

**THE SIMILARITIES AND DIFFERENCES OF  
MEN'S AND WOMEN'S PERSONAL WORK NETWORKS**

by

**RICHARD W. STACKMAN**

**B.S. (Honors), University of California, Berkeley, 1985**

**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF  
THE REQUIREMENTS FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY**

in

**THE FACULTY OF GRADUATE STUDIES  
Faculty of Commerce and Business Administration  
Industrial Relations Management Programme**

**We accept this thesis as conforming  
to the required standard**

**THE UNIVERSITY OF BRITISH COLUMBIA**

**July 1995**

**© Richard W. Stackman, 1995**

## ABSTRACT

Although network analysis has proven a useful approach to the study of organizations and organizational behavior, very little research has been done on the issue of gender differences in personal work networks. While there is considerable conventional wisdom about how men and women associate with their colleagues in the workplace, the matter still requires scientific scrutiny. The purpose of this thesis is to provide much-needed descriptive evidence about the ways and extent to which the personal work networks of men and women managers or supervisors differ, and to illustrate how promotions impact such networks. Two separate studies comprise the thesis.

The first study considered the personal work networks of men and women supervisors or managers who had not undergone formal career transitions in the previous 12 months. Network characteristic data were generated through a questionnaire returned by 242 individuals, representing three large Canadian companies in the banking, forestry, and insurance industries. Multiple regression was used to test for gender differences and company moderator effects.

Contrary to the common assumption currently found in the literature that there are gender differences in personal work networks, this study found that differences in men's and women's association patterns at work were more likely in their expressive, rather than instrumental, networks. Though managers and supervisors were more likely to form homophilous ties, and men had networks of greater density, the results suggested that men and women had comparable instrumental work networks. The expressive networks, however, exhibited greater gender differences. Significant differences included the gender, location, the density, and the frequency of contact of these expressive ties.

The second study considered the personal work networks of men and women supervisors or managers who had recently been promoted. Network characteristic data were generated through a questionnaire returned by 33 individuals working for a leading Canadian bank; however, possibly because of sampling deficiencies, no significant

instrumental or expressive network differences were identified. Moreover, there were no differences in the turnover of individuals in men's and women's instrumental and expressive networks following promotions.

A discussion regarding the status and future of personal work network research concludes the thesis.

## TABLE OF CONTENTS

Abstract .....	ii
Table of Contents .....	iv
List of Tables .....	vi
List of Figures .....	xi
Acknowledgements .....	xii
Chapter One: Introduction and Literature Review .....	1
Networks Defined .....	2
Relationships and the Correlation Between Time and Proficiency .....	3
Types of Work Relationships .....	4
Personal Work Networks and Gender .....	5
Theoretical Explanations for Gender Personal Network Differences ...	6
Presumed Gender Differences in Personal Work Networks .....	8
Network Studies in Work Organizations .....	10
Purpose of the Current Study .....	15
Chapter Two: Research Questions and Hypotheses .....	16
The Similarities and Differences of Men's and Women's	
Personal Work Networks .....	16
Instrumental Ties .....	17
Expressive Ties .....	17
Men's and Women's Work Networks Following Promotions .....	18
Instrumental Ties .....	18
Expressive Ties .....	19
Chapter Three: Research Models .....	22
Non-Transition/Instrumental Network Model .....	22
Promotion/Instrumental Network Model .....	26
Non-Transition/Expressive Network Model .....	27
Promotion/Expressive Network Model .....	30
Hypotheses 2 and 3 .....	30
Chapter Four: Populations and Samples .....	33
The Data Sites .....	33
Non-Transition Sample .....	34
Promotion Sample .....	36
Summary .....	39
Chapter Five: Data Collection .....	40
The Questionnaires .....	41
The Non-Transition Questionnaire .....	41
The Promotion Questionnaires .....	49

