss, peers, subordinates, other managers and outside persons (see Appendix A). Also, they were asked to indicate the strength of each network tie (not strong, moderately strong, very strong). These graphics were scored by tabulating both the number and the strength of network ties. These tabulations were then used to create various measures of network complexity.

Pretesting the Measures

All of the measures used in this research were pretested on a sample of 25 section level managers at the research site. These managers were asked to complete the packet of survey instruments, including a cover letter from the manager of Human Resources. When all had completed the packet, discussion of the content, wording, and format of the survey instrument followed. Their responses were recorded and the measures were revised as necessary to make them relevant for the research site. The final versions of the instrument (manager and supervisor) were approved for use at the research site by the manager of Human Resources.

Criterion Variables. In the research literature, career effectiveness has generally been defined in terms of performance and the popular symbols of success: money and position (Hall, 1976). The three classes of variables employed in the management progress studies are:

1. Rate of advancement
2. Present salary and salary in relation to others at the same level
3. Supervisory ratings of performance, success and contributions

To enable comparison of this research with the literature on management progress, the criterion variables used were based upon these classes of variables. Managerial performance was assessed by an 16-item scale developed for this research. These items were drawn from

materials on the company's model of managerial growth and performance appraisal. Measures of objective outcomes were employed to document the effects of dyadic management development, mentorship and networking on career progress. A number of measures were developed from company records including current salary, salary growth, and the number of promotions received.

Several salary indices were used as indicants of career progress. current salary deviation scores were used and were computed by subtracting each manager's 1987 salary from the mean salary for that year. Each manager's starting salary with the company was input and their deviation score from the mean of all subsection managers' deviation scores was calculated. Ranges of managers' salaries (1987 salary - starting salary) were computed and divided by the manager's tenure with the company. This index was also computed for deviation scores (1987 salary deviation - starting salary deviation). Salary decisions within this company were based upon multilevel evaluations of the managers' performance and were approved by the plant manager. Hence, these indices are possibly the best indicators of career progress used in this study.

The number of promotions received by each manager was operationalized as the managers' 1987 level minus their level when they started with the company divided by tenure. In this company's compensation structure, level increments represent promotions. Promotion decisions were more likely to be based upon availabilty of open positions or a political process of "job hopping", which results in level increases

Table 2

Criterion Variables

Variable	Computation
Managerial performance	Unit weighted sum of 16 item scale completed by supervisors
Salary Indices	
1. Deviation 1987	manager 1987 salary - average 1987 salary
2. Range/Tenure	(manager 1987 salary - manager starting salary)/tenure
3. Deviation Range/Tenure	[(manager 1987 salary - average 1987 salary) - (manager starting salary - average starting salary)]/ tenure
Promotion Index	(Current Level - Starting Level)/ tenure

but not salary increases within this company. Due to these factors, the promotion index was a less reliable criterion than the salary indices employed. Table 2 shows the criterion variables and how they were computed. For all of the criterion variables, a higher score indicates higher performance, salary, salary growth and promotions.

Analysis

Scale Development. Factor analyses using orthogonal (varimax) rotation were employed to develop subscales for the regression analysis (Nunnally, 1967). Based on the results of this analysis, unit weighted scales were constructed. Cronbach's alpha, an estimate of internal consistency (reliability) was completed for each of the scales (Cronbach, 1951). (Note: for scale development, the factor structure of the larger, manager sample was used; mirroring scales from the supervisors' point-of-view were then constructed. for comparison purposes, the item factor loadings for the supervisor sample are provided in Appendix B.)

Regression analysis. Three forms of regression analysis were used to statistically analyze the data collected (Cohen and Cohen, 1978; Bock, (1963). The first will evaluate the three classes of predictors shown in Figure 2. The order of entry was based upon the theoretical framework of this research and summary regression analyses which determined the unique contribution of each set of predictors. The unique contributions of each of the three sets (linear combinations) of variables was determined by controlling for the first two and calculating

Table 3

Regression Models

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1. HIERARCHIAL REGRESSION METHOD

   A. UNIQUE CONTRIBUTION: PRONET

      MODEL 1: DMD + MENTOR
      MODEL 2: DMD + MENTOR + PRONET

   B. UNIQUE CONTRIBUTION: MENTOR

      MODEL 1: DMD + PRONET
      MODEL 2: DMD + PRONET + MENTOR

   C. UNIQUE CONTRIBUTION: DYMGT

      MODEL 1: MENTOR + PRONET
      MODEL 2: MENTOR + PRONET + DMD

2. HIERARCHIAL REGRESSION METHOD (CONTROLLING FOR PERFORM)

      PERFORM + LMX + MENTOR
      PERFORM + LMX + DMD
      PERFORM + LMX + PRONET

3. MODERATED REGRESSION METHOD

      LMX + DMD + (LMX x DMD*)
      LMX + MENTOR + (LMX x MENTOR)
      LMX + PRONET + (LMX x PRONET)

*JOB CHALLENGE, CAREER INVESTMENT

Note: MENTOR = MENTORSHIP SET
      PRONET = PROFESSIONAL NETWORKING SET
      DMD = DYADIC MANAGEMENT DEVELOPMENT SET

the change in R squared for the last set of variables entered. This set of analysis provided the unique contributions of each set of variables. Each of these sets of predictors was regressed separately on the criterion variables shown in Table 2. Hierarchical regression models were next developed for dyadic management development, mentorship and professional networking (see Table 3).

The third form of regression analysis controlled for the manager's current level of performance. The supervisor's performance ratings were partialled from the variance on the criterion variables by the variable being entered first in the regression equation. This analysis was an attempt to remove the bias of subjectivity due to the supervisor's impact on salary and promotion decisions. This analysis was also run over all criterion variables shown in Table 2.

The final form of regression analysis employed was moderated regression analysis. These analysis were used to detect the presence of significant interaction effects. These effects are analogous to multiplicative effects in factorial analysis of variance (ANOVA) designs. In the moderated regression procedure, leader member exchange and mentorship, dyadic management development or professional networking were first entered as predictors (see Table 3). The criterion variables (see Table 2) were separately regressed on the predictors and their products and the significance of unique contributions (in criterion variance) made by the interaction terms were determined (Cohen and Cohen, 1978).

CHAPTER 5

Results

Factor Analysis: Manager Sample

Principal components factor analysis (with Varimax rotation) was performed on the data gathered on variable sets. The Kaiser criterion and scree plots were used to determine the number of factors retained. Based on these orthogonal factors, scales were constructed and Cronbach's alpha, an estimate of internal consistency (reliability) was calculated for each subscale. Refer to Appendix B for presentation of the results of the factor analysis for the supervisor questionnaire. The results for the manager sample, on which the subscales were based, is presented in the following sections.

Set I: Mentorship

Factor analysis of the 18-item mentorship set produced the 3-factor solution shown in Table 4. No items were dropped due to low or double factor loadings.

The items that clustered strongly on the first dimension seem to represent the concept of "coaching" or the classical "mentoring" that is discussed in the literature. Items having loadings above a criterion cutoff point of .50 were: Mentors have taken a personal interest in my career, mentors have placed me in important assignments, mentors have given me special attention, mentors have given advice on promo-

Table 1

Item Factor Loadings: Mentorship

Item	(1) Coaching	(2) Role Modeling	(3) Intimacy
1. mentors have taken a personal interest in career	.75	.32	.19
2. mentors have placed me in important assignments	.75	.22	.02
3. mentors have given me special attention	.69	.38	.30
4. advised on promotions	.72	.23	.28
5. learned strategies for influencing groups	.44	.57	.05
6. shared personal problems	.30	.11	.72
7. mentors have defended me when criticized	.51	.32	.36
8. mentors have taught me "informal" rules	.56	.37	.14
9. mentors have helped me coordinate goals	.59	.21	.47
10. socialized with mentors after work	.03	.12	.47
11. shared ideas with mentors	.22	.73	.18
12. tried to model behavior after mentors'	.30	.76	.15
13. admired mentors' ability to motivate others	.30	.76	.15
14. exchanged confidences	.29	.38	.63

Item	(1) Coaching	(2) Role Modeling	(3) Intimacy
15. respect mentors' knowledge of business	.34	.73	.19
16. respect mentors' ability to teach others	.39	.73	.09
17. mentors have devoted time and consideration to career	.61	.32	.49
18. respect mentors' breadth of knowledge	.10	.71	.25
Eigenvalues	8.78	1.37	1.05
Variance accounted for	49%	8%	6%
Reliability (alpha)	.90	.88	.72

N=244

tions, mentors have defended me when criticized, mentors have taught me "informal" rules, mentors have helped me coordinate goals and mentors have devoted time and consideration to my career. It is interesting to note that these items comprise a behavioral or active part of mentoring. These can be thought of as developmental activities in which mentors and proteges engage. This 8-item subscale, "coaching" had a Cronbach's alpha of .90. In addition, these items accounted for 48.7% of the variance.

The second factor, labeled "role modeling", seemed to represent the mentor's influence as a role model--someone the protege wishes to be like in the future. Items loading heavily on this dimension were: I have learned strategies for influencing groups from mentor(s), I have shared ideas with mentors, I try to model my behavior after mentors, I have admired my mentors ability to motivate others, I respect my mentor's knowledge of the business, I respect my mentor's breadth of knowledge. With the exception of one item ("sharing of ideas"), these items do not involve behaviors. The mentor's influence is based on the respect of the protege, without their interacting. The "sharing of ideas" item may load on this dimension due to its relationship to other items about respecting the mentor's knowledge, expertise, and ability to teach others. It may be that proteges are willing to share their ideas with mentors who are seen as knowledgeable or as teachers. This 7-item scale had a reliability estimate of .88 and accounted for an additional 7.6% of the variance on the scale.

The third factor is labelled "intimacy". These items describe proteges sharing more personal aspects of their lives with mentors.

These items included: I have shared personal problems with my mentor, I have socialized with mentors after work, and I have exchanged confidences with mentors. This 3-item scale had a Cronbach alpha of .72. The factor accounted for an additional 5.8% of the variance.

Set II: Dyadic Management Development

The first 7 questions in this section of the questionnaire were the 7-item leader member exchange (LMX) scale. Factor analysis of this scale produced the 1-factor solution shown in Table 5. No items were dropped due to low factor loadings. The 244 managers in this sample apparently considered LMX to be a unidimensional construct, all items had strong factor loadings on one factor, ranging from .63 to .85. (Note: A criterion cutoff point of .50 was used in these analyses.) This factor accounted for 55% of the variance on this scale. The unit weighted sum of the 7 items had a Cronbach alpha of .86.

Despite recent criticisms of the dimensionality of this 7-item scale (e.g. Dienesch and Liden, 1985), the concept appears to be a unidimensional one for the managers in this sample. Also, the measure had high reliability estimate (internal consistency) indicating that the seven items were fairly homogenous.

The second set of questions regarding dyadic management development focused on activities between managers in direct reporting relationships. Factor analysis of this 14-item scale resulted in the 3-factor solution shown in Table 6. The original scale contained 17 items, however, 3 items were dropped due to low factor loadings (i.e., they did not load highly on any of the 3 factors retained by the Kaiser

Table 5

Item Factor Loadings: Leader Member Exchange

Item	(1) Leader Member Exchange
1. manager understands problems and needs	.80
2. manager recognized potential	.77
3. manager would use power to help solve problems	.63
4. manager would "bail you out" when you really need it	.70
5. effectiveness of relationship	.85
6. would defend manager's decisions	.77
7. know how satisfied the manager is with what you do	.66
Eigenvalue	3.87
Variance accounted for	55%
Reliability (alpha)	.86

N=244

criterion and scree test). The complete 17 item scale is provided in Appendix B.

The items that clustered on the first factor seemed to represent the degree to which the manager learns from his/her supervisor and was therefore labelled, "learning". Items having loadings above a criterion cutoff point of .50 were: Respect for your manager's knowledge of the business, respect for your manager's technical skills, respect for your manager's ability to get things done, it is important to learn from your manager, how much do you learn about technical skills from your manager and how much do you learn about what it takes to succeed in this organization. This factor accounted for 35% of the variance on the scale. The Cronbach alpha or the unit-weighted, 6-item scale was .76.

The second factor, labeled "job challenge" taps into the manager's perceptions of the degree of challenge in the tasks assigned by the supervisor. Items loading heavily on this dimension were: How much respect does your manager have for your intelligence, interest of assignments, challenge of assignments, assignments are real vs. trivial "make work", and the supervisor's delegation of appropriate tasks. This 5-item scale had a Cronbach alpha of .81. The factor accounted for an additional 11% of the variance on the scale.

The third factor was labeled, "career investment". These items assess the level of investment the manager feels his/her boss is making in his/her career. Items loading on this factor were: Discussing how jobs, goals, and career fit with company goals with your boss, how often does your manager praise you about your work, and how much do you

Table 6

Item Factor Loadings: Dyadic Management Development

Item	(1) Learning	(2) Job Challenge	(3) Career
1. Discuss how jobs, goals, career fit with co. goals	.15	.15	<u>.65</u>
2. How much respect does mgr have for your intelligence	.08	<u>.56</u>	.45
3. How often does mgr praise you about your work	.00	.19	<u>.76</u>
4. Respect for mgr's knowledge of the business	<u>.68</u>	.24	.19
5. Respect for mgr's technical skills	<u>.64</u>	.18	-.04
6. Respect for mgr's ability to get things done	<u>.55</u>	.24	.42
7. Interest of assignments	.20	<u>.80</u>	.02
8. Challenge of assignments	.06	<u>.80</u>	.02
9. Assignments are real vs. trivial makework	.19	<u>.72</u>	.18
10. Important to learn from manager	<u>.67</u>	.02	.06
11. How much do you learn about technical skills	<u>.75</u>	.13	.01
12. How much do you learn about what it takes to succeed in this org	<u>.63</u>	.17	.45
13. How much do you learn about how to manage career	.47	.16	<u>.61</u>
14. Delegate tasks that you feel are appropriate	.26	<u>.64</u>	.20

N=244

Item Factor Loadings: Dyadic Management Development

Eigenvalues	5.23	1.66	1.54
Variance accounted for	35%	11%	10%
Reliability	.76	.81	.68

learn about how to manage your career from your boss. This 3-item factor accounted for an additional 10% of the variance and the unit-weighted scale had a Cronbach alpha of .68. Together, the three factors in this set accounted for 56% of the variance on the scale.

Set III: Professional Networking

Factor analysis of the 12-item professional networking set produced the 3-factor solution shown in Table 7. No items were dropped due to low or double loadings.

The items that defined the first factor seemed to represent the concept of network exchange, i.e., what behaviors are exchanged by managers and their peers. Items loading heavily on this factor were: working independently vs. using a network to get things done, developing friendships, supporting others in difficult situations, exchanging work-related information, sharing ideas about how to manage effectively, and helping each other learn technical skills. This 6-item subscale had a Cronbach alpha of .55 and the factor accounted for 24% of the variance on the set of items.

The second factor, labelled "meeting contact", represents the amount of time the managers spent in contact with others. Three items loaded on this factor: time spent on contacts with others, time spent in meetings and service on task forces and committees. These items appear to tap a relatively more formalized aspect of networking, since attendance at meetings and participation on task forces is often required. This factor accounted for an additional 13% of the variance on this set of items. The Cronbach alpha for this subscale was .55.

Table 7

Item Factor Loadings: Professional Networking

Item	(1) Network Exchange	(2) Meeting Contact	(3) Dependency
1. independent vs. network	.54	.10	.17
2. develop friendships	.59	.05	.08
3. support others in difficult situations	.48	-.20	.23
4. exchange work-related information	.53	.12	.14
5. share ideas about how to manage effectively	.60	.38	-.32
6. help each other learn technical skills	.51	.00	.10
7. depend on help from others to meet job objectives	.25	.30	.57
8. time on contacts with others	.17	.50	.25
9. ask for advice from others when confronted with new situations	.19	.00	.73
10. time spent in meetings	-.05	.83	.04
11. served on task forces/ committees	.06	.71	.18
12. enlist help of others in solving problems	.09	.31	.76
Eigenvalues	2.94	1.40	1.19
Variance Accounted for	24%	13%	10%
Reliability (alpha)	.55	.55	.65

N=244

Note. The Reliability estimate for the 12-item sum of scale was .71.

Table 8

Reliability Estimates (Cronbach Alpha) for Manager and Supervisor Instruments

Set: Instrument	Cronbach alpha	
	Manager sample (N=244)	Supervisor sample (N=193)
Dyadic Mgt. Development: Leader Member Exchange	.86	.63
Dyadic Mgt. Development: Learning/Teaching	.76	.72
Dyadic Mgt. Development: Job Challenge	.81	**
Dyadic Mgt. Development: Career Investment	.68	.65
Mentorship: Coaching	.90	**
Mentorship: Role Modeling	.88	**
Mentorship: Intimacy	.72	**
Professional Networking: Exchange	.55	.74
Professional Networking: Meeting Contact	.55	.45
Professional Networking: Dependency	.65	.63
Professional Networking: Sum	.71	.81
Managerial Performance: Sum	**	.93

** = Not measured from this perspective.

Table 9

Operational Definitions

Set I: Mentorship

1. COACHING - extent to which mentor(s) advise on career of manager
2. ROLE MODELING - extent to which manager emulates mentor(s)
3. INTIMACY - personal relationship with mentor(s)

Set II: Dyadic Management Development

A. Manager Ratings
   1. LMX - exchange relationship between supervisor and manager
   2. JOB CHALLENGE - challenge of assignments from supervisor
   3. LEARNING - extent to which manager learns from supervisor
   4. CAREER - extent to which supervisor invests in manager's career

B. Supervisor Ratings
   1. SLMX - exchange relationship between supervisor and manager
   2. STASK - manager's task-related ability; delegation
   3. TEACH - extent to which supervisor teaches manager
   4. SCAREER - extent to which supervisor invests in manager's career

Set III: Professional Networking

A. Manager Rating
   PRONET - Manager's networking activities
   COMPLEXITY - Total number of network connections

B. Supervisor Rating
   SPRONET - Manager's networking activities

Managerial Performance

PERFORM - supervisor's rating of managing others, adaptability to change, allocation of resources and goal setting for individuals and groups

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The third factor was labelled, "dependency" and these items described the degree to which manager relied on others to get their work done. These items included: I depend on help from others to meet job objectives, I ask for advice from others when confronted with new situations and I enlist the help of others when solving problems. This 3-item subscale had a Cronbach alpha of .65. This 3-item factor accounted for an additional 10% of the variance.

The factor solution for the professional networking set posed a dilemma. Two of the subscales, exchange and meeting contact, had marginal reliability estimates of alpha = .55. If the 12-item scale is summed and unit-weighted, the Cronbach alpha is .71, a more acceptable degree of internal consistency. The dilemma is whether to use the 6-item exchange Scale, with its lower reliability or to use the overall summary scale. Since this is an exploratory study with respect to professional networking, and this measure was developed specifically for this research, the issue of reliability is a critical one. Thus, the 12-item summary scale was used in statistical analysis. The 12-item scale was labelled professional networking (PRONET). The two scales (EXCHANGE and PRONET) are highly and significantly intercorrelated (part-whole correlation, $r=.78$, $p \leq .001$, $N=244$).

Summary. A table of reliability estimates (Cronbach alpha) for all manager and supervisor variables is provided in Table 8. (Note: See Appendix B for the factor analysis results for the supervisor sample--the factor structure of the manager sample was used to develop subscales and compute subscale reliability estimates.

Based on these factor analyses of data collected from the manager sample (N=244), the operational definitions given in Table 9 were developed. These sets of variables were used in correlational and regression analyss as independent variables, with the exception of supervisors' ratings of managerial performance which was used as a dependent variable.

Scoring of Network Graphic Measure

The network graphic measure was scored by counting (a) the number of strong, moderate and weak links indicated and (b) the number of peer, manager, outside and subordinate links indicated. These measures were then standardized by dividing the number of links drawn by the total number of connections utilized. Hence 3 degrees of the strength of network links were obtained and 4 different types of links were measured. One of these variables was used as independent variables in statistical analyses, specifically, the total number of connections (an index of network complexity), was used in the professional networking variable set with the PRONET measure in the hierarchical regression analyses. The total number of connections index includes peer, manager, outside and subordinate ties and is, therefore, a general measure of network complexity. Although both supervisors and managers were asked to draw their networks (to obtain the largest possible data base for the establishment of norms on this exploratory measure), only the managers' network graphic index of complexity was used in the statistical analyses. The intercorrelations among the PRONET measure

Table 10

Intercorrelations PRONET and Network Graphic Indices (Manager Sample)

Variable	1	2	3	4	5	6	7	8	9
1. PRONET	—								
2. Complexity	.03	—							
3. Strong links	.19	-.11	—						
4. Moderate links	-.02	.08	-.72	—					
5. Weak links	-.22	.04	-.38	-.36	—				
6. Peer links	-.11	-.02	-.08	-.01	.12	—			
7. Manager links	-.09	.16	-.06	-.07	.19	-.18	—		
8. Outside links	.06	-.02	-.08	-.01	.12	-.38	-.14	—	
9. Subordinate links	.14	.29	.19	-.13	-.10	-.32	-.41	-.28	—

N=244

Note. All correlations above $\pm$ .10 are significant at $p \leq .05$.