Pilot Testing of the Questionnaire . . . . .	50
Reliability of the Questionnaire . . . . .	51
Response Rate . . . . .	54
Chapter Six: Results . . . . .	55
The Non-Transition Study . . . . .	56
The Use of Multiple Regression . . . . .	59
The Regression Models . . . . .	60
Results of Company and Gender Effects . . . . .	65
The Promotion Study . . . . .	77
Chapter Seven: Discussion and Summary . . . . .	83
The Non-Transition Study . . . . .	83
Gender Effects . . . . .	83
Interpreting the Instrumental and Expressive Network Differences . . . . .	87
Company effects . . . . .	88
Time effects . . . . .	90
The Promotion Study . . . . .	92
Limitations . . . . .	95
The Status and Future of Personal Work Network Research . . . . .	97
Personal Work Networks . . . . .	97
Roles of Personal Work Networks . . . . .	101
Summary . . . . .	104
References . . . . .	106
Appendix A: Letters and Questionnaires . . . . .	111
Letter 1: Dean Goldberg's Data Site Approach Letter . . . . .	112
Letter 2: Dr. Pinder's Data Site Approach Letter . . . . .	114
Letter 3: First Cover Letter Included with Questionnaire . . . . .	116
Letter 4: Second Cover Letter Included with Questionnaire . . . . .	117
Letter 5: Follow-up Letter . . . . .	118
Exhibit 1: Non-Transition Sample Questionnaire . . . . .	119
Exhibit 2: First Promotion Sample Questionnaire . . . . .	131
Exhibit 3: Follow-up Promotion Sample Questionnaire . . . . .	144
Exhibit 4: Reliability Check Questionnaire . . . . .	153
Appendix B: Non-Transition Data: Variable Means, Standard Deviations, and Correlations; Promotion Data: Variable Means and Standard Deviations . . . . .	161
Appendix C: Respondent Set Demographics . . . . .	189
Appendix D: Dependent Variable Beta Coefficients . . . . .	199

## LIST OF TABLES

Table 1.1: Summary of Relevant Personal Work Network Empirical Studies . . . . .	13
Table 3.1: Thesis Research Models . . . . .	23
Table 4.1: Male and Female Participation by Company in Non-Transition Sample .	35
Table 4.2: Instrumental Network and Expressive Network Site Location of Individuals Listed by Company . . . . .	37
Table 5.1: Operationalizations of Dependent Variables: Instrumental Network . . .	44
Table 5.2: Operationalizations of Dependent Variables: Expressive Network . . . .	47
Table 5.3: Reliability of Respondent's Demographic Information: Reliability Check Sample . . . . .	53
Table 5.4: Number of Individuals Remaining in, Added to, and Dropped from Respondents' Instrumental and Expressive Networks: Reliability Check . . . . .	53
Table 5.5: Non-Transition Study Questionnaire Response Rates . . . . .	53
Table 6.1: Mann-Whitney U Non-Parametric Results: Male vs. Female Instrumental Network Dependent Variables . . . . .	57
Table 6.2: Mann-Whitney U Non-Parametric Results: Male vs. Female Expressive Network Dependent Variables . . . . .	58
Table 6.3: Predictor Variable Operationalizations . . . . .	62
Table 6.4: Base, Shift, and Moderator Model Regression R-Squared: Instrumental Network Dependent Variables . . . . .	67
Table 6.5: Base, Shift, and Moderator Model Regression R-Squared: Expressive Network Dependent Variables . . . . .	68
Table 6.6: Comparison of Regression Models: Instrumental Network Dependent Variables . . . . .	69
Table 6.7: Comparison of Regression Models: Expressive Network Dependent Variables . . . . .	70
Table 6.8: Comparison of Respondent Sample vs. Individual Company Comparison Results: Instrumental Network Dependent Variables . .	71
Table 6.9: Comparison of Respondent Sample vs. Individual Company Comparison Results: Expressive Network Dependent Variables . . . .	72
Table 6.10: Gender Composition of Non-Parametric and Regression Models Results: Instrumental Network Dependent Variables . . . . .	74
Table 6.11: Gender Composition of Non-Parametric and Regression Models Results: Expressive Network Dependent Variables . . . . .	75
Table 6.12: Gender Non-Parametric and Regression Results: Promotion Sample Instrumental Network Dependent Variables . . . .	78