Table 11

Descriptive Statistics Independent and Agreement Check Variables

VARIABLE	N	MEAN	STANDARD DEVIATION	MIN. VALUE	MAX. VALUE
INDEPENDENT:					
COACHING	244	25.29	6.02	8.00	39.00
ROLE MODELING	244	24.87	5.00	7.00	35.00
INTIMACY	244	8.17	2.56	3.00	15.00
LMX	244	26.13	4.64	10.00	35.00
JOB CHALLENGE	244	18.58	3.07	4.00	24.00
LEARN	244	17.00	3.41	7.00	25.00
CAREER INVEST	244	10.37	2.28	4.00	15.00
MEETING CONTACT	244	12.75	3.25	4.00	20.00
DEPENDENCY	244	15.77	2.76	5.00	21.00
NETWORK EXCH	244	30.61	3.95	19.00	41.00
PRONET	244	59.14	7.44	32.00	78.00
NETWORK COMPLEX	244	5.96	3.28	1.00	23.00
SLMX	193	28.92	2.59	22.00	35.00
STASK	193	15.51	1.91	11.00	20.00
TEACH	193	16.82	2.54	9.00	25.00
SCAREER	193	9.20	1.74	4.00	13.00
SNETWORK EXCH	193	30.51	4.62	16.00	21.00
SMEETING	193	13.52	2.69	6.00	21.00
SDEPENDENCY	193	15.33	2.59	8.00	82.00
SPRONET	193	59.37	8.28	37.00	81.00
AGREEMENT CHECKS:					
MGR TENURE	244	1.67	1.08	1.00	5.00
MGR TALK	244	5.00	1.17	1.00	6.00
MGR INITIATION	244	0.53	0.20	0.00	0.98
SMGR TENURE	193	2.04	1.33	1.00	5.00
STALK	193	5.41	0.98	2.00	6.00
SINITIATION	193	0.50	0.15	0.05	0.93

Table 12

Intercorrelations among Manager Variables

Variable	1	2	3	4	5	6	7	8	9
1. COACHING	—								
2. ROLE MODELING	.76	—							
3. INTIMACY	.62	.53	—						
4. LMX	.30	.20	.11	—					
5. JOB CHALLENGE	.18	.13	.13	.62	—				
6. LEARNING	.30	.31	.10	.60	.43	—			
7. CAREER INVEST	.29	.23	.20	.64	.40	.46	—		
8. PRONET	.19	.18	.15	.00	.10	.08	.16	—	
9. COMPLEXITY	.02	.00	.06	.05	.13	.02	.04	.03	—

N=244

Note. All correlations above .13 are significant at $p \leq .05$

Table 13

Intercorrelations among Supervisor Variables

Variable	1	2	3	4	5	6
1. SLMX	—					
2. TEACHING	.50	—				
3. SCAREER INVEST	.35	.45	—			
4. STASK	.50	.24	.08	—		
5. SPRONET	.30	.35	.27	.33	—	
6. COMPLEXITY	.02	.09	.01	.00	.16	—

N=194

Note. All correlations above .20 are significant at $p \leq .05$

Table 14

Agreement Correlations: Manager and Supervisor Variables

Variables	Pearson r
1. TENURE WITH MANAGER	.71**
2. FREQ OF INTERACTIONS	.48**
3. MANAGER INITIATION OF INTERACTIONS	.27**
4. LMX-SLMX	.33**
5. LEARN-TEACH	.32**
6. CAREER INVESTMENT	.15*
7. TASK	.32**
8. PRONET	.19**

N=194

* $p \leq .05$

** $p \leq .01$

Note. The negative correlation for the manager initiation of interaction variable reflects the phrasing of the item for supervisors and managers. Both were asked to estimate the percentage of the time the manager initiated interactions. Thus, the item was reverse scored for the supervisors.

Descriptive Statistics: Independent Variables

Based on the factor analysis and scoring of the network graphic measure, descriptive statistics were computed for each of the scales (or indices). The sample size, means, standard deviation and ranges (minimum and maximum values) for each of the independent variables is shown in Table 11. In addition, intercorrelations among the manager and supervisor independent variables are shown in Tables 12 and 13. These intercorrelations are presented separately because the regression analyses were run separately for supervisor and manager variables.

To address the issue of the degree of convergence on the dyadic management development measures as suggested by Graen and Cashman (1975), these mirroring scales (see Appendix B) were correlated. These "agreement" correlations between supervisor and manager perceptions are shown in Table 14. The highest correlation for the scale variables was that for LMX and SLMX ($r = .33$, $p \leq .01$). The first three variables in Table 14 reflect more "objective" aspects of exchange and are included for comparison purposes. The most objective of these was the question "How long have you worked with this manager." Although the response to this seems straightforward, the correlation was still not perfect. This illustrates the degree of discrepancy in supervisor-manager perceptions of their working relationship (even in how long they have worked together).

Descriptive Statistics: Dependent Variables

A number of salary indices were considered for use in this research. Upon inspection of descriptive statistics and intercorrela-

tions, this set was reduced to three: (1) current salary deviation (1987), (2) salary range/tenure and (3) salary range deviation/tenure. Table 15 presents the descriptive statistics on the salary dependent variables, and Table 16 shows the intercorrelations among them. The decision process for compensation decisions at this level of the management hierarchy involved multiple levels of management, including the plant manager. Hence, the salary variables should be considered the best indicators of the company's evaluation of these managers. Also, in Table 15, the descriptive statistics for the other two dependent variables, supervisor performance ratings and the promotion index (number of promotions/tenure) are provided.

Unique Contributions of Variable Sets: Manager Variables

The three sets of variables shown as independent variables in Figure 2 (mentorship, dyadic management development and professional networking) were tested for their unique contributions to rated performance and career mobility indices. These tests were performed using hierarchical regression analyses with variable sets as the predictors. The sets of predictors were the following linear combinations:

Set I: (Coaching + Role Modeling + Intimacy)

Set II: (LMX + Job Challenge + Learning + Career Investment)

Set III:(Professional Networking + Network Complexity)

Table 15

Descriptive Statistics Dependent Variables

VARIABLE	N	MEAN	STANDARD DEVIATION	MIN. VALUE	MAX. VALUE
PERFORMANCE	194	60.77	9.30	23.00	78.00
CURRENT SALARY DEVIATION	243	2972.40	1574.75	-2200.00	18975.00
SALARY RANGE/ TENURE	243	0.02	14384.33	-33145.00	57805.00
SALARY RANGE DEV/TENURE	206	51.82	1593.98	-2262.85	19870.00
PROMOTION INDEX	243	0.33	0.27	0.00	1.75

Note. Deviation scores were computed by subtracting salary from the mean salary for each year (1978-1987).

1987 SALARY DEV = 1987 SALARY - 1987 SALARY MEAN

SALARY RANGE/TENURE = (1987 SALARY - STARTING SALARY)/TENURE

SALARY RANGE DEV/TENURE = [(1987 SALARY DEV - STARTING SALARY DEV)]/TENURE

PROMOTION INDEX = (ENDING LEVEL - STARTING LEVEL)/TENURE

Table 16

Intercorrelations among Dependent Variables

Variable	1	2	3	4	5
1. Deviation 1987[1]	--				
2. Range/Tenure[1]	-.13	--			
3. Deviation Range/ Tenure[2]	.33	.00	--		
4. Performance[2]	.04	.20	.02	--	
5. Promotions[1]	.29	.41	.01	.14	--

[1]N=244

[2]N=194

Note. All correlations above $\pm$ .10 are significant at $p \leq .05$.

The unique contributions of these three variable sets is shown in Table 17. The five dependent variables are listed from left to right; the columns contain the variance accounted (R^2) by each of the models at the right. Model 1 indicates the reduced model which included (a) Set II and Set III (b) Set I and Set III and (c) Set I and Set II. Model 2 included these three models with the third variable set added to each in order to determine the unique contribution of each set. This technique offers a conservative test of the unique contributions of mentorship, dyadic management development and professional networking. There are two levels of protection against Type I error in the analyses. First, the incremental contribution (ΔR^2) of the set must be significant. Second, the specific variables within each set are tested for the significance of the standardized regression coefficients (betas). Hence, to be a significant correlate of rated performance and career mobility, a variable had to have a significant partial correlation and be a component in a significant linear combination (variable set) as well.

Table 17 shows the results of this summary regression analysis for the five dependent variables. This tables contains estimates of the variance accounted for by each variable set, after the other two variable sets have been controlled for in the regression equations. As shown in this table, the dyadic management development set (including the LMX measure) contributed to the unique criterion variance accounted for in all of the dependent variables except promotions. The Professsional Networking set accounted for significant criterion variance in the current salary deviation index. Specifically, the

dyadic management development set had significant unique variance contributions (ΔR^2) of .09 for rated performance, .04 for 1987 salary Deviation score, .05 for salary range/tenure and .05 for salary range deviation score/tenure. Significance of the unique contribution of this variable set was not found for the number of promotions/tenure. Thus, the dyadic management development set accounted for significant variance in performance and salary indices of career mobility even after the contributions of mentorship and professional networking were controlled for (partialled out) using this regression technique. Also, the professional networking set accounted for significant variance in the Current Deviation score after the effects of dyadic management development and mentorship were controlled for by this regression technique.

Tables 18 through 22 present the unique contributions of the sets and the significance of the standardized regression coefficients (betas) for each dependent variable shown in Table 17. These tables highlight which variables within the variable sets were significant using separate t-tests. That is, order of entry into the model was not specified and each variable was tested for its unique contribution in the overall regression model. The variance accounted for by the overall regression models is shown at the bottom of each of these tables (Tables 18 through 22).

Table 18 shows the unique contributions of the three variable sets to the rated performance of the managers. The standardized regression coefficients for each of the variables within these sets are also given. As shown in this table, only the dyadic management development set made a

Table 17

Variance Accounted for by Mentorship, Dyadic Management Development and Professional Networking

Contribution Due To:	Variance Accounted for (R^2) Performance (N=190)	Dev 87 (N=241)	Range/Tenure (N=241)	Range Dev/Tenure (N=241)	Promotion (N=241)
Set I: Mentorship+					
Model 1 (R^2_1)	.14***	.05**	.06***	.06***	.04
Model 2 (R^2_2)	.15***	.07**	.07**	.07**	.06
Difference (ΔR^2)	.01	.02	.01	.01	.02
Set II: Dyadic Mgt. Dev.++					
Model 1 (R^2_1)	.06**	.03	.02	.03	.03
Model 2 (R^2_2)	.15***	.07**	.07**	.07**	.06
Difference (ΔR^2)	.09**	.04**	.05**	.05**	.03
Set III: Professional Networking+++					
Model 1 (R^2_1)	.14***	.04	.07**	.06**	.06
Model 2 (R^2_2)	.15***	.07**	.07**	.07**	.06
Difference (ΔR^2)	.01	.03**	.00	.01	.00

+R^2_1: (LMX + Job Challenge + Learning) + PRONET
R^2_2: Model 1 + (Coach + Role Modeling + Intimacy)

++R^2_1: (Coach + Role Modeling + Intimacy) + PRONET
R^2_1: (Model 1 + (LMX + Job Challenge + Learning + Career Inv)

+++R^2_1: (LMX + Job Challenge + Learning + Career Inv) + (Coach + Role Modeling + Intimacy)
R^2_2: Model 1 + PRONET

Difference: $R^2_2 - R^2_1$

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 18

Unique Contributions of Variable Sets: Dyadic Management Development, Mentorship, Professional Networking on Performance (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Mentorship		.01
Coaching	.16	
Role Modeling	-.11	
Intimacy	.19**	
Set II: Dyadic Mgt Development		.09***
LMX	-.11	
Job Challenge	.23***	
Learning	.17*	
Career Investment	.19**	
Set III: Professional Networking		.01
PRONET	-.04	
Complexity	.09	
Model		.15*** (.11)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 19

Unique Contributions of Variable Sets: Dyadic Management Development, Mentorship and Professional Networking on Current Salary Deviation (N=241)

Variable Set Variables	Standardized Regression Coefficient	R^2 (Adj)
Set I: Mentorship		.02
Coaching	-.17	
Role Modeling	.00	
Intimacy	.06	
Set II: Dyadic Mgt. Development		.04**
LMX	.22***	
Job Challenge	.07	
Learning	-.09	
Career Investment	-.06	
Set III: Professional Networking		
PRONET	.17***	.03**
Complexity	-.03	
Model		.07** (.04)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 20

Unique Contributions of Variable Sets: Dyadic Management Development, Mentorship and Professional Networking on Salary Range/Tenure (N=244)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Mentorship		.01
Coaching	.13	
Role Modeling	-.12	
Intimacy	.02	
Set II: Dyadic Mgt. Development		.05***
LMX	-.19*	
Job Challenge	.19**	
Learning	.15*	
Career Investment	.09	
Set III: Professional Networking		.00
PRONET	.05	
Complexity	.01	
Model		.07** (.04)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 21

Unique Contributions of Variable Sets: Dyadic Management Development, Mentorship and Professional Networking on Salary Range Deviation/Tenure (N=244)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Mentorship		.01
Coaching	.00	
Role Modeling	-.13	
Intimacy	.05	
Set II: Dyadic Mgt. Development		.05**
LMX	.09	
Job Challenge	.13	
Learning	.22***	
Career Investment	.01	
Set III: Professional Networking		.01
PRONET	.13**	
Complexity	.02	
Model		.07** (.04)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 22

Unique Contributions of Variable Sets: Dyadic Management Development, Mentorship and Professional Networking on Promotions (N=244)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Mentorship		.02
Coaching	.20*	
Role Modeling	-.05	
Intimacy	-.04	
Set II: Dyadic Mgt. Development		.03
LMX	-.14	
Job Challenge	.08	
Learning	.12	
Career Investment	.10	
Set III: Professional Networking		.01
PRONET	-.05	
Complexity	.04	
Model		.06 (.03)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

significant and unique contribution to the variance explained in performance ratings ($\Delta R^2 = .09$, $p \leq .01$). Within this variable set, the variables dyadic job challenge and career investment by the supervisor (manager rating) had significant and positive standardized regression coefficients ($p \leq .05$), meaning that higher degrees of job challenge and career investment by the supervisor (as perceived by the manager) were related to higher performance ratings. Thus, job challenge and career investment by the supervisor were positively related to performance. Leader-member exchange (LMX) and learning did not contribute significantly in the regression equation nor did the mentorship or professional networking variables. The overall regression equation containing all eight variables accounted for 15% of the variance in supervisors' ratings of managerial performance (11%, when adjusted for shrinkage). It should be noted that the dependent variable used in these analyses was supervisors' ratings and the independent variables were all measured from the subordinate managers' point of view. Hence, response bias due to the use of self-report data for both independent and dependent variables can be ruled out as a contribution to the size of the percentage of variance accounted for by the regression equation.

Tables 19, 20 and 21 show the unique contributions and standardized regression coefficients for the salary dependent variables. Table 19 presents the results for the current (1987) salary deviation index. The dyadic management development and professional networking sets made significant unique contributions to current salary deviation scores ($\Delta R^2 = .04$, $p \leq .05$). Within the variable sets, the LMX variable was the only variable to be significantly and positively related to

current salary deviation. Dyadic job challenge, learning and career investment failed to show significance in this overall regression model. Also, the PRONET measure was significant in the professional networking set. This standardized regression coefficient was positive, meaning that higher levels of network activity were related to higher levels of current salary. These variables were significant in the independent tests for the standardized regression coefficients and the variable sets they belonged to made significant unique contributions to the criterion variance accounted for by the model. This overall regression equation accounted for 7% of the variance in 1987 salary deviations (4%, when adjusted for shrinkage). Again, it should be noted that the dependent variable in the equations was measured separately from the independent variables. In this case, the dependent variable, current salary deviation, was computed from data collected from company files.

Table 20 shows the unique contributions of variable sets and standardized regression coefficients for the third salary dependent variable, salary range/tenure. Only the dyadic management development set made a significant contribution to the regression ($\Delta R^2 = .05$, $p \leq .01$). Three variables within the set had significant standardized regression coefficients, LMX, job challenge and learning ($p \leq .05$). LMX showed a negative relationship, whereas learning and career investment were positively related to salary range/tenure. The negative relationship between LMX and salary range/tenure may be due to low LMX scores for some of the managers who had long company tenures and, therefore, had large salary ranges. This criterion variable had the largest

standard deviation of any of the variables used in this study (see Table 15). Hence, due to extreme scores on this index and that these managers had lower LMX scores, the standardized regression coefficient was negative (note that this coefficient was significant at $p \leq .10$, and therefore this result is close to the margin of error). Neither the mentorship set nor the professional networking variable made a significant unique contributions to the criterion variance explained. Also, the variables within the mentorship and professional networking sets did not have significant standardized regression coefficients. This regression model accounted for 7% of the variance in salary range/tenure, which was computed from company record data (4%, when adjusted for shrinkage).

Table 21 shows the unique contributions and standardized regression coefficients for the hypothesized relationships for mentorship, dyadic management development, and professional networking on salary range deviation/tenure. As shown in the table, only the dyadic management development set made a unique contribution to the criterion variance explained in this index ($\Delta R^2 = .05$, $p \leq .05$). Within this set, the learning variable was significant, meaning that higher manager ratings of learning from the boss were associated with higher salary range deviation/tenure scores. The mentorship and professional networking sets (and variables within them) did not contribute significantly to the overall regression. This model accounted for 7% of the variance in salary range deviation/tenure (4%, when adjusted for shrinkage). This dependent variable, as were all salary indices, was computed from company record data. Thus, bias in the regression

analyses due to self-report was eliminated by the use of different measurement sources for independent and dependent variables.

The final analyses in this set of regressions is shown in Table 22, which contains the unique contributions of variable sets and standardized regression coefficients for the promotion index. As shown in this table, none of the variable sets made a significant unique contribution to the criterion variance accounted for in the number of promotions received by the managers. In addition, none of the standardized regression coefficients were significant. The overall model accounted for 6% of the variance in promotions, but was not statistically significant.

Summary. Taken together, this set of tables (Tables 17 through 22) summarize the research findings for the manager variables used in this study. These regressions constitute empirical tests of Hypotheses 1 through 9, which propose the relationships of the three variable sets (mentorship, dyadic management development and professional networking) to performance, salary and promotions. No variable or set of variables accounted for significant variance in promotions. The dyadic management development set was significantly related to performance ratings, current salary deviation, salary range/tenure and salary range deviation/tenure. One of these relationships, LMX and salary range/tenure was negative. Professional networking was positively related to current salary deviation. Within these significant variable sets, the four dyadic management development variables were significantly related to the criterion variables as follows: Job challenge and learning were related to performance; LMX and PRONET were related to current salary

deviation; job challenge and learning were positively related to salary range/tenure (LMX being negatively related) and learning and PRONET were positively related to salary range deviation/tenure.

Hierarchical Regressions: Controlling for Rated Performance

As discussed in the conceptual framework for this research, one potential bias in the results might be the relationship between performance ratings by supervisors and the salary and promotion indices. This may occur because immediate supervisors play an important role in salary and promotion recommendations. The purpose of the following set of hierarchical regression analyses was to statistically control for the effect of performance ratings on the other dependent variables by forcing the performance variable into the regression equations first. The regression analyses using variable sets are provided in Appendix D. These regressions indicate that only the dyadic management development set was consisently related to all dependent variables. Given these results, the dyadic management development variables were entered into the hierarchical regression equations second, following the performance variable. This produces conservative tests of the effects of mentorship and professional networking, which control for performance first and then dyadic management development.

The regression analyses shown in Appendix D also show that the network graphic meaure, complexity, was not significant in any of the regression equations. Thus, this variable was dropped from the statistical analyses.

Based upon the literature reviewed and the overall summary regression on variable sets (see Appendix D), LMX was entered second, followed by mentorship variables, other dyadic management development variables or professional networking (PRONET). Since LMX has been shown to be a strong predictor of career mobility (Wakabayashi and Graen, 1984; 1987), the LMX variable was entered second in the regression model. The other variables, mentorship and professional networking are proposed to be elaborations of the manager's network, given that the direct reporting relationship has stabilized. Hence, this ordering of predictors is supported by the literature reviewed and in the summary regressions in Appendix D, in which the dyadic management development set was consistently the only set related to the criterion variables.

Tables 23 through 25 present the results from this set of regressions for the manager variables. Salary and promotions were regressed onto the variable combinations specified in Table 3 (see Research Methods, Chapter 4). Standardized regression coefficients (betas) are presented and the amount of variance on each dependent variable accounted for (R^2) was computed.

As shown in Table 23, controlling for supervisor performance ratings clarifies the contributions of the mentorship set. Three of dependent variables, salary range/tenure, salary range deviation/tenure and the promotion index have significant R^2 values. For salary range/tenure and salary range deviation/tenure, the role modeling

Table 23

Hierarchical Regressions LMX and Mentorship (Controlling for Performance) (N=194)

	Standardized Regression Coefficients						
Variable	PERFORM	LMX	COACH	ROLE MODELING	INTIMACY	R^2	(Adj)
Current Salary Dev	-.03	.08	-.19	.00	.07	.03	(.01)
Salary Range/Tenure	.19**	-.02	.31***	.38***	-.09	.10**	(.07)
Salary Range Dev/ Tenure	.14**	-.05	-.15	.32***	-.11	.06**	(.04)
Promotion Index	.10	.02	.34***	-.16	-.01	.07***	(.05)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

PERFORMANCE = Performance rating by supervisor
PROMOTION INDEX = Ending Level-Starting Level/Tenure
LMX = Leader-Member exchange (manager rating)
COACH = Coaching by Mentor(s)
ROLE MODELING = Role Modeling of Mentor(s)
INTIMACY = Personal Relationship(s) with Mentor(s)

Table 24

Hierarchical Regressions LMX and Dyadic Management Development (Controlling for Performance) (N=194)

	Standardized Regression Coefficients					
Variable	PERFORM	LMX	JOB	LEARN	CAREER	R^2 (Adj)
Current Salary Dev	-.05	-.07	-.07	-.12	.00	.01 (.00)
Salary Range/Tenure	.15**	-.28***	-.12	.28***	.16	.09***(.05)
Salary Range Dev/ Tenure	.14**	-.10	-.11	.29***	-.06	.08***(.05)
Promotion Index	.09	-.11	.04	.12	.13	.05* (.02)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

PERFORMANCE = Performance rating by supervisor
LMX = Leader-Member exchange (manager rating)
JOB = Job Challenge
LEARN = Learning from supervisor
CAREER = Career Investment by supervisor

Table 25

Hierarchical Regressions LMX and PRONET (Controlling for Performance) (N=194)

	Standardized Regression Coefficients			
Variable	PERFORM	LMX	PRONET	R^2 (Adj)
Current Salary Dev	.07	-.03	.16**	.05** (.00)
Salary Range/Tenure	.19***	-.03	-.10	.06***(.04)
Salary Range Dev/ Tenure	.16**	-.03	-.07	.05** (.01)
Promotion Index	.13*	.07	-.05	.03 (.01)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

PERFORMANCE = Performance rating by supervisor
LMX = Leader-Member exchange (manager rating)
PRONET = Professional Networking (manager rating)

variable shows statistical significance (R^2=.06 and .10, $p \leq .01$); this beta was positive. In addition, the coaching variable was significantly and positively related to salary range/tenure. For the promotion index, the coaching variable showed significance (R^2=.07, $p \leq .01$); this beta was also positive. Both of these statistical relationships hold, even after controlling for rated performance and LMX. Thus, controlling for the managers' performance ratings reveals significant and positive relationships between the mentorship variables (coaching and role modeling) and salary range/tenure, salary range deviation/tenure and the promotion index.