Table 6.13: Gender Non-Parametric and Regression Results:	
Promotion Sample Expressive Network Dependent Variables . . . . .	79
Table 6.14: Gender Composition of Turnover in Expressive and	
Instrumental Networks: Promotion Respondent Sample . . . . .	81
Table B.1: Non-Transition Respondent Sample Variable Means and	
Standard Deviations: Instrumental Network . . . . .	162
Table B.2: Non-Transition Respondent Sample Variable Means and	
Standard Deviations: Expressive Network . . . . .	163
Table B.3a: Bank Respondent Sample Variable Means and	
Standard Deviations: Instrumental Network . . . . .	164
Table B.3b: Forestry Respondent Sample Variable Means and	
Standard Deviations: Instrumental Network . . . . .	165
Table B.3c: Insurance Respondent Sample Variable Means and	
Standard Deviations: Instrumental Network . . . . .	166
Table B.4a: Bank Respondent Sample Variable Means and	
Standard Deviations: Expressive Network . . . . .	167
Table B.4b: Forestry Respondent Sample Variable Means and	
Standard Deviations: Expressive Network . . . . .	168
Table B.4c: Insurance Respondent Sample Variable Means and	
Standard Deviations: Expressive Network . . . . .	169
Table B.5: Description of Variables Labels for Tables B.6 through B.11 . . . . .	170
Table B.6: Two-Tailed Spearman Rank Correlations: Instrumental Network	
Dependent Variables . . . . .	172
Table B.7: Two-Tailed Spearman Rank Correlations: Expressive Network	
Dependent Variables . . . . .	173
Table B.8: Two-Tailed Spearman Rank Correlations: Expressive Network and	
Instrumental Network Dependent Variables . . . . .	175
Table B.9: Two-Tailed Spearman Rank Correlations: Predictor Variables . . . . .	176
Table B.10: Two-Tailed Spearman Rank Correlations: Instrumental Network	
Dependent Variables and Predictor Variables . . . . .	180
Table B.11: Two-Tailed Spearman Rank Correlations: Expressive Network	
Dependent Variables and Predictor Variables . . . . .	182
Table B.12: Promotion Study Variable Means and Standard Deviations:	
Instrumental Networks . . . . .	186
Table B.13: Promotion Study Variable Means and Standard Deviations:	
Expressive Networks . . . . .	187
Table B.14: Kilmogorov-Smirnov (Lilliefors) Test for Normality:	
Instrumental Network and Expressive Network Dependent Variables	188

Table C.1: Non-Transition Study Cross-Tabulation Percentages:	
Categorical Demographic Data . . . . .	190
Table C.2: Between Gender and Among Company Non-Transition Study	
Significant Differences: Categorical Demographic Data . . . . .	191
Table C.3: Non-Transition Study Male-Female Means and Standard Deviations:	
Numerical Demographic Data . . . . .	193
Table C.4: Non-Transition Study Company Means and Standard Deviations:	
Numerical Demographic Data . . . . .	194
Table C.5: Promotion Study Cross-Tabulation Percentages:	
Categorical Demographic Data . . . . .	196
Table C.6: Promotion Study Male-Female Means and Standard Deviations:	
Numerical Demographic Data . . . . .	197
Table D.1: Description of Predictor Variable Labels for Tables D.2 through D.30 .	200
Table D.2: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed . . . . .	201
Table D.3: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Males Listed . . . . .	202
Table D.4: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Females Listed . . . . .	203
Table D.5: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Same Site . . . . .	204
Table D.6: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Different Site/Same City . . . . .	205
Table D.7: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Different Site/Different City . . . . .	206
Table D.8: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Same Function . . . . .	207
Table D.9: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Different Functions Listed . . . . .	208