Table 24 shows the results of the regression analyses for LMX and other dyadic management development variables on the salary and Promotion variables. As this table shows, the standardized regression coefficient for the learning (from the supervisor) variable showed statistical significance after controlling for rated performance and LMX. Two of the salary dependent variables were positively related to the learning variable in this set: Salary range/tenure and salary range deviation/tenure. Also, LMX was significantly related to salary range/tenure; this correlation was negative, indicating that higher salary levels of salary were associated with lower LMX. As stated in the hierarchical regression section, this may be due to lower LMX scores and the greater amount of dispersion in the salary range/tenure variable.

The final table in this set of regressions which control for rated performance is Table 25. This table shows the relationships between professional networking (PRONET) and the salary and promotion vari-

ables. As shown in this table, three of the regression equations produced significant R^2 values, with current salary deviation, salary range/tenure and salary range deviation/tenure as the dependent variables with R^2 values of .05, .06 and .05, respectively. However, the standardized regression coefficients indicated that the performance rating was the only statistically significant variable for salary range/tenure and salary range deviation/tenure. The standardized regression coefficients for the PRONET variable also indicate a positive relationship with the current salary variable, 1987 salary Deviation.

Summary. The results of these regression analyses (controlling for rated performance) suggest that mentorship may play a role in long-term salary growth and promotions. Specifically, the role modeling variable was positively related to the salary range/tenure index and the coaching variable was positively related to the promotion index. These results suggest that mentors may affect career mobility, even after the effects of individual performance ratings and LMX are partialled out using this regression technique.

The results also indicated that dyadic management development activities, besides LMX, contributed significantly to long-term salary growth. In fact, LMX was negatively related to one salary variable, salary range/tenure. However, learning from the manager was positively related to salary range/tenure and salary range deviation/tenure. The PRONET measure was only related to one criterion variable, current salary deviation after controlling for the LMX variable and rated performance.

Moderated Regression Analyses

Based upon the literature review on LMX, interaction effects with this variable were explored (Graen, Novak and Sommerkamp, 1982; Scandura, Graen and Novak, 1986; Graen, Scandura and Graen, 1986; Wakabayashi and Graen, 1984; 1987). Specific interaction for LMX and (a) coaching (which represents the traditional concept of mentorship); (b) job challenge (which reflects the task dimension); (c) career investment (which reflects an important aspect of the dyadic management development set) and (d) professional networking (which reflects the managers' interactions with peers). The objective in these tests was not to perform all possible combinations of variables, but to choose those which best represented the three domains of mentorship, dyadic management development and professional networking. Also, these variables were selected because they accounted for significant criterion variance in the hierarchical regression analyses. Interaction terms were created by multiplying the two variables and entering this term third in the regression equations, after the effects for the the two variables (i.e., main effects) were determined (Arnold, 1982; 1984). For example, the first analyses involved Model 1: LMX + coaching, and Model 2: LMX + coaching + the product of the two (LMX x coaching). The difference between these models was determined by subtracting the R^2 of Model 1 from the R^2 from Model 2 to determine the unique contribution of the interaction term (Cohen and Cohen, 1975). Thus, a significant moderating effect was determined if the change in the R^2 value was statistically significant.

Table 26

Moderated Regression Analyses LMX and Mentorship on Rated Performance, Salary, and Promotions (N=194)

Variable	Standardized Regression Coefficient			R^2 (Adj)
	LMX	COACH	LMX X COACH	
Performance				
MODEL 1	.20	.15		.08*** (.06)
MODEL 2	.33	.31	-.24	.08*** (.06)
DIFFERENCE				.00
Current Salary Deviation				
MODEL 1	.17	.12		.03** (.02)
MODEL 2	.60***	.41	-.79*	.05** (.03)
DIFFERENCE				.02**
Salary Range/Tenure				
MODEL 1	.11	.03		.02 (.00)
MODEL 2	.14	.07	-.06	.02 (.00)
DIFFERENCE				.00
Salary Range Dev/Tenure				
MODEL 1	.09	-.12		.01 (.00)
MODEL 2	.20	.02	-.21	.02 (.01)
DIFFERENCE				.01
Promotion Index				
MODEL 1	.05	.15**		.03** (.02)
MODEL 2	.10	.21	-.09	.03** (.02)
DIFFERENCE				.00

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

LMX = Leader-Member exchange (manager Rating)
COACH = Coaching by mentor(s)

Table 27

Moderated Regression Analyses LMX and Job Challenge on Rated Performance, Salary, and Promotions (N=194)

Variable	Standardized Regression Coefficient			
	LMX	JOB	LMX X JOB	R^2 (Adj)
Performance				
MODEL 1	-.08	.26		.10*** (.09)
MODEL 2	-.07	.13	.26	.10*** (.09)
DIFFERENCE				.00
Current Salary Deviation				
MODEL 1	.06	.09		.02* (.00)
MODEL 2	.48*	.46	-.69	.03** (.02)
DIFFERENCE				.01
Salary Range/Tenure				
MODEL 1	.00	.19***		.04*** (.03)
MODEL 2	-.10	.10	.17	.04*** (.03)
DIFFERENCE				.00
Salary Range Dev/Tenure				
MODEL 1	.03	-.03		.00 (.00)
MODEL 2	.41	.27	-.69	.02 (.00)
DIFFERENCE				.02
Promotion Index				
MODEL 1	.04	.09		.01 (.00)
MODEL 2	.12	.16	-.14	.01 (.00)
DIFFERENCE				.00

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

LMX = Leader-Member exchange (manager Rating)
JOB = Job Challenge

Table 28

Moderated Regression Analyses LMX and Career Investment on Rated Performance, Salary and Promotions (N=194)

Variable	Standardized Regression Coefficient				
	LMX	CAREER	LMX X CAREER	R_2	(Adj)
Performance					
MODEL 1	.32	.01		.09***	(.08)
MODEL 2	.10	.25	-.02	.09	(.03)
DIFFERENCE				.00	
Current Salary Deviation					
MODEL 1	.17***	-.12*		.03**	(.02)
MODEL 2	.57***	.49	-.87*	.03**	(.02)
DIFFERENCE				.00	
Salary Range/Tenure					
MODEL 1	.06	.11		.02	(.01)
MODEL 2	-.09	-.09	.31	.02	(.01)
DIFFERENCE				.00	
Salary Range Dev/Tenure					
MODEL 1	.04	-.02		.00	(.00)
MODEL 2	.14	.12	-.21	.00	(.00)
DIFFERENCE				.00	
Promotion Index					
MODEL 1	.04	.09		.01	(.00)
MODEL 2	.12	.16	-.14	.01	(.00)
DIFFERENCE				.00	

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

LMX = Leader-Member exchange (manager Rating)
CAREER = Career Investment

Table 29

Moderated Regression Analyses LMX and Professional Networking (PRONET) on Rated Performance, Salary and Promotions (N=194)

Variable	Standardized Regression Coefficient			R_2 (Adj)	
	LMX	PRONET	LMX X PRONET		
Performance					
MODEL 1	.24***	.08		.07***	(.00)
MODEL 2	-1.15**	.84**	1.70**	.09***	(.08)
DIFFERENCE				.02***	
Current Salary Deviation					
MODEL 1	.13	.13		.04***	(.03)
MODEL 2	.12	.11	.24	.03**	(.02)
DIFFERENCE				.01	
Salary Range/Tenure					
MODEL 1					
MODEL 2	-.35	-.21	.57	.03*	(.01)
DIFFERENCE				.01	(.00)
Salary Range Dev/Tenure					
MODEL 1	.03	.11*		.01	(.00)
MODEL 2	.77	.61	-89	.02	(.00)
DIFFERENCE				.01	
Promotion Index					
MODEL 1	-.10	.00		.00	(.00)
MODEL 2	-.30	-.28	.48	.01	(.00)
DIFFERENCE				.01	

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

LMX = Leader-Member exchange (manager Rating)
PRONET = Professional Networking (manager Rating)

Tables 26 through 29 contain the results of these regression analyses for the four models specified above (a,b,c,d). Scanning the right hand columns of these tables (ΔR^2 values), it is apparent that only two of these analyses produced significant changes in the criterion variance accounted for by these models. From Table 26, the LMX x coaching interaction accounted for an additional 2% of the variance in current salary deviation. Second, the LMX x professional networking interaction term accounted for 2% of the variance in rated performance (Table 29).

Summary. The results of the moderated multiple regression analyses were inconsistent, and therefore, difficult to interpret. There are possible relationships between LMX and coaching on current salary deviation and between LMX and professional networking on rated performance. However, the relatively small amounts of variance accounted for by the interaction terms (2%, in both cases) and the fact that the interactions were not significant for more of the dependent variables make these results somewhat unreliable.

These analyses complete the results for the manager variables. Next, the results for the supervisor variables on the same set of dependent variables will be presented, with the exception of the mentorship set, which was not measured from the supervisors' point of view.

Unique Contributions of Variable Sets: Supervisor Variables

Two of the three sets of variables shown in Figure 2 (dyadic

Table 30

Unique Contributions (ΔR^2) of Dyadic Management Development and Professional Networking (Supervisor Ratings) (N=194)

Contribution Due to:	Variance Accounted For (R^2)				
	Performance	Dev87	Range/Tenure	Range Dev/Tenure	Promotion
Set I: **Dyadic Mgt. Development+**					
MODEL 1 (R^2_1)	.30***	.00	.03**	.00	.00
MODEL 2 (R^2_2)	.49***	.14***	.09**	.14***	.06***
DIFFERENCE (ΔR^2)	.19***	.14***	.06***	.14***	.06***
Set II: **Professional Networking++**					
MODEL 1 (R^2_1)	.36***	.13***	.09**	.13***	.06***
MODEL 2 (R^2_2)	.49***	.14***	.09**	.14***	.06**
DIFFERENCE (ΔR^2)	.13***	.01	.01	.00	.00

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

+R^2_1: SPRONET
R^2_2: SPRONET + (SLMX + STASK + TEACH + SCAREER)

++R^2_1: (SLMX + STASK + TEACH + SCAREER)
R^2_2: (SLMX + STASK + TEACH + SCAREER) + SPRONET

DIFFERENCE: $R^2_2 - R^2_1$

Table 31

Unique Contributions of Variable Sets (Supervisor Ratings): Performance (N=194)

Variable Set / Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Dyadic Mgt Development		.19***
SLMX	.22***	
STASK	.32***	
Teaching	-.07	
SCareer Investment	.00	
Set II: Professional Networking		.13***
SPRONET	.37***	
Model		.49*** (.48)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 32

Unique Contributions of Variable Sets (Supervisor Ratings): Current Salary (N=194)

Variable Set / Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Dyadic Mgt Development		.14***
SLMX	-.05	
STASK	-.07	
Teaching	.10	
SCareer Investment	.31***	
Set II: Professional Networking		.01
SPRONET	-.11	
Model		.14*** (.11)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq 01$

Table 33

Unique Contributions of Variable Sets (Supervisor Ratings): Salary Range/Tenure (N=194)

Variable Set / Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Dyadic Mgt Development		.06***
SLMX	-.10	
STASK	.22***	
Teaching	.19**	
SCareer Investment	.09	
Set II: Professional Networking		.00
SPRONET	.04	
Model		.09*** (.07)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 34

Unique Contributions of Variable Sets (Supervisor Ratings): Salary Range Deviation/Tenure (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Dyadic Mgt Development		.14***
SLMX	.12	
STASK	-.12	
Teaching	.06	
SCareer Investment	.28***	
Set II: Professional Networking		.01
SPRONET	-.12	
Model		.14*** (.11)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table 35

Unique Contributions of Variable Sets (Supervisor Ratings): Promotions (N=194)

Variable Set / Variable	Standardized Regression Coefficient	R^2 (Adj)
Set I: Dyadic Mgt Development		.06***
SLMX	-.04	
STASK	.03	
Teaching	.17**	
SCareer Investment	.13	
Set II: Professional Networking		.00
SPRONET	.00	
Model		.06** (.04)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

management development and professional networking) were measured from the supervisors' point of view. Mentorship was not assessed because the relationship between supervisors' mentorship experiences (as a protege) was not hypothesized to be related to managers' performance and career mobility. The supervisor dyadic management development and ratings of managers' professional networking activities (designated by the prefix "S" in the tables) were tested for their unique contributions to rated performance and career mobility indices. These tests were performed using hierarchical regression analyses with variable sets as the predictors. Network complexity was not used in this set of regressions because it was measured only from the managers' viewpoint. Thus, the sets of independent variables were the following linear combinations:

Set I: (SLMX + STASK + TEACH + SCAREER)

Set II: (SPRONET)

where:

SLMX = Supervisor rating, leader member exchange

STASK = Respect for manager's task-related abilities, delegation

TEACH = Supervisor rating of their role as teacher

SCAREER = Supervisor rating of their investment in manager's career

SPRONET = Supervisor rating of manager's professional networking

The unique contributions of these two variable sets are shown in Table 38. The five dependent variables are listed from left to right; the columns contain the variance accounted for (R^2) by each of the models at the right. Model 1 indicates the reduced model which includes (a) Set I and (b) Set II. Model 2 includes these two models

with the other added to each regression equation to determine the unique contributions of each set of variables. This technique offers a conservative test of the unique contributions of dyadic management development and professional networking because a variable had to have a significant partial correlation coefficient (beta) and also be a component in a linear combination (variable set) to be considered a significant predictor of performance and/or career mobility.

Table 30 shows the results of these summary regression analyses for the five dependent variables (standardized regression coefficients for the variables are shown in Tables 31 through 35). As shown in this table, the dyadic management development set (including the SLMX measure) contributed significant unique variance to all of the criterion variables. Specifically, the dyadic management development set made significant variance contributions (ΔR^2) of .19 for rated performance, .14 for current salary deviation, .10 for Average salary Deviation, .06 for salary range/tenure, .14 for salary range deviation/tenure and .06 for promotions. Thus, the dyadic management development set (from the supervisors' viewpoint) accounted for significant variance in performance, salary, salary growth and promotions, even after the contribution of supervisor ratings of managers' professional networking were controlled for (partialled out) using this regression technique.

Tables 31 through 35 present the unique contributions of the sets and the significance of the standardized regression coefficients (betas) for each dependent variable shown in Table 30. These tables highlight which variables within the variable sets were significant,

based upon independent t-tests. That is, the order of entry into the model was not specified, and each variable was tested for its contribution to the overall regression model. The variance accounted for by these overall models is also shown at the bottom of each of the tables (Tables 31 through 36).

Table 31 shows the unique contributions of the two variable sets to the rated performance of the managers. The standardized regression coefficients for each of the variables within the sets are also presented. As shown in this table, both variable sets made significant unique contributions to the criterion variance explained by the regression models. The dyadic management development set accounted for 19% ($p \leq .01$) in performance ratings and the supervisors' ratings of managers' professional networking (SPRONET) accounted for 13% ($p \leq .01$). Within the dyadic management development set, the SLMX and STASK variables had significant and positive standardized regression coefficients ($p \leq .01$). Supervisors' ratings of themselves as teachers and their investment in managers' careers were not significant. Supervisors' ratings of managers' network activities (SPRONET) was also statistically significant, with a positive standardized regression coefficient, indicating that managers professional network activities were related to higher performance ratings. The overall regression equation containing all five variables accounted for 48% of the variance in rated performance. The size of the R^2 values in this model can be explained, in part, by the use of supervisor data for both the independent and dependent variable measurements. However, the remain-

der of these analyses employ data from company records, which enables estimation of the effect of single-source response bias in this data.

Tables 32, 33 and 34 show the unique contributions and standardized regression coefficients for the salary dependent variables. Table 32 presents the results for the current (1987) salary deviation scores. Only the dyadic management development set made a significant contribution to current salary deviation (ΔR^2=.14, $p \leq .01$). Within this variable set, the career investment variable was the only variable significantly related to current salary deviation; this beta was positive, indicating that higher levels of career investment by the supervisor were associated with positive current salary deviation scores. SLMX, supervisors' ratings of managers' task-related abilities (STASK) and the supervisors' ratings of themselves as teachers failed to show significance in this overall regression model. The professional networking variable (SPRONET), was not significant. This overall regression equation accounted for 14% of the criterion variance (11%, when adjusted for shrinkage). It should be noted that this dependent variable was measured separately from the independent variables. This reduces the problem of single-source response bias in this analysis.

Table 33 shows the unique contributions of variable sets and standardized regression coefficients for the second salary dependent variable, salary range/tenure. As shown in this table, the dyadic management development set made a unique contribution to the criterion variance explained in salary range/tenure. Two variables within the dyadic management development set, STASK and Teaching, made significant

contributions to the overall regression ($p \leq .05$); these betas were positive, indicating that supervisors' ratings of managers' task-related abilities and their ratings of themselves as teachers were associated with managers' long-term salary growth (salary range/tenure). The overall model accounted for 9% of the variance in salary range/tenure and was statistically significant ($p \leq .05$). The model accounted for 7% of the criterion variance when adjusted for shrinkage.

Table 34 shows the unique contributions and standardized regression coefficients for the relationships between supervisor ratings of dyadic management development and managers' professional networking on salary range deviation/tenure. As shown in this table, only the dyadic management development set made a unique contribution to the variance explained in salary range deviation/tenure index ($\Delta R^2 = .14$, $p \leq .01$). Within this set, the career investment variable again had a significant standardized regression coefficient; this beta was positive, indicating that higher supervisors' ratings of career investment in the manager were associated with higher long-term salary growth (salary range deviation/tenure). SLMX, STASK, Teaching and SPRONET failed to show statistical significance in the overall regression model. This model accounted for 14% of the variance in salary range deviation/tenure (11%, when adjusted for shrinkage). This dependent variable, as were the other salary indices, was computed from company record data. Thus, the bias in the regression analyses due to reliance on a single source was eliminated by the use of different sources for the independent and dependent variables.

The final analysis in this set of regressions is shown in Table 35, which contains the unique contributions of variables sets and standardized regression coefficients for the promotions dependent variable. As shown in the table, the dyadic management development set accounted for significant variance in the promotion index ($\Delta R^2 = .06$, $p \leq .01$). Within this set, the teaching variable had significant standardized regression coefficient ($p \leq .05$); this beta was positive, indicating that supervisors' ratings of themselves as teachers was associated with higher rates of promotions for the managers. The professional networking variable (SPRONET) failed to show statistical significance in the overall regression model. This regression equation accounted for 6% of the criterion variance (4%, when adjusted for shrinkage).

Summary. This set of analyses (Tables 31 through 36) summarizes the research findings for the supervisor variables used in this study. These regressions constitute empirical tests of the relationships that were hypothesized between supervisor ratings of dyadic management development and networking and managerial performance and mobility. The supervisors' rating of managers' professional networking (SPRONET) variable accounted for significant variance in only one criterion variable, performance ratings and this relationship was positive. Supervisors' ratings of dyadic management development accounted for significant criterion variance in all but one variable, salary range/ tenure. Within this variable set, SLMX and supervisors' ratings of managers' task-related abilities (STASK) were positively related to performance ratings. The career investment (by the supervisor) was

positively related to two of the criterion variables: current salary deviation, and salary range deviation/tenure. The supervisors' ratings of themselves as a teacher was positively related to the number of promotions received by managers.

Hierarchical Regression Analyses: Controlling for Rated Performance (Supervisor Variables)

The purpose of the following set of regression analyses was to control for the effect of performance ratings on the salary and promotions dependent variables. The performance rating variable was forced into the regression models first, followed by SLMX and dyadic management development variables (STASK, TEACH, SCAREER) (see Table 36) or SPRONET (see Table 37) [Note: The results of the regression analyses using sets of supervisor variables are provided in Appendix D]. salary and Promotion variables were regressed onto these two models. The standardized regression coefficients (betas) and the amount of criterion variance accounted for (R^2) are presented in these tables.

As shown in Table 36, controlling for supervisor performance ratings clarifies some of the analyses. All of the regression models were statistically significant. The dyadic management development variables, STASK and SCAREER contributed to the criterion variance explained on current salary deviation scores (R^2=.13, $p \leq .01$) and salary range deviation/tenure (R^2=.15, $p \leq .01$). The relationships between supervisors' ratings of career investment and current salary deviation and salary range deviation/tenure were positive, however the relationships between supervisors' ratings of managers' task-related abilities

and these two dependent variables was negative. Therefore, higher levels of career investment were associated with higher levels of current salary and long-term salary growth. The data indicate that lower supervisors' ratings of task related abilites of managers were associated with higher salary and salary growth. This may be due to the fact that managers with more senior status may not have technical skills that are as current as younger managers. Therefore higher salaries and salary ranges may be negatively related to task-related ability, as indicated by these analyses. Supervisors' ratings of their career investment in the managers (SCAREER) also accounted for significant variance in the promotion index (ΔR^2=.07, $p \leq .05$); this beta was positive, indicating that higher ratings of supervisors' investment in managers' careers was associated with higher rates of promotion for the managers. The teaching variable was significant in one of the regression equations, the dependent variable being salary range/tenure (ΔR^2=.05, $p \leq .10$); this beta was positive, indicating that the higher the supervisors rated themselves as teacher, the higher the salary range differential.

Table 37 shows the relationships between the supervisors' ratings of professional network activities of managers (SPRONET) and the salary and promotion variables, controlling for rated performance. As shown in this table, two of the regression equations accounted for significant criterion variance. Supervisors' ratings of managers' professional networking (SPRONET) was significantly related to the salary range deviation/tenure variable only; this beta was negative, indicat

Table 36

Hierarchical Regressions SLMX and Supervisor Dyadic Management Development (Controlling for Rated Performance) (N=194)

	Standardized Regression Coefficients					
Variable	PERFORM	SLMX	STASK	TEACH	SCAREER	R^2 (Adj)
Current Salary Dev	.11	-.06	-.19**	.04	.31***	.13***(.11)
Salary Range/Tenure	.13	-.12	.09	.17**	.12	.09* (.07)
Salary Range Dev/ Tenure	.20*	.08	-.27***	.03	.26***	.15***(.13)
Promotion Index	.16*	-.05	-.09	.12	.15*	.07** (.04)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

PERFORMANCE = Performance rating by supervisor
SLMX = Leader-Member exchange (supervisor rating)
STASK = Task-related activities (supervisor rating)
TEACH = Teaching by supervisor (supervisor rating)
SCAREER = Task-related activities (supervisor rating)

Table 37

Hierarchical Regressions SLMX and Supervisor's Rating of Professional Networking (Controlling for Rated Performance) (N=194)

	Standardized Regression Coefficients			
Variable	PERFORM	SLMX	SPRONET	R^2 (Adj)
Current Salary Dev	.08	.02	-.10	.00 (.00)
Salary Range/Tenure	.14	.03	.08	.05**(.03)
Salary Range Dev/ Tenure	.16*	.12	-.16*	.04**(.03)
Promotion Index	.12	.03	.01	.02 (.00)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

PERFORMANCE = Performance rating by supervisor
SLMX = Leader-Member exchange (manager rating)
SPRONET = Professional Networking (supervisor rating)

ing that lower supervisor ratings of managers' professional networking activity were associated with higher long-term salary growth (note that this beta was significant at $p \leq .10$ which is close to the margin of error). This regression model failed to produce significant results for the other criterion variables: Current salary deviation salary range/tenure, and the promotion index).

Summary. The results of some of these regression analyses (controlling for rated performance) suggest that the relationships between dyadic management development variables still hold after the effects of supervisor performance ratings on salary and promotions are partialled out. Specifically, SCAREER was positively related to current salary deviation and salary range deviation/tenure, teaching is positively related to salary range/tenure and SCAREER is positively related to the promotion index. Supervisors' ratings of managers' task-related abilities (STASK) was negatively related to current and long-term salary deviation scores. This may be due to the problem of obsolescence of technical skills over time in the high technology environment. Further, these analyses suggest that supervisors' ratings of managers' professional networking (SPRONET) are positively related to two of the salary indices, salary range/tenure and salary range deviation/tenure.

Regression Analyses: Dyadic Management Development on Mentorship and Networking

To this point, the hierarchical regression analyses have examined the relationships between the three sets of independent variables (mentorship, dyadic management development and professional networking)

Table 38

Hierarchical Regressions: Dyadic Management Development on Mentorship & Networking Variables (N=244)

Dependent Variable	Standardized Regression Coefficient LMX	JOB	LEARN	CAREER	R^2 (Adj)
Mentorship:					
Coaching	.12	-.02	.17**	.14	.13***(.11)
Role Modeling	-.04	-.02	.27***	.14*	.11***(.09)
Intimacy	-.09	.09	.02	.21***	.05***(.03)
Professional Networking:					
PRONET	-.20**	.15**	.11	.05	.03 (.00)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

LMX = Leader-Member exchange
JOB = Job Challenge
LEARN = Learning
CAREER = Career Investment

and the criterion variables (performance, salary and promotions). It is also important to consider the relationships among the independent variables to determine if there are significant relationships among the mentorship, dyadic management development and professional networking variables. For these analyses, the dyadic management development variables were used as independent variables and the mentorship and professional network variables were used as dependent variables. The literature review suggests that dyadic relationships form early in one's job tenure (Graen, Orris and Johnson, 1973; Graen and Cashman, 1975) and these skills transfer to other working relationships (Graen and Scandura, 1987). A causal relationship is not hypothesized here, only that dyadic management development will be positively related to both mentorship and professional networking.

To examine the relationships among the independent variables, the mentorship variables and PRONET were regressed onto the four dyadic management development variables. Table 38 shows the standardized regression coefficients (betas) and estimates of variance accounted for (R^2) from these analyses. As shown in the table, all three mentorship variables were related to the dyadic management development variables, learning and career investment. Specifically, learning and career investment were significantly related to coaching (R^2=.13, $p \leq .01$) and role modeling (R^2=.11, $p \leq .01$). Career investment was also related to intimacy (R^2=.05, $p \leq .01$). The dyadic management development variables failed to account for significant variance in professional networking.

Summary. These regression analyses show the extent to which the independent variables used in this study are interrelated. Learning

and career investment from the immediate supervisor were related to the mentorship experiences of the managers. Dyadic management development was not related to managers' professional networking activities with peers. This suggests that there may be similarities between direct reporting relationships and mentorship relationships which are not found in network relationships.

CHAPTER 6

Conclusions

The purpose of this research was to determine the unique contributions of mentorship, dyadic management development and professional networking on career mobility within a high technology manufacturing organization. This research extended previous research on interpersonal influences on management development and progress in several important ways. First, the contributions of mentorship, dyadic management development and networking were examined within the same organizational setting. Previous research has investigated each in isolation, making it impossible to compare the contributions of each to performance and career mobility. Second, this research employed the same sets of criterion variables as other career mobility studies (performance, salary and salary growth, and promotions) which will enable comparison of this research on career mobility. Third, these criterion variables were measured independently of the predictor variables. Performance ratings for the managers were obtained from the supervisors and salary and promotion variables were computed from company records. Thus, this research constituted strict tests of the hypothesized relationships between mentorship, dyadic management development, professional networking and career mobility. Fourth, the dyadic exchange concept was expanded to include measures other than LMX, as suggested by critical reviews of the LMX literature. The dyadic management development concept included LMX, dyadic job chal-

lenge, learning from the boss and career investment by the boss. These variables had acceptable reliability estimates and the construct validity of the measures was suggested by the statistical relationships between these variables and the criterion variables. The fifth contribution of this research was the nature and size of the sample employed. Previous research on LMX has used service or government organizations and has had the problem of small sample sizes due to the necessity of obtaining responses from both supervisors and subordinates. This research employed a sample of subsection level managers and their bosses in a private sector organization. Also, data were obtained for 194 dyad pairs, making this data base one of the largest samples of supervisor-manager responses to dyadic exchange measures and career mobility outcomes.

The results of the statistical analyses will be briefly reviewed, in terms of the three streams of research which were examined in this research (mentorship, dyadic management development and professional networking). Following this review, the limitations of this research will be discussed and the findings will be evaluated in terms of the research hypotheses that were stated in Chapter 4. A phasic model of management development will be described, which suggests directions for future research on management networks. Finally, the implications of this research for practice will be outlined.

Summary of Results

Scale Development: Manager vs. Supervisor Samples. Factor analyses were performed on data collected from the manager and super-

visor samples. Based on these analyses, unit-weighted scales were constructed. These measures are summarized in Table 9. The supervisors' responses to the items factored differently than the managers, suggesting that perhaps supervisors and managers have different conceptual frameworks for the aspects of management development which were investigated in this study. Despite some discrepancies between the factor structures of managers and supervisors, most of the supervisor subscales had acceptable reliability estimates. These results, which indicated that supervisors and managers had differing views of the dyadic management development and networking processes, were also supported by the agreement correlations in Table 14. Higher degrees of convergence across measures (LMX, for example) have been reported in the literature (Graen and Cashman, 1975; Graen and Schiemann, 1977) than were found in these data. The hierarchical regression analyses performed on these data also highlighted the differences between supervisor and manager perceptions of management development in this company.

This study highlighted the importance of including the perspective of the immediate supervisors in models of management development. The supervisors' ratings of their investment in the managers' careers was the best overall predictor of performance, salary, salary growth and promotions. Also, the supervisors were better able to rate the managers' professional networking activities than the managers themselves. The supervisors appeared to be more aware of the professional networking concept, perhaps due to their longer experiences with the company. It may also be that it is difficult to rate one's own

networking due to immersion in the various relationships, but an outsider can clearly see the patterns of network activity.

Set I: Mentorship. One contribution of this research was the development of the mentorship subscales, coaching, role modeling and intimacy. Previous research on mentorship has employed open-ended interview formats for data collection, whereas the present study used a questionnaire format. The subscales had acceptable reliability estimates, and one scale, coaching, was significantly related to the number of promotions received by the managers. Moreover, this scale was developed using a managerial sample within a private sector organization; the study from which this measure was derived used a sample of university professors. The development of this scale within a private sector organization will enable comparisons of mentorship with other management development processes in future research.

The hierarchical regression analyses for the mentorship set on rated performance, salary and salary growth indicated that the mentorship variables used in this study were not related to these criterion variables. Also, the moderated regression analyses for the LMX x coaching interaction did not show statistical significance.

However, analyses that controlled for rated performance suggested some contributions of the mentorship set. In these analyses, the coaching and role modeling variables were significantly and positively related to the salary range/tenure, the salary range deviation/tenure and the promotion index. Role modeling was positively related to salary range/tenure and salary range deviation/tenure, suggesting that

the process through which managers modeled the behaviors of higher level managers was most relevant for long-term salary growth. Coaching, which represented the traditional concept of one-on-one personal attention from a mentor, was significantly and positively related to promotions. Once variance in career growth that was accounted for by rated performance was removed, the more subtle effects of the mentorship variables became detectable.

Only the hypothesized positive relationship between mentorship (specifically, the coaching variable) and the promotion index was supported by the data. Although the percentage of variance accounted for by these models was small, these results suggested that coaching by mentors had influence on promotions within this organization when performance ratings were controlled for statistically. Also, managers' role modeling of more senior managers was related to long-term salary growth. These relationships became apparent when the contamination in the criterion variables which was due to performance differences among managers was statistically removed. Mentorship was not measured from the supervisors' point of view, thus these relationships could not be examined from supervisory data.

Set II: Dyadic Management Development. This research replicated previous findings on the leader member exchange concept and extended this model by including additional measures of leadership exchange. This expanded concept was labeled "dyadic management development" and included LMX, dyadic job challenge, learning from the boss and the bosses' investment in the manager's career.

The results for the dyadic management development set generally confirmed the research hypotheses. The dyadic management development set was significantly related to all of the criterion variables, except the promotion index. The moderated regression analyses, however, did not show significance for the LMX x job challenge or LMX x career investment interactions. When the effects of rated performance were controlled for in the regression equations, LMX was negatively related to salary range/tenure and learning (from the supervisor) was positively related to all of the dependent variables except the current salary deviation. The negative correlation between LMX and long-term salary growth may be due to the fact that this relationship is being examined postdictively. That is, the managers' current boss is not the same boss that the manager had when the he/she started with the company. Therefore, the managers' current boss may not be engaging in high quality leader member exchange, because the manager may not need this type of development at at this middle management stage in his/her career.

From the supervisors' point of view, dyadic management development was significantly related to all of the criterion variables. All of the variables within the set were significant, but were related to different criterion variables. Supervisors' ratings of career investment were positively related to current and long-term salary growth as hypothesized. However, supervisors' ratings of managers' task-related technical abilities were negatively related to current salary deviation and salary range deviation/tenure, as in the hierarchical regressions. This statistical relationship may reflect the problem of obsolescence

of technical skills in this high technology organization. Managers with higher current and long-term salaries may actually be rated lower in terms of task-related abilites than managers with shorter company tenures (and therefore smaller current and long-term salary deviation values). Thus, two of the variables within this set were negatively related to the criterion variables, and these hypotheses were not confirmed. However, these findings were interpretable, given the postdictive research design. Since some of the managers had long company tenures (some had been with the company for 25 to 30 years), and were therefore more likely to have less current technical skills, measures of dyadic concepts may indeed be inversely related to salary and salary growth.

Referring back to Figure 2 and the research hypotheses, the relationships between dyadic management development and the criterion variables were supported by the regression analyses for both manager and supervisor variables. An important aspect of this research is that variables other than leader member exchange were found to be significantly related to the criterion variables. Specifically, dyadic job challenge and learning from the supervisor (from the manager's point of view) were positively related to the criterion variables. From the supervisors' point of view, teaching and career investment in the manager were positively related to the criterion variables. This study investigated the suggestions of Dienesch and Liden (1985) and Vecchio and Gobdel (1984) that leadership exchange is not a unidimensional construct with respect to career mobility. The results of this research showed that, within the dyadic management development set,

variables other than LMX were related to performance, salary and salary growth. These findings constitute an elaboration of the dyadic exchange concept into the area of management development between supervisors and managers. This theoretical extension, which was proposed in the conceptual framework (Chapter 3) was supported by the empirical results from the managers' point view for performance, salary and salary growth and from the supervisors' point of view for all criterion variables.

Set III: Professional Networking. There were problems associated with low reliability estimates for the professional networking measure. The subscales which resulted from the factor analyses had reliabilities ranging from .55 to .65, and were therefore not used in the regression analyses. When all of the items were summed, a reliability of .71 was obtained, which was marginally acceptable. This may explain why the PRONET variable did not contribute in many of the regressions. Therefore, the failure of professional networking to contribute to significant variance explained in performance and career mobility may be a methodological rather than a conceptual disconfirmation of the usefulness of the social network methodology in this organization. This methodology suggests that the frequency of interactions be measured rather than the content of interactions. The network measures used in this research were based upon this method. Development of a measure of professional networking which reflects the content of network interactions is still necessary, given the problems with measurement of the concept in this study.

In the hierarchical regression analyses, the professional networking (PRONET) measure was only significantly and positively related to the current salary deviation. Thus, networking with peers may be most relevant for the manager's current situation (in terms of salary). The moderated regression analyses did not produce significance for the LMX x PRONET interaction. Controlling for rated performance did not change the results, the PRONET measure was again only related to the current salary deviation score. From the supervisors' point of view, SPRONET was signficantly and positively related to the rated performance measure only. When the effects of rated performance were controlled for in the regression equations, only the salary range/tenure showed statistical significance. Since these results were not consistent across dependent variables, the contribution of networking to career mobility remains an area for future research.

Professional networking was only consistently related to current salary deviation scores. This suggests that the network process may be most relevant for one's current status in terms of salary. This may be due to the dynamic nature of networks. Since they change over time to meet the needs of the managers' current agendas (Kotter, 1982), they may not be related to long-term mobility or salary growth.

Relationships among Independent variables. The final set of regression analyses for the manager data showed that dyadic management development was significantly related to mentorship, but not to professional networking. This suggests that there may be similarities between mentorship and dyadic management development. Professional networking appears to be an independent concept for these managers,

perhaps because the network concept involves more than one dyad. Also, the factor structures indicated similarities between mentorship and dyadic management development, particularly between the coaching and career investment subscales.

Summary. The results of the statistical analyses employed generally support the research hypotheses for the dyadic management development set. Dyadic management development was related to performance and salary, but not promotions. Professional networking was related to current salary deviation only. And mentorship was related to promotions, after the effects of rated performance were partialled out. From the supervisors' perspective, dyadic management development was related to all of the criterion variables, with supervisors' ratings of career investment being the most consistent predictor in the set. This relationship held, even after controlling for rated performance. These results suggest that different components of management networks are related to different criterion measures of management progress. The results of the statistical analyses employed generally supported the hypotheses for dyadic management development, and supported the hypotheses for mentorship and professional networking in terms of selected dependent variables: Mentorship was most related to the number of promotions received by managers and professional networking was most related to current salary deviation scores. Given these results, the limitations of the research will be discussed in the following section.

Limitations of the Research

The research design employed in this project was cross-sectional and, therefore, the processes of management development and career progress had to be inferred from historical data. Managers were responding to the questionnaire based upon recollections of their job histories and salary data were collected for entire career spans. Thus, a potential bias due to selective memory exists. Managers may have responded the questions based on critical events in their job histories rather than their overall career strategies. Also, given this research design, it was not possible to infer causality between the independent and criterion variables. Whether the management development activities explored in this study predict career mobility or vice versa remains an issue for future research.

The generalizabilty of the results is limited by the characteristics of the sample employed. The study essentially included middle-level managers and their bosses within a high technology manufacturing environment. Results may not be generalizable to lower level or nonsupervisory jobs. Also, the results may not be directly relevant for service organizations or governmental agencies.

Sources of measurement error were also an important limitation of this research. Several of the measures employed were developed specifically for this research site and, therefore, may not be transferable to other research sites without revision. The professional networking measures had lower reliability estimates than the other measures employed and their stability for future use is questionable. Thus, the lack of significant results for the professional networking

variables may, in part, be due to the use of measures which were not internally consistent. Based on these results, research on professional networks should continue to explore alternative measures of network properties, particulary measure which reflect the content of network interactions.

The limitations reviewed in this section suggest that refinements to the model presented in the conceptual framework are necessary. The following section presents a model which attempts to explain why mentorship and professional networking did not show statistical significance in more of the analyses. This model is also based upon the written comments provided by managers in essay questions, which suggest that mentorship and networking were active processes in this organization. These processes, however, may occur at different points in time during a managerial career, suggesting that a "phasic" approach to management development may be needed. This model is somewhat speculuative and is offered as an agenda for future research on the development of management networks.

Model Refinement

The results reported in Chapter 5 suggest revisions to the conceptualization of the mentorship, dyadic and network contributions to management networks shown in Figures 2 and 3. First, an "evolutionary" perspective on the emergence of management networks will be presented which is based upon the strength of the dyadic management development set in predicting long-term career mobilty. Second, the inability of the mentorship and professional networking variables to

show statistical significance in more of the analyses will be addressed by the model. This "phasic" model suggests that some processes may be more active than others at differenet stages in management development.

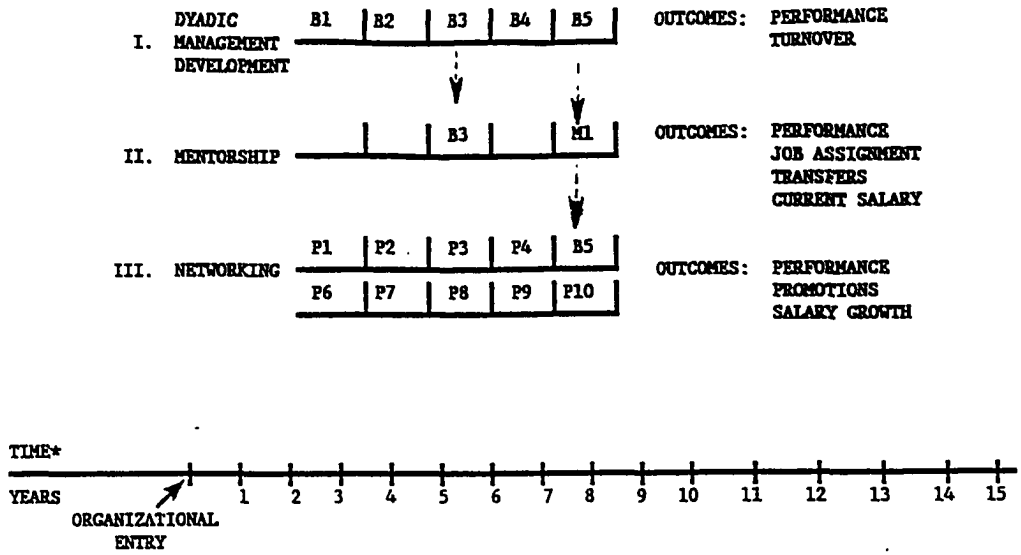
In addition to the questionnaire items, managers were asked to respond to an open-ended question: "How did you learn to be a manager at [this company]? What persons or events have most influenced your management style?" A few managers stated that they had developed their management skills independently, however, most acknowledged the contributions of others to the development of their management style. Many managers commented on the "evolutionary" nature of their management development:

> "[I] established a strong foundation of knowedge and skills via CO-OP training and [in house training program] assignments. Concentrated on supervisory experience with numerous foreman assignments. Established early in my career that I wanted a manufacturing management career in [this industry]. Sought a diversity of managerial jobs at the unit level. Recognized that my managerial strength was in a participatory approach."

> "Becoming a manager was an evolutionary process. I initially concentrated on the technical areas and became comfortable making the technical decisions. Later through leading projects [I] developed skills in making both technical and people decisions."

Given these comments, it appears that a number of processes contribute to how a manager learns how to manage: Education, experience, responsibility and both on-the-job and formal training. Models of management development need to reflect the relative importance of these contributions as they develop over time. A phasic model of the development of management development is shown Figure 4. This figure contains the same independent variable sets as Figure 2, however, they are presented as simultaneous processes, with the independent variable sets as stages in network development. The outcomes of each phase differ somewhat and are shown separately for each phase of development. The timeline in the figure begins at zero, organizational entry, and ends at 15 years, which was approximately the median job tenure for the manager sample used in this research. Hence, this management development process was not generalized beyond this time frame.

Line I in Figure 4 represents the dyadic management development phase. Upon organizational entry, the most important person in the employee's network of relationships is usually the immediate supervisor (Graen, Orris and Johnson, 1973). This network relationship is prescribed by the organization, and usually becomes stabilized within the first year of employement in terms of whether the employee is a "trusted assistant" or a "hired hand" (i.e., in group vs. out group) (Dansereau, Graen and Haga, 1975). A sequence of 5 bosses is shown in Figure 4 (B1 to B5) to represent the process by which some bosses might become mentors or network members in another phase of development. Therefore this model also addresses the issue of how the roles in a



*Time dimension implies Dyadic Management Development and Networks have approximately the same starting times. Mentoring lags.

Figure 4. Phasic Model of Management Networks

manager's network of working relationships changes over time. A number of managers mentioned that they modeled their management style after their bosses early in their career. Examples of this type of response to the open-ended question about how managers learned how to manage were:

> "Most of my knowledge on being an effective manager came from observing both the positive and negative style of my immediate managers."

> "The people that probably influenced me the most were managers that I had worked for early in my career. These individuals were technically astute, goal-oriented and good communicators."

One manager mentioned the career impact of the one-on-one coaching provided by his/her first boss:

> "My first manager at [this company] told me, 'keep your eyes and ears open and your mouth shut and you will learn more by seeing people do things the wrong way than you will the right way.'"

One interesting type of comment within the dyadic management development process was the effect of a manager who was a negative role model -- someone the manager did not want to emulate. For example,

"The event that has had the most influence on my management style was from my first boss. This was purely a case of HOW NOT TO MANAGE PEOPLE. His technical expertise, though, is second to none."

"I have had a lot exposure to management styles that are not worthy of imitation — tyrant-managers, workaholic managers, absentee managers, managers-who-don't-care-about-people. Only in the last 7-8 years have I seen what I think is good management style rise to [this] level and up."

Therefore, many managers noted that avoidance of what they perceived to be unsuccessful management styles was an important aspect of their development as a manager. This may be a new area for research on management development, since the literature on role modeling only addresses the impact of positive role models on managerial behavior.

Leader member exchange has been the construct most often researched in this domain, however, the present study showed that other dyadic concepts contribute to career mobility. The outcomes for this phase are job performance and turnover, which have both been predicted by studies of leader member exchange (Graen and Scandura, 1987). The relationship with the immediate supervisor remains active, while the new manager develops develops other network contacts with peers, managers from other units, and even those outside the organization. Often, these contacts are introduced by the immediate supervisor as

part of the manager's professional development (Kotter, 1982; Kaplan, 1984).

Mentorship is shown as line II in Figure 4. The literature on mentorship suggests that these relationships develop over time, and often they span managerial careers (Kram, 1985). A mentorship relationship would most likely develop from a previous supervisor-subordinate relationship (e.g., M1 in Figure 4). However, managers can also role model more senior managers from other divisions in the company (e.g., M2). Of course, the manager still has a direct reporting relationship with his/her immediate supervisor to mainain, but the mentorship relationship may become more important during this phase. Often a manager is being "groomed" for a higher management position by the senior manager and both parties are investing heavily in the relationship. Managerial performance is also an outcome of this phase, however, the rate of salary growth and promotions should be accelerated during this phase, due to the senior manager's sponsorship.

Based upon the written comments of the managers, one of the most important functions of mentors in this organization was the managers' ability to role model successful managers and <u>not</u> to role model the unsuccessful ones. One manager broke the influence on his/her managerial development down in terms of percentages, which reveals the importance of role modeling for some managers:

"50% - on the job, trial and error

20% - observing immediate manager

15% - observing other managers

15% - training programs and materials."

Thus, 35% of this manager's learning resulted from observation of higher level managers. This method of learning was mentioned by a number of managers in the sample, examples of their comments follow.

> "[I learned] mostly by studying other peoples' success and mistakes and evaluating them as deeply as possible."

> "Primarily through observation of managers that I considered to be successful and respected for their accomplishments as well as managerial style."

One manager described the learning process he/she employed in detail:

> "To a great degree, my managerial education has been by observation of various managers I have worked with either directly via the reporting chain of command or managers that I had interfaced with in other phases of the business. By evaluating the degree of success these managers enjoyed and their particular styles and techniques, I have tried to incorporate the more successful traits into my routines. I also try to be perceptive to the needs of my staff, realizing that although situations may be similar to those I observed earlier, every situation/organization/person is somewhat unique."

Hence, the role modeling process was not one of pure imitation, but rather one of thoughtful analyses and adopting successful strategies and specific techniques to situations as needed.

Line III of the network development process is the professional networking phase, in which the manager develops contacts with peers and managers from other units. A few of these network links may be former supervisor-subordinate relationships, as shown in Figure 4 (e.g., P5, with "P" indicating a peer relationship). These connections become necessary as the manager becomes responsible for implementation of more agendas, either his/her own or those of the immediate supervisor (Kotter, 1982). The essence of managing is getting things done through other people (Mintzberg, 1971), therefore, these network contacts are critical in terms of managerial effectiveness. As one manager put it,

> "Success comes from... establishing a working network of allies and sources that you can count on when you need it... from energizing a large group of poeple to get an important task accomplished, not from trying to do it all yourself. Influence is a key."

Other managers commented on the importance of network contacts and influence:

> "To accomplish major tasks within [this organization] requires a large amount of teamwork (aid from others).

Accruing this aid/teamwork requires good communications skills and the interspersonal skills to 'influence' others."

"Because [this division] is so large, I believe you have to possess strong interpersonal skills and build large networks of people to get things done. In today's environment, you also have to be results-oriented and get good visibility."

Another manager commented on the contributions of network activities in terms of what was learned:

"Task forces and special assignments that expsoed me to higher level people from various disciplines have been among the most broadening experiences both managerially and technically."

Therefore, the development of both technical and managerial skills may be outcomes of the networking process. Given the comments of these managers about the networking process, it appears to be an important aspect of their development as managers. The written responses to the essay questions and this phasic model of management development suggest implications for future research on management networks. Some of these areas for future research are discussed in the following section.

Implications for Research

The sample selected for this research had implications for the results of the statistical analyses. Since this was a sample of middle level managers within a high technology operating environment, some of the hypothesized relationships were not confirmed. In fact, negative relationships were found between some of the dyadic management development variables (particulary LMX, learning from the supervisor, and the supervisors' ratings of managers' task-related abilities) and the criterion variables. It is apparent that some of the managers in this sample had large salaries and salary ranges and low quality LMXs. This may be due to the observation that these managers did not rely on the direct reporting relationship at this stage in their career. Therefore, one research question generated from this research would involve the examination of this process for managers at different levels in the organizational hierarchy. It may be that mentorship, dyadic management development and professional networking are active at different stages in a managers' career, as suggested by the phasic model presented in this chapter.

The results of this study suggest that the LMX concept can be expanded to include other aspects of dyadic working relationships. The context of this study was management development and career mobility, and therefore, measures of dyadic management development were developed and used in statistical analyses. These results suggested that dyadic job challenge, learning from the supervisor and career investment by the supervisor were related to performance, salary and salary growth. Future research should continue to elaborate the dyadic exchange

concept. It appears that the concept is multidimensional, and other aspects of dyadic working relationships might include power-dependence relations, task variables (in addition to challenge), and socio-emotional support, as examples.

Based upon the factor analyses of the mentorship scale and managers' comments about mentorship, it appears that role modeling contributes to a managers' development. Both positive and negative role models were mentioned in written responses, indicating that managers learned a great deal from analyses of the successes and failures of others in this organization. The process of negative role modeling, that is, avoiding the unsuccessful behaviors of others, is a new area of research, which was revealed in the managers' comments. This raises interesting research questions involving the process by which managers learn how to manage without actually interacting with higher level managers. Future research on this topic should investigate the learning process through which managers process information gained via observation and the decision process by which certain behaviors are adopted (i.e., positive role modeling) and other are avoided (i.e., negative role modeling). The choice of a role model and the bases of that choice (e.g., proximity, technical expertise, interpersonal skills) are also important aspects of this process that are in need of empirical investigation. The factor analysis of the mentorship scale and written responses suggested that the mentorship concept is more complex than previous definitions, which focus on the one-on-one personal relationships between managers and protege.

The managers' comments also provided some insights into the professional networking process in this organization. Although the measures used in this study failed to show statistical significance, this appears to have been a methodological rather than an conceptual discomfirmation of the professional networking perspective. Problems with the professional networking measures were compounded by the issue of criterion specification. The outcomes during the professional networking phase need careful definition. Dependent variables which reflect network development should represent the outcomes of this phase. Managerial performance would still be an important criterion, particularly if managers are recognized for networking activities. Also, job assignments, lateral transfers to gain exposure to various functions within the company might be related to the development of the manager's network. Current levels of salary may also be relevant, as indicated in the present research.

Also, the results indicated that supervisors were better able to rate managers' professional network activities than the managers themselves. This finding suggests that future research should expand supervisory ratings of network concepts which appear to be more reliable than manager ratings. The fact that supervisors notice managers' network activites has important implications for what is learned from dyadic management development between supervisors and subordinates.

Implications for Practice

From the manager' point of view, this study supported the dyadic management development model. The development of a high quality relationship with one's immediate supervisor contributes to long-term career progress, based on these results. Not only does the boss mediate salary and promotion recommendations, but also performs important functions in terms of developing management skills and integrating the manager into existing network structures. This integration is critical to a managers' professional development and the manager should enlist the boss' help in making network contacts, if the boss is not already doing so. The independent variable most consistently related to the criterion variables was the degree of career investment in the manager (from the supervisors' point of view). Hence, the manager should attempt to elicit this response by initiating discussions of his/her career development with the boss. Challenging tasks were also related to salary and salary growth, suggesting that managers should carefully consider task assignments, especially if there are options. Challenging tasks provide opportunities for growth and development on-the-job. Also, some managers mentioned that success on critical tasks early in their careers provided visibility and recognition which put their careers on a "fast track".

The relationship with the boss must be maintained while the manager develops his/her professional network. This network should include peers, managers from other units and those outside the organization (contractors, for example). This network expansion should occur as the manager becomes responsible for the implementation of more

agendas. From these network contacts, the manager may identify a special relationship with a more senior manager which develops into a mentorship relationship. The catch-phrase, "everyone who makes it has a mentor," was suggested by the present study, in terms of promotions (when the effects of managerial performance ratings were removed). This study indicated that dyadic management development, networking, and mentorship are all potential components of managers' network, but they are related to different management progress outcomes. Dyadic management development was most related to managerial perfcrmance and salary growth; professional networking was most related to current salary; mentorship was most related to promotions. As the previous discussion of the "phasic model" of the development of management networks indicates, these differences may reflect different stages of network development. Therefore, different activities appear to be appropriate at different phases of management development. The timing of management development activities is often as important as the developmental process itself.

The implications of this study for the human resource function involve the long-term development of managers. It appears that managers learn how to manage from a variety of sources and that management development is a long-term "evolutionary" process. A manager should be exposed to training which highlights these sources at appropriate intervals in his/her managerial development. Early in the management career, the importance of the direct reporting relationship should be emphasized. The dyadic management development process between supervisors and direct reports still appears to be the best

predictor of long-term career mobility. The networking concept should be introduced after the direct reporting relationship becomes stabilized. Mentorship should be part of training programs later in the managers' development, perhaps after the manager becomes a mentor to others. At each stage of development, it is important to diagnose the managers' training needs and provide appropriate training which sensitizes the manager to the issues each source of management development.

Toward a New Concept of Management Development

This research suggests a concept of management development which involves more than the development of dyadic superior-subordinate exchange relationships. Managers should learn negotiating skills in these direct reporting relationship, which should transfer to the development of networks involving peers, other managers, persons outside the company and mentors. These contacts should give rise to a plan for job sequencing which will provide maximum exposure to the various functions of the company. The network concept involves on-the-job learning, which is supported by training at appropriate phases in the managers' network development. Finally, an important aspect of the network concept is to alter existing evaluation and reward systems to acknowledge the importance of networking activities.

Learning how to manage through networking should result in managers with more broad bases of knowledge, through exposure to the perspectives of peers and perhaps multiple mentors. Flexibility in the development of network structures will enable managers to adapt to

rapidly changing competitive environments. The idea is for the managers to have access to the expertise and viewpoints of others when necessary. It is hoped that this research suggests a new concept of management development which will increase adaptability to changing business conditions.

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APPENDIX A

Questionnaires

Form M: Manager Form

Forms B1,B2: Boss Forms

SECTION I

These questions deal with your working relationships with higher level managers that you may consider to be your mentors (other than direct reporting relationships). Excluding the possibility of "negative role models" (i.e., persons that you don't want to be like), think of the person or persons from whom you have learned the most about managing. For each question below, please circle the number which best describes your working relationships with the higher level manager(s) that have been your mentor(s) at [redacted].

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Higher level managers have taken a personal interest in my career.	1	2	3	4	5
2.	Higher level managers have placed me in important assignments.	1	2	3	4	5
3.	Higher level managers have given me special attention as mentors.	1	2	3	4	5
4.	I have been advised on promotions by my mentor(s).	1	2	3	4	5
5.	I have learned strategies for influencing groups and/or meetings from my mentor(s).	1	2	3	4	5
6.	I have shared personal problems with my mentor(s).	1	2	3	4	5
7.	My mentor(s) have defended me when I have been criticized.	1	2	3	4	5
8.	My mentor(s) taught me "informal" rules at [redacted].	1	2	3	4	5
9.	My mentor(s) have helped me coordinate personal and professional goals.	1	2	3	4	5
10.	I have socialized with my mentor(s) after work.	1	2	3	4	5
11.	I have shared my ideas with my mentor(s).	1	2	3	4	5
12.	I have tried to model my behavior after my mentor(s).	1	2	3	4	5

CONTINUED ON THE NEXT PAGE

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13. I have admired my mentor's (s') ability to motivate others.	1	2	3	4	5
14. I have exchanged confidences with my mentor(s).	1	2	3	4	5
15. I have respected my mentor's (s') knowlege of the business.	1	2	3	4	5
16. I have respected my mentor's (s') ability to teach others.	1	2	3	4	5
17. My mentor(s) have devoted special time and consideration to my career.	1	2	3	4	5
18. I have respected my mentor's (s') breadth of knowledge in areas other than the aircraft engine business.	1	2	3	4	5

SECTION II

The next set of questions are about your working relationship with the manager you report to at the present time. Please write his or her name and job title below.

Manager's Name: _____

1. How many years have you worked with your manager?

   __0-2 yr __3-5 yr __6-8 yr __9-10 yr __more than 10 yr

2. How often do you talk with your manager?

   ___less than once monthly ___two or three times monthly

   ___less than once weekly ___two or three times weekly

   ___less than once daily ___daily

3. Approximately what percent of your interactions with your manager do you initiate?

   _____%

CONTINUED ON THE NEXT PAGE

For each of the following questions, circle the response that best represents your current working relationship with your manager.

1. How well do you feel that your manager understands your problems and needs?

Not at all	A Little	A Fair Amount	Quite a Bit	A Great Deal

2. How well do you feel that your manager recognizes your potential?

Not at all	A Little	Moderately	Mostly	Fully

3. Regardless of how much formal organizational authority your manager has built into his/her position, what are the chances that he/she would be personally inclined to use power to help you solve problems in your work?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

4. Again, regardless of the amount of formal authority your manager has, to what extent can you count on him/her to "bail you out" at his/her expense, when you really need it?

Not at all	A Little	Somewhat	Mostly	Completely

5. How would you characterize your working relationship with your manager?

Extremely Ineffective	Less than Average	About Average	Better than Average	Extremely Effective

6. I have enough confidence in my manager that I would defend and justify his/her decisions if he/she were not present to do so.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

7. Do you usually feel that you know where you stand... do you usually know how satisfied you manager is with what you do?

Rarely	Seldom	Sometimes	Usually	Always

8. How often do you discuss with your manager how your jobs, career, and goals fit into the broader perspective of the company's future and goals?

Almost Never	Rarely	Occasionally	Often	Always

9. How much respect do you think your manager has for your intelligence?

Almost None	A Little	Average	A Lot	Extreme

CONTINUED ON THE NEXT PAGE

10. How often does your manager praise you about your work?

Almost Never	Rarely	Occasionally	Often	Always

11. How often does your manager criticize you about your work?

Almost Never	Rarely	Occasionally	Often	Always

12. On the average, how appropriate is the feedback you get from your manager?

Much too Critical	Too Critical	About Right	Too Positive	Much Too Positive

13. How much respect do you have for your manager's knowledge of the business?

Almost None	A Little	Average	A Lot	Extreme

14. How much respect do you have for your manager's technical skills?

Almost None	A Little	Average	A Lot	Extreme

15. How much respect do you have for your manager's ability to get things done, that is, for his/her organizational ability?

Almost None	A Little	Average	A Lot	Extreme

16. How is the frequency of your interactions with your manager in relationship to your needs?

Much too Little	Too Little	About Right	Too Often	Much too Often

17. How do you find the assignments which your manager gives you?

Boring	Not very Interesting	Of Average Interest	Interesting	Very Interesting

18. How challenging are the assignments which your manager gives you?

Too Easy	Easy	About Right for me	Challenging	Too Challenging

19. Are the assignments your manager gives you "real" work or just trivial makework?

Almost All	Some	About 50-50	Most are "Real"	All are "Real"

CONTINUED ON THE NEXT PAGE

20. How important do you feel it is to learn as much as you can from your manager?

Not at all A Little Average A Lot Extreme

21. How much do you learn from your manager about the technical skills required in your profession?

Almost Nothing A Little Average A Lot Constantly Learning New Things

22. How much do you learn from your manager about what it takes to succeed in this particular organization?

Almost Nothing A Little Average A Lot Constantly Learning New Things

23. How much do you learn from your manager about how to manage your career?

Almost Nothing A Little Average A Lot Constantly Learning New Things

24. How formal is your relationship? (That is, if you make appointments to talk, if you talk only about business, if you interact in a carefully calculated way, the relationship is more formal.)

Not at all A Little Average Quite Very

25. How similarly do you and your manager perceive the goals of your work group?

Not at all A Little Somewhat A Lot Extreme

26. To what extent do you and your manager approach complex problems in the same manner?

Not at all A Little Somewhat A Lot Extreme

27. Given the same decision to make, to what extent would you and your manager do the same thing?

Definitely Would Not Probably Would Not Might or Might Not Probably Would Certainly Would

28. To what extent does your manager delegate tasks to you that you feel are appropriate?

Not at all A Little Somewhat A Lot Extreme

SECTION III

Please indicate what you consider to be your work group?

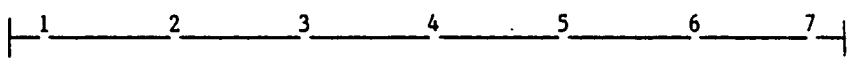
_____unit _____subsection _____section _____department

_____other:_____

How many people are included in your work group? _____

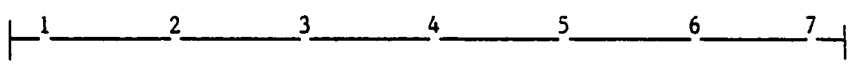
The following questions deal with your working relationships with persons other than your manager or mentor(s). Please consider the people you deal with on a day-to-day basis and circle the number which best represents your response to each question.

1. When you want to get things done in [redacted], is it best to work independently or to develop a network of people who can help you?



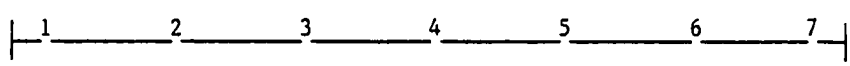
Work Independently — A Little of Both — Develop Network

2. How much time do you spend developing friendship relationships with others in [redacted]?



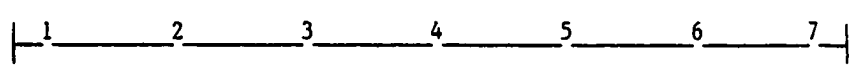
Very Little — Some — A Great Deal

3. To what degree do you support other people in difficult situations?



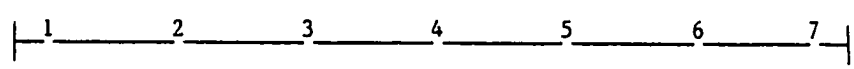
Almost Never — Sometimes — Almost Always

4. To what extent do you exchange work related information with others in [redacted]?



Very Little — Some — A Great Deal

5. How much do you share ideas about how to manage effectively with others in [redacted]?



Very Little — Some — A Great Deal

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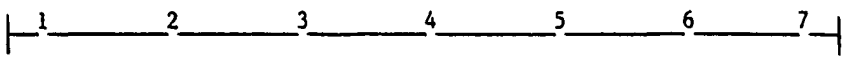
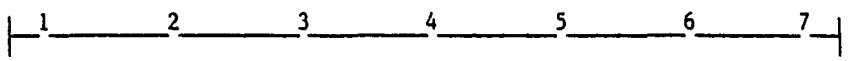
6. To what extent do you and other people you work with help each other to learn important technical skills?



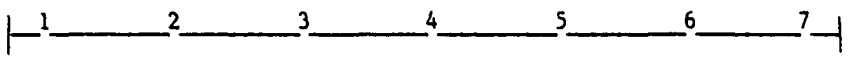
Very Little — Some — A Great Deal

7. How much do you depend on help from others to meet your job objectives?



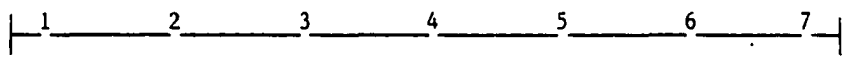
Very Little — Some — A Great Deal

8. How much time to you spend on contacts with others (other than meetings) as opposed to working alone?



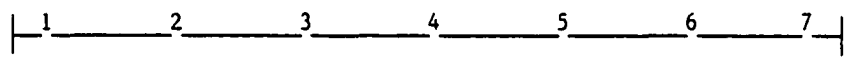
Less than 1 hr/wk — About 15 hr/wk — More than 30 hr/wk

9. How much do you ask for advice from others when confronted with a situation you have not dealt with before?



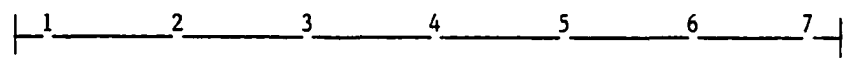
Almost Never — Sometimes — Almost Always

10. Approximately how much time do you spend in meetings with other persons?



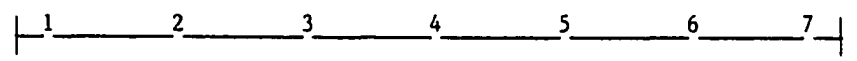
Less than 1 hr/wk — About 15 hr/wk — More than 30 hr/wk

11. How often have you served on task forces or other interdepartmental committees?



Almost Never — Once or Twice — Very Frequently

12. How much do you enlist the help of others in solving problems you encounter in your work?



Never — Sometimes — Frequently

Professional Networks in organizations come in all shapes and sizes. In the box below, please draw a picture of your professional network. Use the key below to indicate who is in your network and how strong (i.e., dependable, trusting) your working relationships are. Please include only those persons who you interact with daily on work-related issues.

Persons in the Network:

(F) - Yourself (Focal Manager)

(B) - Your Boss or Supervisor

(P) - Peers

(M) - Managers from other sections

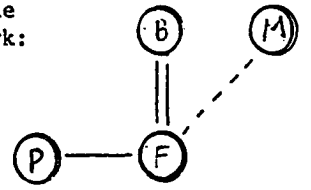
(O) - Persons outside [redacted] (customers, contractors, etc.)

(S) - Persons reporting to you

Strength of Relationship:

======= Very Strong ——— Moderately Strong - - - - Not Strong

Example Network:



This manager has a strong relationship with his/her manager, a moderately strong relationship with a peer, and a relationship with a manager from another section that is not strong.

Next, answer the following questions about the network you have drawn. Please circle all of the network members that apply using the same key as you used for the drawing.

Key: B = Boss
M = Managers from other sections
P = Peers
O = Outside (customers, contractors, etc.)
S = Persons reporting to you

1. If you have a problem relating to expertise in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

2. If you have a problem relating to resources in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

3. If you have to have a decision made before you continue your work, to whom do you go for that decision? (Circle all that apply)

B M P O S

SECTION IV

Please rank order the following work issues to indicate their importance to you. Use the number 1 to indicate the most important, 2 to indicate the second most important, etc. Be sure that each goal has a number assigned to it when you have finished.

	ISSUE	RANK
1.	Timeliness (completing projects on time)	_____
2.	Productivity	_____
3.	Accuracy	_____
4.	Completeness	_____
5.	Budget Considerations	_____

The next ten statements depict decision situations which you might encounter on your job. Please indicate the degree to which you agree or disagree with each statement by circling the appropriate number.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. If an employee were consistently tardy and/or absent to work (without reason), I would take displinary action.	1	2	3	4	5
2. If I know an important deadline will not be met, I try to change it (by going through proper channels)	1	2	3	4	5
3. In making important decisions, I always get input from those who will be affected by the decision.	1	2	3	4	5
4. When involved in promotion decisions, I back the most technically qualified person, regardless of interpersonal skills.	1	2	3	4	5
5. When I am involved in job assignment decisions, the experience of a person outweighs all other factors.	1	2	3	4	5
6. Most decisions are based on "rules-of-thumb."	1	2	3	4	5
7. Meeting targets, quotas or goals is the best way to determine the effectiveness of a work group.	1	2	3	4	5
8. Once the budget is set on a project, there is little decision making discretion.	1	2	3	4	5
9. In making decisions about the use of organizational resources, it is best to follow precedents.	1	2	3	4	5
10. Appropriate documentation is essential for the decision making process.	1	2	3	4	5

Please write your responses to the following questions in the space provided.

1. How did you learn to be a manager at Aircraft Engines? What persons or events have most influenced your management style?

2. Why do you believe you have attained the level you have in the company, that is, what things seem to be the key ingredients for success in Aircraft Engines?

PLEASE TURN THE PAGE

Biographical Information

1. What is your Aircraft Engines job title?

_____

2. How old are you? (check one)

_____Under 20	_____40-44
_____20-24	_____45-49
_____25-29	_____50-54
_____30-34	_____55-59
_____35-39	_____60 or older

3. What is your level of formal education (check one)?

_____Completed high school

_____Technical or Trade School Degree

_____Some Undergraduate Work

_____Bachelor's Degree

_____Some Graduate Work

_____Advanced Degree (e.g., MS, MBA, etc.)

4. What school(s) did you receive your degree(s) from?

_____

_____

5. What Aircraft Engines Training Programs have you attended? (check all that apply)

_____FMP	_____MMP
_____EDP	_____RMP
_____MDP	_____Other(s) (please list below)

_____

_____

PLEASE CHECK TO MAKE SURE YOU HAVE NOT MISSED ANY QUESTIONS.

*** THANK YOU FOR YOUR PARTICIPATION ***

*** INSTRUCTIONS ***

This survey contains questions about your working relationships with one or more of your direct reports who have agreed to participate in this study. Sections I through III contain questions about these managers who report to you at the present time. You may have duplicates of these sections with different manager's names on them. Please fill these out separately for each manager. You will also find section IV in your packet which contains questions about your working relationships and job attitudes, which you will only need to fill out once.

Once again, complete confidentiality of your responses is assured. No one will be able to identify you with your responses to the questions on this survey.

Your participation is sincerely appreciated. Without your responses to the enclosed survey, the data already collected is unusable: the objective is to collect information from both parties in managerial relationships. If you have further questions about this survey, please call Dr. Anderson at 243-9194 or Terri Scandura at 475-7120.

SECTION I

This set of questions are about your working relationship with a manager that reports to you at the present time. His or her name is printed below.

Manager's Name: _____

1. How many years have you worked with this manager?

__0-2 yr __3-5 yr __6-8 yr __9-10 yr __more than 10 yr

2. How often do you talk with this manager?

___less than once monthly ___two or three times monthly

___less than once weekly ___two or three times weekly

___less than once daily ___daily

3. Approximately what percent of your interactions with this manager do you initiate?

_____%

For each of the following questions, circle the response that best represents your current working relationship with this manager.

1. How well do you feel that you understand this manager's problems and needs?

Not at all	A Little	A Fair Amount	Quite a Bit	A Great Deal

2. How well do you feel that you recognize this manager's potential?

Not at all	A Little	Moderately	Mostly	Fully

3. Regardless of how much formal organizational authority you have built into your position, what are the chances that you would be personally inclined to use power to help him/her solve problems in his/her work?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

4. Again, regardless of the amount of formal authority you have to what extent can he/she count on you to "bail him/her out" at your expense, when he/she really needs it?

Not at all	A Little	Somewhat	Mostly	Completely

5. How would you characterize your working relationship with this manager?

Extremely Ineffective	Less than Average	About Average	Better than Average	Extremely Effective

6. I have enough confidence in this manager that I would defend and justify his/her decisions if he/she were not present to do so.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

7. Does this manager usually feel that he/she knows where he/she stands... do they usually know how satisfied you are with what they do?

Rarely	Seldom	Sometimes	Usually	Always

8. How often do you discuss with this manager how his/her jobs, career, and goals fit into the broader perspective of the company's future and goals?

Almost Never	Rarely	Occasionally	Often	Always

9. How much respect do you think this manager has for your intelligence?

Almost None	A Little	Average	A Lot	Extreme

10. How often do you praise this manager about his/her work?

Almost Never	Rarely	Occasionally	Often	Always

11. How often do you criticize this manager about his/her work?

Almost Never	Rarely	Occasionally	Often	Always

12. How much respect do you have for this manager's knowledge of the business?

Almost None	A Little	Average	A Lot	Extreme

13. How much respect do you have for this manager's technical skills?

Almost None	A Little	Average	A Lot	Extreme

14. How much respect do you have for this manager's ability to get things done, that is, for his/her organizational ability?

Almost None	A Little	Average	A Lot	Extreme

15. How is the frequency of your interactions with this manager in relationship to your needs?

Much too Little	Too Little	About Right	Too Often	Much too Often

16. How important do you feel it is to be a teacher to this manager?

Not at all	A Little	Average	A Lot	Extreme

17. How much has this manager learned from you about the technical skills required in your profession?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

18. How much has this manager learned from you about what it takes to succeed in this particular organization?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

19. How much do you coach this manager about how to manage his/her career?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

20. How formal is your relationship? (That is, if you make appointments to talk, if you talk only about business, if you interact in a carefully calculated way, the relationship is more formal.)

Not at all	A Little	Average	Quite	Very

21. How similarly do you and this manager perceive the goals of your work group?

Not at all	A Little	Somewhat	A Lot	Extreme

22. To what extent do you and this manager approach complex problems in the same manner?

Not at all	A Little	Somewhat	A Lot	Extreme

23. Given the same decision to make, to what extent would you and this manager do the same thing?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

24. To what extent do you delegate tasks to this manager that you feel are appropriate?

Not at all	A Little	Somewhat	A Lot	Extreme

SECTION II

The following questions deal with this manager's working relationships with his/her peers (persons other than you or other mentors). Please consider the people you see him/her interact with on a day-to-day basis and circle the number which best represents your response to each question.

1. When this manager wants to get things done in [redacted], is it best for him/her to work independently or to develop a network of people who can help?

1	2	3	4	5	6	7
Work Independently			A Little of Both			Develop Network

2. How much time does this manager spend developing friendship relationships with others in [redacted]?

1	2	3	4	5	6	7
Very Little			Some			A Great Deal

3. To what degree does this manager support other people in difficult situations?

1	2	3	4	5	6	7
Almost Never			Sometimes			Almost Always

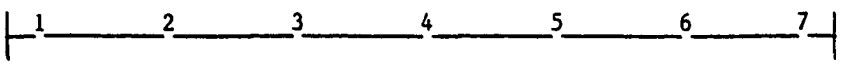
4. To what extent does this manager exchange work related information with others in [redacted]?

1	2	3	4	5	6	7
Very Little			Some			A Great Deal

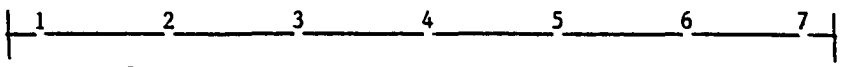
5. How much does this manager share ideas about how to manage effectively with others in [redacted]?

1	2	3	4	5	6	7
Very Little			Some			A Great Deal

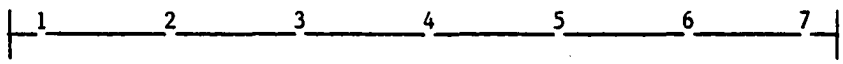
6. To what extent does this manager help others to learn important technical skills?



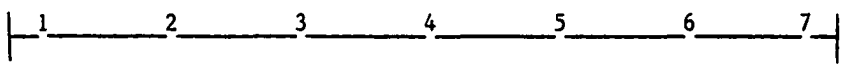
7. How much does this manager depend on help from others to meet his/her job objectives?



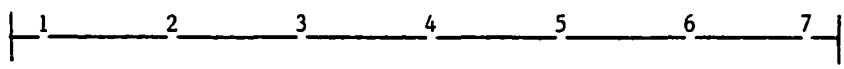
8. How much time does this manager spend on contacts with others (other than meetings) as opposed to working alone?



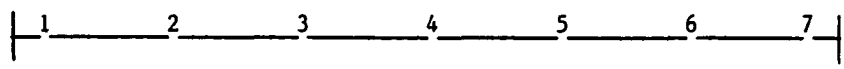
9. How much does this manager ask for advice from others when confronted with a situation he/she have not dealt with before?



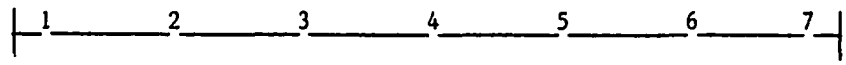
10. Approximately how much time does this manager spend in meetings with other persons?



11. How often has this manager served on task forces or other interdepartmental committees?



12. How much does this manager enlist the help of others in solving problems he/she encounters in <u>their</u> work?



SECTION III

Next, please rate the accuracy of the following statements about this manager using the following rating scale.

1 = Totally Innaccurate
2 = Mostly Inaccurate
3 = Somewhat Accurate
4 = Mostly Accurate
5 = Very Accurate

_____ 1. This manager inspires others to accomplishment.

_____ 2. This manager deals with failure constructively.

_____ 3. This manager is responsive to changes in the environment.

_____ 4. This manager incorporates and is open to input from many sources.

_____ 5. This manager supports and provides a strategic vision.

_____ 6. This manager facilitates appropriate cross-functional, cross-group integration.

_____ 7. This manager assures appropriate allocation and reallocation of resources.

_____ 8. This manager sets and meets appropriate and effective financial targets.

_____ 9. This manager assures the best mix of talent and perspectives in organization and work group staffing.

_____10. This manager facilitates effective communication among related internal and external groups.

_____11. This manager identifies goals which require cross-group integration and obtains formal and informal support.

_____12. This managers assures that intergroup priority setting occurs that reflects a common commitment to the business as a whole.

_____13. This manager is seen as supportive and actively removing imdediments to performance.

_____14. This manager's performance expectations are clear to individuals and groups.

_____15. This manager provides clear, consistant signals regarding performance expectations.

_____16. This manager rewards quality in work performance.

SECTION IV

Professional Networks in organizations come in all shapes and sizes. In the box below, please draw a picture of your professional network. Use the key below to indicate who is in your network and how strong (i.e., dependable, trusting) your working relationships are. Please include only those persons who you interact with daily on work-related issues.

Persons in the Network:

(F) - Yourself (Focal Manager)

(B) - Your Boss or Supervisor

(P) - Peers

(M) - Managers from other sections

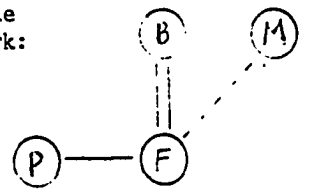
(O) - Persons outside GE Aircraft Engines (customers, contractors, etc.)

(S) - Persons reporting to you

Strength of Relationship:

═══ Very Strong —— Moderately Strong - - - - Not Strong

Example Network:



This manager has a strong relationship with his/her manager, a moderately strong relationship with a peer, and a relationship with a manager from another section that is not strong.

Next, answer the following questions about the network you have drawn. Please circle all of the network members that apply using the same key as you used for the drawing.

Key: B = Boss
M = Managers from other sections
P = Peers
O = Outside (customers, contractors, etc.)
S = Persons reporting to you

1. If you have a problem relating to expertise in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

2. If you have a problem relating to resources in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

3. If you have to have a decision made before you continue your work, to whom do you go for that decision? (Circle all that apply)

B M P O S

Please rank order the following work issues to indicate their importance to you. Use the number 1 to indicate the most important, 2 to indicate the second most important, etc. Be sure that each goal has a number assigned to it when you have finished.

	ISSUE	RANK
1.	Timeliness (completing projects on time)	_____
2.	Productivity	_____
3.	Accuracy	_____
4.	Completeness	_____
5.	Budget Considerations	_____

The next ten statements depict decision situations which you might encounter on your job. Please indicate the degree to which you agree or disagree with each statement by circling the appropriate number.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. If an employee were consistently tardy and/or absent to work (without reason), I would take displinary action.	1	2	3	4	5
2. If I know an important deadline will not be met, I try to change it (by going through proper channels)	1	2	3	4	5
3. In making important decisions, I always get input from those who will be affected by the decision.	1	2	3	4	5
4. When involved in promotion decisions, I back the most technically qualified person, regardless of interpersonal skills.	1	2	3	4	5
5. When I am involved in job assignment decisions, the experience of a person outweighs all other factors.	1	2	3	4	5
6. Most decisions are based on "rules-of-thumb."	1	2	3	4	5
7. Meeting targets, quotas or goals is the best way to determine the effectiveness of a work group.	1	2	3	4	5
8. Once the budget is set on a project, there is little decision making discretion.	1	2	3	4	5
9. In making decisions about the use of organizational resources, it is best to follow precedents.	1	2	3	4	5
10. Appropriate documentation is essential for the decision making process.	1	2	3	4	5

Please write your responses to the following questions in the space provided.

1. How did you learn to be a manager at Aircraft Engines? What persons or events have most influenced your management style?

2. Why do you believe you have attained the level you have in the company, that is, what things seem to be the key ingredients for success in Aircraft Engines?

PLEASE TURN THE PAGE

Biographical Information

1. What is your [redacted] job title?

   _____

2. How old are you? (check one)

_____Under 20	_____40-44
_____20-24	_____45-49
_____25-29	_____50-54
_____30-34	_____55-59
_____35-39	_____60 or older

3. What is your level of formal education (check one)?

   _____Completed high school

   _____Technical or Trade School Degree

   _____Some Undergraduate Work

   _____Bachelor's Degree

   _____Some Graduate Work

   _____Advanced Degree (e.g., MS, MBA, etc.)

4. What school(s) did you receive your degree(s) from?

   _____

   _____

5. What [redacted] Training Programs have you attended? (check all that apply)

_____FMP	_____MMP
_____EDP	_____RMP
_____MDP	_____Other(s) (please list below)

   _____

   _____

☞ PLEASE CHECK TO MAKE SURE YOU HAVE NOT MISSED ANY QUESTIONS.

*** THANK YOU FOR YOUR PARTICIPATION ***

*** INSTRUCTIONS ***

This survey contains questions about your working relationships with one or more of your direct reports who have agreed to participate in this study. Sections I through III contain questions about these managers who report to you at the present time. You may have duplicates of these sections with different manager's names on them. Please fill these out separately for each manager. You will also find section IV in your packet which contains questions about your working relationships and job attitudes, which you will only need to fill out once.

Once again, complete confidentiality of your responses is assured. No one will be able to identify you with your responses to the questions on this survey.

Your participation is sincerely appreciated. Without your responses to the enclosed survey, the data already collected is unusable: the objective is to collect information from both parties in managerial relationships. If you have further questions about this survey, please call at or at).

SECTION I

This set of questions are about your working relationship with a manager that reports to you at the present time. His or her name is printed below.

Manager's Name: _____

1. How many years have you worked with this manager?

__0-2 yr __3-5 yr __6-8 yr __9-10 yr __more than 10 yr

2. How often do you talk with this manager?

___less than once monthly ___two or three times monthly

___less than once weekly ___two or three times weekly

___less than once daily ___daily

3. Approximately what percent of your interactions with this manager do you initiate?

_____%

For each of the following questions, circle the response that best represents your current working relationship with this manager.

1. How well do you feel that you understand this manager's problems and needs?

Not at all	A Little	A Fair Amount	Quite a Bit	A Great Deal

2. How well do you feel that you recognize this manager's potential?

Not at all	A Little	Moderately	Mostly	Fully

3. Regardless of how much formal organizational authority you have built into your position, what are the chances that you would be personally inclined to use power to help him/her solve problems in his/her work?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

4. Again, regardless of the amount of formal authority you have to what extent can he/she count on you to "bail him/her out" at your expense, when he/she really needs it?

Not at all	A Little	Somewhat	Mostly	Completely

5. How would you characterize your working relationship with this manager?

Extremely Ineffective	Less than Average	About Average	Better than Average	Extremely Effective

6. I have enough confidence in this manager that I would defend and justify his/her decisions if he/she were not present to do so.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree

7. Does this manager usually feel that he/she knows where he/she stands... do they usually know how satisfied you are with what they do?

Rarely	Seldom	Sometimes	Usually	Always

8. How often do you discuss with this manager how his/her jobs, career, and goals fit into the broader perspective of the company's future and goals?

Almost Never	Rarely	Occasionally	Often	Always

9. How much respect do you think this manager has for your intelligence?

Almost None	A Little	Average	A Lot	Extreme

10. How often do you praise this manager about his/her work?

Almost Never	Rarely	Occasionally	Often	Always

11. How often do you criticize this manager about his/her work?

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12. How much respect do you have for this manager's knowledge of the business?

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13. How much respect do you have for this manager's technical skills?

Almost None	A Little	Average	A Lot	Extreme

14. How much respect do you have for this manager's ability to get things done, that is, for his/her organizational ability?

Almost None	A Little	Average	A Lot	Extreme

15. How is the frequency of your interactions with this manager in relationship to your needs?

Much too Little	Too Little	About Right	Too Often	Much too Often

16. How important do you feel it is to be a teacher to this manager?

Not at all	A Little	Average	A Lot	Extreme

17. How much has this manager learned from you about the technical skills required in your profession?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

18. How much has this manager learned from you about what it takes to succeed in this particular organization?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

19. How much do you coach this manager about how to manage his/her career?

Almost Nothing	A Little	Average	A Lot	Constantly Learning New Things

20. How formal is your relationship? (That is, if you make appointments to talk, if you talk only about business, if you interact in a carefully calculated way, the relationship is more formal.)

Not at all	A Little	Average	Quite	Very

21. How similarly do you and this manager perceive the goals of your work group?

Not at all	A Little	Somewhat	A Lot	Extreme

22. To what extent do you and this manager approach complex problems in the same manner?

Not at all	A Little	Somewhat	A Lot	Extreme

23. Given the same decision to make, to what extent would you and this manager do the same thing?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

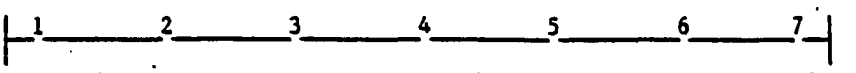
24. To what extent do you delegate tasks to this manager that you feel are appropriate?

Not at all	A Little	Somewhat	A Lot	Extreme

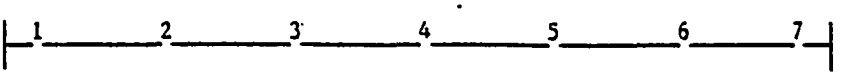
SECTION II

The following questions deal with this manager's working relationships with his/her peers (persons other than you or other mentors). Please consider the people you see him/her interact with on a day-to-day basis and circle the number which best represents your response to each question.

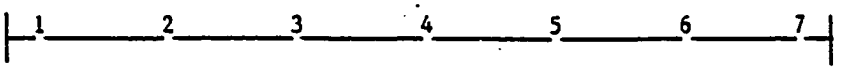
1. When this manager wants to get things done in [redacted], is it best for him/her to work independently or to develop a network of people who can help?



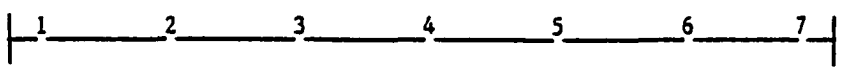
2. How much time does this manager spend developing friendship relationships with others in [redacted]?



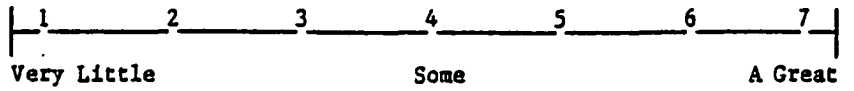
3. To what degree does this manager support other people in difficult situations?



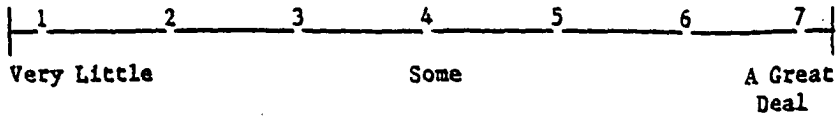
4. To what extent does this manager exchange work related information with others in [redacted]?



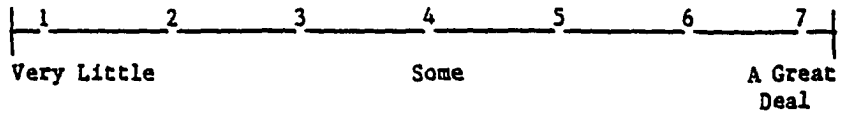
5. How much does this manager share ideas about how to manage effectively with others in [redacted]?



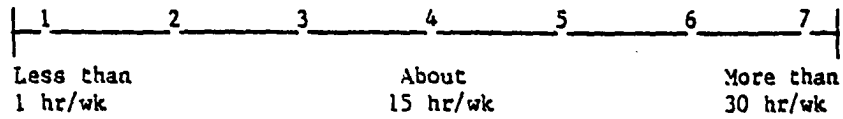
6. To what extent does this manager help others to learn important technical skills?



7. How much does this manager depend on help from others to meet his/her job objectives?



8. How much time does this manager spend on contacts with others (other than meetings) as opposed to working alone?



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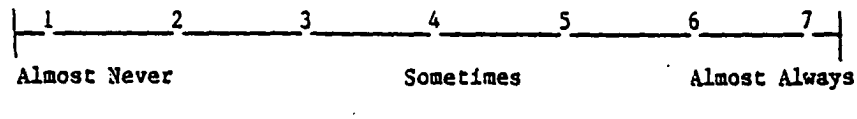
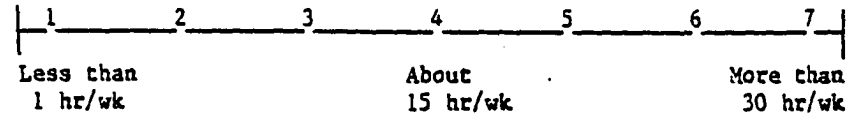
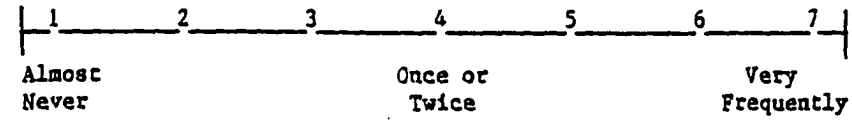


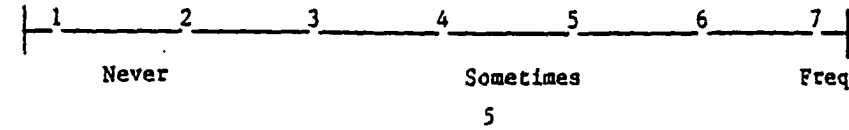
10. Approximately how much time does this manager spend in meetings with other persons?



11. How often has this manager served on task forces or other interdepartmental committees?



12. How much does this manager enlist the help of others in solving problems he/she encounters in <u>their</u> work?



SECTION III

Next, please rate the accuracy of the following statements about this manager using the following rating scale.

1 = Totally Innaccurate
2 = Mostly Inaccurate
3 = Somewhat Accurate
4 = Mostly Accurate
5 = Very Accurate

_____ 1. This manager inspires others to accomplishment.

_____ 2. This manager deals with failure constructively.

_____ 3. This manager is responsive to changes in the environment.

_____ 4. This manager incorporates and is open to input from many sources.

_____ 5. This manager supports and provides a strategic vision.

_____ 6. This manager facilitates appropriate cross-functional, cross-group integration.

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_____ 8. This manager sets and meets appropriate and effective financial targets.

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_____10. This manager facilitates effective communication among related internal and external groups.

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_____14. This manager's performance expectations are clear to individuals and groups.

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_____16. This manager rewards quality in work performance.

SECTION I

This set of questions are about your working relationship with a manager that reports to you at the present time. His or her name is printed below.

Manager's Name: _____

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__0-2 yr __3-5 yr __6-8 yr __9-10 yr __more than 10 yr

2. How often do you talk with this manager?

___less than once monthly ___two or three times monthly

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___less than once daily ___daily

3. Approximately what percent of your interactions with this manager do you initiate?

_____%

For each of the following questions, circle the response that best represents your current working relationship with this manager.

1. How well do you feel that you understand this manager's problems and needs?

Not at all	A Little	A Fair Amount	Quite a Bit	A Great Deal

2. How well do you feel that you recognize this manager's potential?

Not at all	A Little	Moderately	Mostly	Fully

3. Regardless of how much formal organizational authority you have built into your position, what are the chances that you would be personally inclined to use power to help him/her solve problems in his/her work?

Definitely Would Not	Probably Would Not	Might or Might Not	Probably Would	Certainly Would

4. Again, regardless of the amount of formal authority you have to what extent can he/she count on you to "bail him/her out" at your expense, when he/she really needs it?

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7. Does this manager usually feel that he/she knows where he/she stands... do they usually know how satisfied you are with what they do?

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15. How is the frequency of your interactions with this manager in relationship to your needs?

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16. How important do you feel it is to be a teacher to this manager?

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17. How much has this manager learned from you about the technical skills required in your profession?

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SECTION II

The following questions deal with this manager's working relationships with his/her peers (persons other than you or other mentors). Please consider the people you see him/her interact with on a day-to-day basis and circle the number which best represents your response to each question.

1. When this manager wants to get things done in [redacted], is it best for him/her to work independently or to develop a network of people who can help?

1	2	3	4	5	6	7
Work Independently			A Little of Both			Develop Network

2. How much time does this manager spend developing friendship relationships with others in [redacted]?

1	2	3	4	5	6	7
Very Little			Some			A Great Deal

3. To what degree does this manager support other people in difficult situations?

1	2	3	4	5	6	7
Almost Never			Sometimes			Almost Always

4. To what extent does this manager exchange work related information with others in [redacted]?

1	2	3	4	5	6	7
Very Little			Some			A Great Deal

5. How much does this manager share ideas about how to manage effectively with others in [redacted]?

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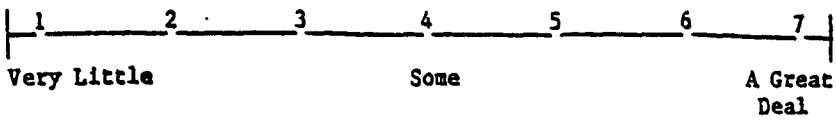

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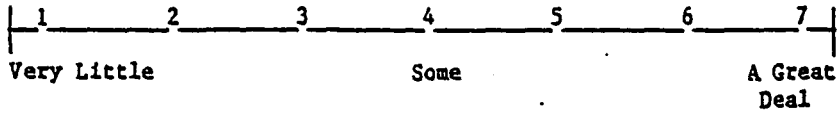

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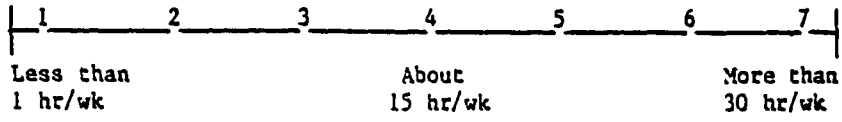

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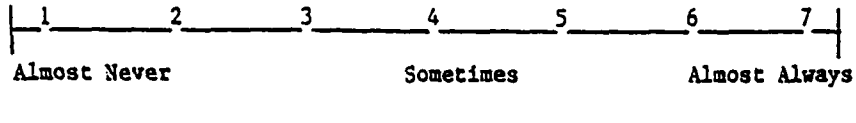

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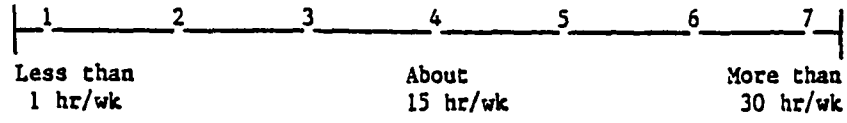

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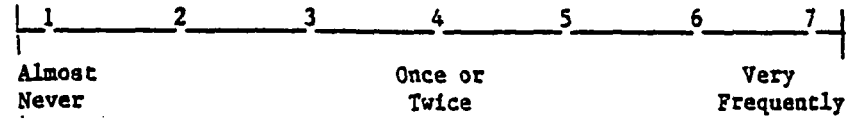

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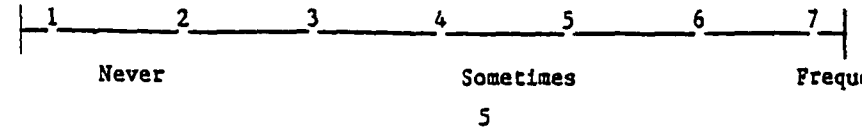

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_____15. This manager provides clear, consistant signals regarding performance expectations.

_____16. This manager rewards quality in work performance.

SECTION IV

Professional Networks in organizations come in all shapes and sizes. In the box below, please draw a picture of your professional network. Use the key below to indicate who is in your network and how strong (i.e., dependable, trusting) your working relationships are. Please include only those persons who you interact with daily on work-related issues.

Persons in the Network:

(F) - Yourself (Focal Manager)

(B) - Your Boss or Supervisor

(P) - Peers

(M) - Managers from other sections

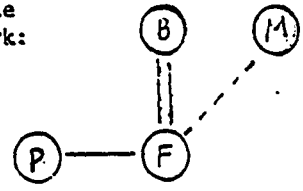
(O) - Persons outside [redacted] (customers, contractors, etc.)

(S) - Persons reporting to you

Strength of Relationship:

═══ Very Strong —— Moderately Strong - - - - Not Strong

Example Network:



This manager has a strong relationship with his/her manager, a moderately strong relationship with a peer, and a relationship with a manager from another section that is not strong.

Next, answer the following questions about the network you have drawn. Please circle all of the network members that apply using the same key as you used for the drawing.

Key: B = Boss
M = Managers from other sections
P = Peers
O = Outside (customers, contractors, etc.)
S = Persons reporting to you

1. If you have a problem relating to expertise in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

2. If you have a problem relating to resources in your work unit, to whom do you go for help? (Circle all that apply)

B M P O S

3. If you have to have a decision made before you continue your work, to whom do you go for that decision? (Circle all that apply)

B M P O S

Please rank order the following work issues to indicate their importance to you. Use the number 1 to indicate the most important, 2 to indicate the second most important, etc. Be sure that each goal has a number assigned to it when you have finished.

	ISSUE	RANK
1.	Timeliness (completing projects on time)	____
2.	Productivity	____
3.	Accuracy	____
4.	Completeness	____
5.	Budget Considerations	____

The next ten statements depict decision situations which you might encounter on your job. Please indicate the degree to which you agree or disagree with each statement by circling the appropriate number.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. If an employee were consistently tardy and/or absent to work (without reason), I would take displinary action.	1	2	3	4	5
2. If I know an important deadline will not be met, I try to change it (by going through proper channels)	1	2	3	4	5
3. In making important decisions, I always get input from those who will be affected by the decision.	1	2	3	4	5
4. When involved in promotion decisions, I back the most technically qualified person, regardless of interpersonal skills.	1	2	3	4	5
5. When I am involved in job assignment decisions, the experience of a person outweighs all other factors.	1	2	3	4	5
6. Most decisions are based on "rules-of-thumb."	1	2	3	4	5
7. Meeting targets, quotas or goals is the best way to determine the effectiveness of a work group.	1	2	3	4	5
8. Once the budget is set on a project, there is little decision making discretion.	1	2	3	4	5
9. In making decisions about the use of organizational resources, it is best to follow precedents.	1	2	3	4	5
10. Appropriate documentation is essential for the decision making process.	1	2	3	4	5

Please write your responses to the following questions in the space provided.

1. How did you learn to be a manager at [redacted]? What persons or events have most influenced your management style?

2. Why do you believe you have attained the level you have in the company, that is, what things seem to be the key ingredients for success in [redacted]?

PLEASE TURN THE PAGE

Biographical Information

1. What is your [redacted] job title?

   _____

2. How old are you? (check one)

____Under 20	____40-44
____20-24	____45-49
____25-29	____50-54
____30-34	____55-59
____35-39	____60 or older

3. What is your level of formal education (check one)?

   ____Completed high school

   ____Technical or Trade School Degree

   ____Some Undergraduate Work

   ____Bachelor's Degree

   ____Some Graduate Work

   ____Advanced Degree (e.g., MS, MBA, etc.)

4. What school(s) did you receive your degree(s) from?

   _____

   _____

5. What [redacted] Programs have you attended? (check all that apply)

____FMP	____MMP
____EDP	____RMP
____MDP	____Other(s) (please list below)

   _____

   _____

PLEASE CHECK TO MAKE SURE YOU HAVE NOT MISSED ANY QUESTIONS.

*** THANK YOU FOR YOUR PARTICIPATION ***

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13.	I have admired my mentor's (s') ability to motivate others.	1	2	3	4	5
14.	I have exchanged confidences with my mentor(s).	1	2	3	4	5
15.	I have respected my mentor's (s') knowlege of the business.	1	2	3	4	5
16.	I have respected my mentor's (s') ability to teach others.	1	2	3	4	5
17.	My mentor(s) have devoted special time and consideration to my career.	1	2	3	4	5
18.	I have respected my mentor's (s') breadth of knowledge in areas other than the [redacted] business.	1	2	3	4	5

SECTION II

The next set of questions are about your working relationship with the manager you report to at the present time. Please write his or her name and job title below.

Manager's Name: _____

1. How many years have you worked with your manager?

   __0-2 yr __3-5 yr __6-8 yr __9-10 yr __more than 10 yr

2. How often do you talk with your manager?

   ___less than once monthly ___two or three times monthly

   ___less than once weekly ___two or three times weekly

   ___less than once daily ___daily

3. Approximately what percent of your interactions with your manager do you initiate?

   _____%

CONTINUED ON THE NEXT PAGE

APPENDIX B

Factor Analysis: Supervisor Sample

Factor Analysis: Supervisor Sample

Data collected from 194 supervisors on (1) dyadic management development, (2) subordinate managers' professional networking and (3) managerial performance were factor analyzed. Principal Components analysis using varimax rotation was performed for each measure. The Kaiser criterion and scree test were used to determine the number of factors to be retained in the solutions. This analysis was performed so that the factor structures of the supervisor's responses can be compared to that for the managers responses to mirroring scales. A "mirroring" item asks the same question of supervisor and subordinate about the other party in the dyad. For example, a manager item would be "Do you talk to your supervisor daily?" and a mirroring item for the supervisor to respond to would be "Do you talk to this manager daily?" Hence, the structure of the items is identical, only the nouns and pronouns change. The use of mirroring scales of dyadic concepts is present in most LMX research (Graen and Cashman, 1975; Graen, Novak and Summerkamp, 1982, for examples). (Note: A mirroring scale of the supervisor's Mentorship activities was not used. In the conceptual framework, the separation of these roles is specified. Also, most supervisors are probably not able to describe the mentorship activities of their direct reports).

Dyadic Management Development

Supervisor Leader-Member Exchange (SLMX). Factor analysis of the 7-item SLMX scale produced the two-factor solution shown in Table 1. No items were dropped due to low or double factor loadings.

Table B1

Item Factor Loadings: Supervisor Leader-Member Exchange

Item	Factor 1	Factor 2
1. Manager understands problems and needs	.62	-.08
2. Manager recognizes potential	.60	-.19
3. Manager would use power to help solve problems	.18	.82
4. Manager would "bail you out" when you really need it	.43	.60
5. Effectiveness of relationship	.79	.01
6. Would defend manager's decisions	.68	-.12
7. Know how satisfied the manager is with what you do	.63	-.28
Eigenvalues	2.45	1.16
Variance accounted for	35%	17%
7-item Reliability (alpha)		.63

N=194

The items that clustered on the first dimension represent the exchange aspect of SLMX. Items having loadings above the criterion cutoff point of .50 were: This manager understands my problems and needs, this manager recognizes my potential, my working relationship with this manager is effective, I would defend this manager's decisions and I know how satisfied this manager is with what I do. These items accounted for 35% of the variance on the scale.

The first factor represents a task-oriented aspect of management development. Items loading on this dimension were: Respect for manager's knowledge of the business, Respect for manager's technical skills, respect for manager's ability to get things done and the supervisor's delegation of appropriate tasks. This factor accounted for an additional 19% of the variance. This subscale had a Cronbach alpha of .62.

The second factor seemed to represent power, or upward influence by the subordinate manager. Items loading on this factor were: This manager would use power to help solve problems and this manager would "bail you out" when you really need it. This factor accounted for are additional 17% of the variance. The total variance accounted for by these two factors was 52%.

Compared to the manager's LMX scale, which was unidimensional in this sample, it appears that upward influence (items 3 and 4) constitutes a separate dimension from the supervisor's point of view. In order to ensure comparison of this scale with the manager's LMX scale, the two dimensions were combined into one 7-item unit weighted scale representing SLMX. This scale had a reliability estimate (Cronbach alpha) of .63.

Supervisor Dyadic Management Development. Factor analysis of this eleven item scale (3 questions about the subordinate manager's degree of job challenge were dropped), produced the 3-factor solution shown in Table 2.

The items that clustered strongly on the second factor represent the supervisor's willingness to be a teacher to the manager (a scale that was parallel to the manager's "Learning" scale). Items having loadings above the criterion cutoff point were: How important is it to be a teacher to this manager, How much do you teach technical skills, and how much do you teach about how to succeed in this organization. There was a double loading on one item, How much do you teach the manager about how to manage his/her career. This item also loaded strongly on the third factor, and to make the scales parallel the manager scales this item was included on the third factor. This factor accounted for 27% of the variance on the scale. This subscale had a Cronbach reliability estimate of .72.

The third factor appears to tap into the level of career investment in the manager, as reported by the supervisor. Items that load strongly on this factor were: How often do you discuss how this manager's jobs, goals and career fit with company goals and how often do you praise this manager about his/her work. This factor accounted for an additional 10% of the variance. Hence, the total variance accounted for by these subscales was 56%. A third item was added to this scale, How much do you teach this manager about how to manage his/her career. This item double loaded on the teaching dimension, probably due to the inclusion of both "teach" and "career". The

Table B2

Item Factor Loadings: Supervisor Dyadic Management Development

Item	Factor 1	Factor 2	Factor 3
1. Discuss how jobs, goals, career fit with co. goals	-.07	-.29	.73
2. How much respect do you have have for manager's intelligence	.40	.31	-.15
3. How often do you praise this manager about their work	.02	.25	.79
4. Respect for manager's knowledge of the business	.66	.15	.05
5. Respect for manager's technical skills	.65	-.12	-.13
6. Respect for mgr's ability to get things done	.65	.03	.41
7. Important to be a teacher to manager	-.22	.76	.23
8. How much do you teach manager technical skills	.06	.78	.03
9. How much do you teach manager about how to succeed in this organization	.18	.78	.11
10. How much do you teach manager about how to manage career	-.26	.51	.63
11. How much do you delegate tasks that you feel are appropriate	.64	.15	.14
Eigenvalues	3.53	3.18	1.35
Variance accounted for	27%	19%	10%
Reliability (alpha)	.72	.62	.65

N=194

judgment call to include the item on the career subscale is based on the need to have scales which contain the same items as the manager scales so that this research can be compared to previous research on Leader-Member exchange. This subscale had a Cronbach alpha of .65.

Supervisor's Rating of Manager's Networking. Factor analysis of the supervisor ratings of manager's networking produced the 3-factor solution shown in Table 3.

The items that clustered strongly on the first factor seems to represent the exchange dimension, as well as a dependency dimension. These items factored differently for the manager sample, but apparently supervisors also see this scale as having only one dimension (Factors 2 and 3 have only one dimension. The first factor accounted for 35% of the variance on this scale. For comparison purposes, these 12 items were summed and unit-weighted in the same manner as the manager PRONET scale. This 12-item scale had an acceptable Cronbach alpha of .82.

Managerial Performance Ratings. Supervisors were asked to rate managers on 16 items which reflected the formal performance appraisal for managers at the level sampled.

Factor analysis of the 16-item scale produced the 2-factor solution shown in Table 4. Most of the items clustered heavily on the first factor which accounted for 49% of the variance on the scale. Two of the items had double loadings (5 and 16). The remaining 3 items on the second factor represent financial decisions and staffing. The second factor accounted for an additional 8% of the variance, for a total of 57%. It is apparent that this scale represents a unidimen-

Table B3

Item Factor Loadings: Supervisor's Rating of Manager's Networking

Item	Factor 1	Factor 2	Factor 3
1. Independent vs. network	.64	.41	-.13
2. Develops friendships	.61	.14	-.23
3. Supports others in difficult situations	.65	.17	-.43
4. Exchanges work-related information	.67	.32	-.02
5. Shares idea about how to manage effectively	.63	-.41	-.04
6. Helps others learn technical skills	.49	-.50	.05
7. Depends on help from others to meet job objectives	.50	.58	-.11
8. Time on contacts with others	.57	.33	.35
9. Asks for advice from others when confronted with new situation	.66	.04	-.18
10. Time spent in meetings	.44	.10	.68
11. Serves on task forces /committees	.48	-.28	.33
12. Enlists help of others in solving problems	.70	.04	.05
Eigenvalues	4.19	1.28	1.01
Variance Accounted for	35%	11%	8%
12-item Reliability (alpha)		.82	

N=194

sional concept of overall managerial performance. This is supported by the reliability estimate for the 16-item scale, which was .93. Thus, this scale was summed and unit-weighted to produce a 16-item measure of overall managerial performance.

This Appendix was provided so that the factor structures of the manager scales can be compared to those of the supervisor scales. There is some degree of similarity in the solutions, most notably for the dyadic management development scales. Where discrepancies occurred, the factor solution for the manager sample was used. This sample was larger (N=244) and, in general, produced solutions which were more interpretable. The supervisor scales that were based on the manager solutions had acceptable reliability estimates. The supervisor scales were used in the statistical analysis in the same manner as the manager scales (i.e., as predictors). The managerial performance rating was used as a dependent variable in the analysis.

Summary. The use of these parallel scales should enable a more comprehensive view of the management development process in this organization. Although the manager and supervisors scales did not factor in exactly the same manner, the reliabilities (Cronbach alpha) suggested that the item combinations for the supervisor sample were homogeneous. The use of mirroring scales is necessary so that the convergence across perspectives can be reported. Also, the supervisor variables were used in the regression analyses in the same way that the manager variables were used, so that comparison of manager and supervisor perceptions of management development would be possible.

Table B4

Item Factor Loadings: Managerial Performance

Item	Factor 1	Factor 2
1. This manager inspires others to accomplishment	.59	.41
2. This manager deals with failure constructively	.52	.26
3. This manager is responsive to changes in the environment	.70	.12
4. This manager incorporates and is open to input from many sources	.80	.01
5. This manager supports and provides a strategic vision	.51	.40
6. This manager facilitates appropriate cross-functional, cross-group integration	.68	.37
7. This manager assures appropriate allocation and reallocation of resources	.32	.75
8. This manager sets and meets appropriate and effective financial targets	.00	.86
9. This manager assures the best mix of talent and perspectives in organization and work group staffing	.32	.75
10. This manager facilitates effective communication among related internal and external groups	.69	.35
11. This manager identified goals which require cross-group integration and obtains formal and informal support	.67	.28
12. This manager assures that intergroup priority setting occurs that reflects a common commitment to the business as a whole	.61	.44

Table B4 (continued)

Item	Factor 1	Factor 2
13. This manager is seen as supportive and actively removing imdediments to performance	.73	.40
14. This manager's performance expectations are clear to individuals and groups	.61	.49
15. This manager provides clear, consistent signals regarding performance evaluations	.63	.49
16. This manager rewards quality in work performance	.57	.40
Eigenvalues	7.90	1.29
Variance accounted for	49%	8%
16-item Reliability	.93	

N=194

APPENDIX C

Change in Salary Structure

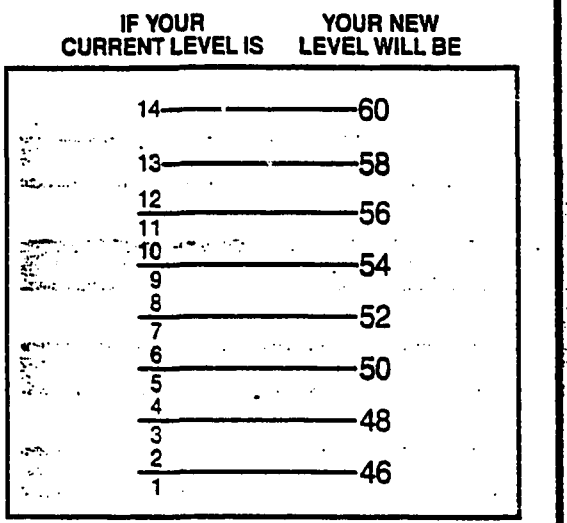
In 1986, the company studied in this research underwent a change in their salary structure. Basically, position levels were combined to simplify what had become a difficult system to administer. It was often hard to make the kinds of fine distinctions between the close position values required on the former structure.

The Position Level Comparison presented below was taken from the company's documentation on this change in salary structure. The compensation department recommended that these transformations be performed on the Position Level data before statistical analyses were performed. This transformation was necessary so that the Promotion Index (Ending Level - Starting Level) would correctly reflect the managers' mobility within the company.

Position Level Comparison

If the current level is:	The new level will be:
14	60
13	58
12	
11	56
10	
9	54
8	
7	52
6	
5	50
4	
3	48
2	
1	46

POSITION LEVEL COMPARISON



By combining position levels, is simplifying what had become a difficult system to administer. It was often hard to make the kinds of fine distinctions between the close position values required on the former structure.

Under the new salary structure, which has fewer levels and broader ranges, jobs with similar degrees of responsibility can be grouped within the same position level. This will make the task of identifying the appropriate level for a job much simpler and more realistic. It will also help hire and place new employees into pay levels that better reflect the competitive job market.

With the new structure:

- ☐ The maximum salary for your new position level will be at least as much as your current position level maximum in the 1986 exempt salary structure.
- ☐ The underlying philosophy of pay-for-performance will not change.
- ☐ Level-related eligibilities and practices may require some adjustment to accommodate the new structure. This includes widely diverse items ranging from parking practices at some locations to membership in the Society. However, whatever accommodations are made to the new structure, you will not lose any eligibilities you currently have.

APPENDIX D

Unique Contributions of Variable Sets

(Controlling for Rated Performance)

Unique Contributions of Variable Sets

(Controlling for Rated Performance)

Hierarchical Regression Analyses: Manager Variables

The three sets of variables, Mentorship, Dyadic Management Development and Professional Networking, were tested for their unique contributions to career mobility indices after the effects of rated Performance were controlled for in the regression equations. These tests were performed using hierarchical regression analyses with variable sets as predictors. The sets of independent variables were the following linear combinations:

Set I: Performance + (Coaching + Role Modeling + Intimacy)

Set II: Performance + (LMX + Job Challenge + Learning + Career Investment)

Set III: Performance + (Professional Networking + Complexity)

The unique contribution of these three variable sets, controlling for performance is shown in Table D1. The four dependent variables are listed from left to right; the columns contain the variance accounted for (R^2) by each of the models at the right. Model 1 indicates the reduced model which included (a) Set II and Set III (b) Set I and Set III and (c) Set I and Set II. Model 2 included these three models with the third variable set added to each in order to determine the unique contribution of each set. This technique offers a very conservative test of the unique contributions of Mentorship, Dyadic Management Development and Professional Networking. First, the incremental contribution (ΔR^2) of the set must be significant as well as the

Table D1

Hierarchical Regressions (Controlling For Performance): Manager Variables (N=194)

Contribution Due to:	Variance Accounted For (Controlling For Performance) DEV 87	RANGE/TENURE RANGE DEV/TENURE	PROMOTIONS
Mentorship:+			
MODEL 1	.04	.11***	.18**	.05
MODEL 2	.07	.15***	.11**	.10**
DIFFERENCE (ΔR^2)	.03	.04**	.02	.05**
Dyadic Mgt. Development:++			
MODEL 1	.06*	.11***	.07**	.09**
MODEL 2	.07*	.15***	.11**	.10**
DIFFERENCE (ΔR^2)	.01	.04**	.04**	.01
Professional Networking:+++			
MODEL 1	.03	.14***	.10**	.09**
MODEL 2	.07	.15***	.11**	.10**
DIFFERENCE (ΔR^2)	.04**	.01	.01	.01

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

\+ Model 1: PERFORM + (LMX + JOB CHALLENGE + LEARNING + CAREER INVESTMENT) + (PRONET + Complexity)

Model 2: Model 1 + (Coaching + Role Modeling = Intimacy)

++ Model 1: PERFORM + (Coaching + Role Modeling + Intimacy) + PRONET + Complexity)

Model 2: Model 1 + (LMX + JOB CHALLENGE + LEARNING + CAREER INVESTMENT)

+++ Model 1: PERFORM + (Coaching + Role Modeling + Intimacy) + (LMX + JOB CHALLENGE + LEARNING + CAREER INVESTMENT)

Model 2: Model 1 + (PRONET + Complexity)

specific variables within each set. Second, these variables must make a contribution after the effects of rated performance are partialled out.

Table D1 shows the results of this regression analysis for the four dependent variables. As shown in this table, the Mentorship set accounted for significant criterion variance in Salary Range/Tenure ($\Delta R^2 = .04$, $p \leq .05$) and Promotions ($\Delta R^2 = .05$, $p \leq .05$) when the effects of rated performance were removed. Dyadic Management Development variables accounted for significant variance in Salary Range/Tenure ($\Delta R^2 = .04$, $p \leq .05$) and Salary Range Deviations/Tenure ($\Delta R^2 = .04$, $p \leq .05$). Professional Networking variables (PRONET and Complexity) only accounted for significant variance in one dependent variable, Current Deviation score ($\Delta R^2 = .04$, $p \leq .05$).

Tables D2 through D5 present the unique contributions of the variable sets and the significance of the standardized regression coefficients (betas) for each dependent variable shown in Table D1. These tables highlight which variables within the variable sets were significant using a stepwise procedure. That is, order of entry into the model was not specified and each variable was tested for its unique contribution in the overall regression model. The variance accounted for by the overall regression models is shown at the bottom of each of these tables (Tables D2 through D5).

Table D2 shows the unique contributions of the three variable sets to the Current Salary Deviation Index. The standardized regression coefficients for each of the variables within these sets are also given. As shown in this table, only the Professional Networking variable set made a unique contribution to the variance explained in

Current Salary Deviation scores (ΔR^2=.04, $p \leq .05$). Within this variable set, the PRONET measure had a significant standardized regression coefficient ($p \leq .01$). The Network complexity measure did not contribute significantly in the regression equation.

Table D3 presents the results for the Salary Range/Tenure index. Only the Dyadic Management Development set made a significant contribution to the regression (Δ^2=.04, $p \leq .01$). Two variables within the set had significant standardized regression coefficients, LMX ($p \leq .05$) and Learning from the manager ($p \leq .01$). Neither the Job Challenge or Career Investment variables made significant contributions to the variance explained. The performance variable was significant ($p \leq .10$) indicating that supervisors' ratings of managers' performance were related to Salary Range/Tenure. This regression model accounted for 15% of the variance in Salary Range/Tenure (10%, when adjusted for shrinkage).

Table D4 shows the unique contributions and standardized regression coefficients for the relationships for Dyadic Management Development, Mentorship and Networking on Salary Range Deviations/Tenure. As shown in the table, only the Dyadic Management Development set made a unique contribution to the criterion variance explained in this index (ΔR^2=.04, $p \leq .10$). Within this set, the Learning variable was significant ($p \leq .01$). The Mentorship and Professional Networking sets did not contribute significantly to the regression. The supervisors' performance rating was significant ($p \leq .05$) in the overall regression. This regression equation accounted for 11% of the criterion variance (6%, when adjusted for shrinkage).

The final analyses for the manager variables is shown in Table D5, which contains the unique contributions and standardized regression

Table D2

Hierarchical Regressions (Controlling For Performance): Current Salary Deviation (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.04	.00
Mentorship		.03
Coaching	.27**	
Role Modeling	-.05	
Intimacy	-.05	
Dyadic Mgt. Development		
LMX	-.10	.01
Job Challenge	-.05	
Learning	.12	
Career Investment	-.04	
Professional Networking		.04***
PRONET	-.21***	
Complexity	.04	
Model		.07 (.03)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D3

Hierarchical Regressions (Controlling For Performance): Salary Range/Tenure (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.13*	.02*
Mentorship		.03
Coaching	.27**	
Role Modeling	-.35***	
Intimacy	.08	
Dyadic Mgt. Development		.04***
LMX	-.26**	
Job Challenge	.07	
Learning	.22***	
Career Investment	.13	
Professional Networking		.01
PRONET	.05	
Complexity	.09	
Model		.15*** (.10)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D4

Hierarchical Regressions (Controlling For Performance): Salary Range Deviation/Tenure (N=197)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.15**	.02**
Mentorship		.02
Coaching	-.14	
Role Modeling	.24**	
Intimacy	-.06	
Dyadic Mgt. Development		.04*
LMX	-.12	
Job Challenge	-.07	
Learning	.27***	
Career Investment	-.05	
Professional Networking		.01
PRONET	-.09	
Complexity	-.05	
Model		.11** (.06)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D5

Hierarchical Regressions (Controlling For Performance): Promotions (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.07	.00
Mentorship		.05***
Coaching	.36***	
Role Modeling	-.18	
Intimacy	-.02	
Dyadic Mgt. Development		.01
LMX	-.12	
Job Challenge	.03	
Learning	.11	
Career Investment	.07	
Professional Networking		.01
PRONET	-.11	
Complexity	.05	
Model		.10** (.05)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Current Salary Deviation scores (ΔR^2=.04, $p \leq .05$). Within this variable set, the PRONET measure had a significant standardized regression coefficient ($p \leq .01$). The Network complexity measure did not contribute significantly in the regression equation.

Table D3 presents the results for the Salary Range/Tenure index. Only the Dyadic Management Development set made a significant contribution to the regression (ΔR^2=.04, $p \leq .01$). Two variables within the set had significant standardized regression coefficients, LMX ($p \leq .05$) and Learning from the manager ($p \leq .01$). Neither the Job Challenge or Career Investment variables made significant contributions to the variance explained. The performance variable was significant ($p \leq .10$) indicating that supervisors' ratings of managers' performance were related to Salary Range/Tenure. This regression model accounted for 15% of the variance in Salary Range/Tenure (10%, when adjusted for shrinkage).

Table D4 shows the unique contributions and standardized regression coefficients for the relationships for Dyadic Management Development, Mentorship and Networking on Salary Range Deviations/Tenure. As shown in the table, only the Dyadic Management Development set made a unique contribution to the criterion variance explained in this index (ΔR^2=.04, $p \leq .10$). Within this set, the Learning variable was significant ($p \leq .01$). The Mentorship and Professional Networking sets did not contribute significantly to the regression. The supervisors' performance rating was significant ($p \leq .05$) in the overall regression. This regression equation accounted for 11% of the criterion variance (6%, when adjusted for shrinkage).

The final analyses for the manager variables is shown in Table D5, which contains the unique contributions and standardized regression

coefficients for the Promotion Index. As shown in the table, only the Mentorship set made a unique contribution to the variance explained in the number of promotions received by the managers (ΔR^2=.05, $p \leq .01$). Within this set, the Coaching variable had a significant standardized regression coefficient ($p \leq .01$). The overall regression accounted for 10% of the variance in promotions (5%, when adjusted for shrinkage).

Hierarchical Regression Analyses: Supervisor Variables

Two of the three sets of variables shown in Figure (Chapter 3), Dyadic Management Development and Professional Networking, were measured from the supervisors' point of view. Mentorship was not assessed because the relationship between supervisors' mentorship experience (as a protege) was not hypothesized to be related to managers' performance and career mobility. The supervisor Dyadic Management Development and ratings of managers' professional networking activities (designated by the prefix "S" in the tables) were tested for their unique contributions to career mobility indices, after the effects of rated performance were partialled out. This set of analyses used the managers' ratings of their Network Complexity (total number of connections) as a measure of Professional Networking. These tests were performed using hierarchical regression analyses with variable sets as the predictors. Thus, the sets of independent variables were the following linear combinations:

Set I: (SLMX + STASK + TEACH + SCAREER)

Set II: (SPRONET + Network Complexity)

The unique contributions of these two variable sets, controlling for rated performance, are shown in Table D6. The four dependent variables are listed from left to right; the columns contain the variance accounted for (R^2) by each of the models at the right. Model 1 indicates the reduced model which includes (a) Set I and (b) Set II. Model 2 includes these two models with the other added to each regression equation to determine the unique contributions of each set of variables. This technique offers a conservative test of the unique contributions of Dyadic management Development and Professional Networking because a vriable had to have a significant partial correlation coefficient (beta) and also be a component in a linear combination (variable set) to be considered a significant predictor of career mobility. In addition, the variable set/variable had to make a significant contribution to the overall regression equation after the effect of rated performance had been partialled out using this technique.

Table D6 shows the results of these summary regression analyses for the four dependent variables. As shown in this table, the Dyadic Management Development set (including the SLMX measure) contributed to unique variance explained in all of the criterion variables. Specifically, the Dyadic Management Development set made significant variance contributions (ΔR^2) of .15 for Current Salary Deviation, .05 for Salary Range/Tenure, .14 Salary Range Deviation/Tenure and .07 for Promotions. Thus, the Dyadic Management Development set (from the supervisors' point of view) accounted for significant variance in salary, salary growth and promotions, even after the contribution of supervisor ratings of managers' Performance and Professional Networking

Table D6

Hierarchical Regressions (Controlling for Performance): Supervisor Variables (N=194)

Contribution Due to:	Variance Accounted For (Controlling For Performance) DEV 87	RANGE/TENURE RANGE DEV/TENURE	PROMOTIONS
Dyadic Mgt. Development+			
MODEL 1	.00	.06***	.04*	.02
MODEL 2	.15***	.11***	.18***	.09***
DIFFERENCE (R^2)	.15***	.05**	.14***	.07**
Professional Networking++			
MODEL 1	.13***	.10***	.15***	.08***
MODEL 2	.15***	.11***	.18***	.09***
DIFFERENCE (R^2)	.02*	.01	.03**	.01

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

\+ Model 1: PERFORM + (SPRONET + Complexity)

Model 2: PERFORM + (SPRONET + Complexity) + (SLMX + STASK + TEACH + SCAREER INVESTMENT)

++ Model 1: PERFORM + (SLMX + STASK + TEACH + SCAREER INVESTMENT)

Model 2: PERFORM + (SLMX + STASK + TEACH + SCAREER INVESTMENT) + (SPRONET + Complexity

were controlled for using this regression technique. The Professional Networking set was also related to the Current Salary deviation and the Salary Range Deviation/Tenure with variance contributions (ΔR^2) of .02 and .03, respectively.

Tables D7 through D10 present the unique contributions of the sets and the significance of the standardized regression coefficients (betas) for each dependent variable shown in Table D6. These tables highlight which variables within the variable sets were significant, based upon a stepwise procedure. That is, the order of entry into the model was not specified, and each variable was tested for its contribution to the overall regression model. The variance accounted for by these overall models is also shown at the bottom of each of the tables (Tables D7 through D10).

Table D7 shows the unique contributions of the two variable sets to the managers' Current Salary deviation scores. The Dyadic Management Development set made a significant contribution to the criterion variance explained (ΔR^2=.15, $p \leq .01$). Within this variable set, the supervisors' rating of their investment in the managers' careers was the only variable which had a significant standardized regression coefficient ($p \leq .01$). The supervisors' ratings of managers' Professional Networking (SPRONET) was also related to Current Salary Deviation (ΔR^2=.02, $p \leq .05$). The overall regression model accounted for 15% of the variance in Current Salary Deviation Scores (12%, when adjusted for shrinkage).

Table D8 shows the unique contributions of variables sets and standardized regression coefficients for the Salary Range/Tenure variable. As shown in this table, only the Dyadic Management Development

Table D7

Hierarchical Regressions (Controlling for Performance): Supervisor Variables on Current Salary Deviation (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.20**	.02**
Dyadic Mgt. Development		.15***
SLMX	-.08	
STASK	-.14	
TEACH	.11	
SCareer Investment	.31***	
Professional Networking		.02**
SPRONET	-.18***	
Complexity	.04	
Model		.15*** (.12)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D8

Hierarchical Regressions (Controlling for Performance): Supervisor Variables on Salary Range/Tenure (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.13	.00
Dyadic Mgt. Development		.05**
SLMX	-.12	
STASK	.16*	
TEACH	.19**	
SCareer Investment	.09	
Professional Networking		.01
SPRONET	.00	
Complexity	.07	
Model		.11*** (.08)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D9

Hierarchical Regressions (Controlling for Performance): Supervisor Variables on Salary Range Deviation/Tenure (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.30***	.05***
Dyadic Mgt. Development		.14***
SLMX	.05	
STASK	.21**	
TEACH	.09	
SCareer Investment	.27***	
Professional Networking		.03***
SPRONET	-.22***	
Complexity	-.05	
Model		.18***
		(.15)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

Table D10

Hierarchical Regressions (Controlling for Performance): Supervisor Variables on Promotions (N=194)

Variable Set Variable	Standardized Regression Coefficient	R^2 (Adj)
Performance	.19**	.02**
Dyadic Mgt. Development		.01***
SLMX	-.07	
STASK	-.03	
TEACH	.18**	
SCareer Investment	.13	
Professional Networking		.01
SPRONET	-.07	
Complexity	.04	
Model		.09** (.05)

* $p \leq .10$ ** $p \leq .05$ *** $p \leq .01$

set made a unique contribution to the criterion variance explained (ΔR^2=.05, $p \leq .05$). Two variables made significant contributions to the overall regression, STASK ($p \leq .10$) and Teaching ($p \leq .05$). The overall model accounted for 11% of the variance in Salary Range/Tenure (8%, when adjusted for shrinkage).

Table D9 shows the unique contributions and standardized regression coefficients for the relationships between supervisor ratings of Dyadic Management Development and managers' Professional Networking on Salary Range Deviation/Tenure, controlling for rated performance. As shown in this table, both the Dyadic Management Development set (ΔR^2=.14, $p \leq .01$) and the Professional Networking set (ΔR^2=.03, $p \leq .01$) made unique contributions to the criterion variance explained. Within the variable sets, the STASK ($p \leq .05$) and superviors' Career Investment ($p \leq .01$) variables had significant standardized regression coefficients. SLMX, Teaching and the Network Complexity variables did not contribute in the overall regression model. This model accounted for 15% of the variance in Salary Range Deviations/Tenure (15%, when adjusted for shrinkage).

The final analysis in this set of regressions is shown in Table D10, which contains the unique contributions of variable sets and standardized regression coeffieients for Promotions, controlling for rated performance of the managers. As shown in this table, the Dyadic Management Development set accounted for significant variance in the Promotion Index (ΔR^2=.07, $p \leq .01$). Within this set, the Teaching variable had a significant standardized regression coefficient ($p \leq .05$). The Professional Networking variable and Complexity index failed to show statistical significance in the overall regression model. This

regression equation accounted for 9% of the criterion variance (5%, when adjusted for shrinkage).

Summary. This set of analyses (Tables D1 through D10) summarizes the findings for the manager and supervisor variables, when the effects of supervisors' performance ratings are controlled for in the regression models. The supervisors' rating of managers' Professional Networking (SPRONET) accounted for significant variance in two criterion variables, Current Salary Deviation and Salary Range Deviations/Tenure. Supervisors' ratings of Dyadic Management Development accounted for significant variance in all of the criterion measures. Within this variable set, supervisors' ratings of managers' task-related abilities (STASK) was related to Salary Range/Tenure and Salary Range Deviations/Tenure, the Teaching variable was related to Salary Range/Tenure and the number of promotions received by the managers. Supervisors' ratings of their investment in managers' careers, was related to both Current Salary Deviation and Salary Range Deviations/Tenure.