Table D.10: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Hierarchical Rank of Individuals Listed . . . . .	209
Table D.11: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Hierarchical Range of Individuals Listed . . . . .	210
Table D.12: Instrumental Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Density . . . . .	211
Table D.13: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed . . . . .	212
Table D.14: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Males Listed . . . . .	213
Table D.15: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Females Listed . . . . .	214
Table D.16: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Overlapping Expressive and Instrumental Ties . . . . .	215
Table D.17: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Overlapping Female Ties . . . . .	216
Table D.18: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Seen Outside of Work . . . . .	217
Table D.19: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Females Seen Outside of Work . . . . .	218
Table D.20: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Same Site . . . . .	219
Table D.21: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Different Site/Same City . . . . .	220
Table D.22: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Different Site/Different City . . . . .	221

Table D.23: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Individuals Listed at Same Function . . . . .	222
Table D.24: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Different Functions Listed . . . . .	223
Table D.25: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Hierarchical Rank of Individuals Listed . . . . .	224
Table D.26: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Hierarchical Range of Individuals Listed . . . . .	225
Table D.27: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Supervisors Listed . . . . .	226
Table D.28: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Number of Subordinates Listed . . . . .	227
Table D.29: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Density . . . . .	228
Table D.30: Expressive Network Regression Model Analysis	
Beta Coefficients and R-Squared Comparisons on Dependent Variable:	
Frequency of Contact . . . . .	229

## LIST OF FIGURES

Figure 3.1: Non-Transition/Instrumental Network Model of Variables . . . . .	24
Figure 3.2: Promotion/Instrumental Network Model of Variables . . . . .	28
Figure 3.3: Non-Transition/Expressive Network Model of Variables . . . . .	29
Figure 3.4: Promotion/Expressive Network Model of Variables . . . . .	31
Figure 3.5: Hypothesis 2 Model of Variables . . . . .	32
Figure 6.1: Non-Transition/Instrumental Network Model . . . . .	66
Figure 6.2: Non-Transition/Expressive Network Model . . . . .	66

## ACKNOWLEDGEMENTS

Over two years ago, I envisioned a doctoral thesis that studied both personal networks and social support. In the end, this thesis focused solely on personal work networks, and ironically, I learned far more about social support by doing the thesis than I could have ever learned from studying social support. What follows is my attempt to thank those individuals who taught me so much about social support.

My family. Though my parents (Wayne and Jackie), my sister (Deb), and my grandparents (Ada and Bernard) provided a myriad of appreciated (and timely) tangible support, I am indebted to them for all of the support that went unnoticed (and unacknowledged) while I was consumed with my studies.

My supervisory committee. Craig Pinder, Nancy Langton, Bonita Long, and Gordon Walter were always generous with their time, constructive in their criticism, and challenging with their questions. I do not think I could have envisioned or assembled a better committee. Period.

I owe much to my advisor ("What is your name again?") that mere words cannot begin to convey. At various times, Craig supported me financially with his SSHRC grant (#5-57312) or UBC-HSS research grant (#5-71247). Craig allowed me to not only teach him a new topic so that I could conduct this study, but he graciously suffered through numerous intrusions during his sabbatical. More importantly, though, Craig recognized how important teaching was to me (and ultimately to my motivation) and allowed me to continue teaching, knowing full well it would slow my progress on this thesis.

A special "thanks" also goes to Nancy who first suggested the topic of networks for one of my comprehensive examination papers.

The Dean and Data Site Contacts. This study would not have been possible without the help of Dean Michael Goldberg, who lent his name as I tried to secure data sites, and of my data site contacts (Betti Clipsham, Barbara Hislop, Alexis Freidman, Brian King, Brent White, Jim Whyte, and Debbie Woodward), who tolerated my repeated requests for their respective study participants lists.

Several Professors, Staff Members, and Fellow Ph.D. Students. Dr. Tom Knight graciously provided me with summer employment and the use of the Centre for Labour and Management Studies' computer. Dr. Larry Pinfield of Simon Fraser University played a pivotal role in helping me focus my thesis. Discussions with Dr. Keith Head improved my statistical knowledge, and various conversations with fellow Ph.D. students Karen Harlos, Vivien Clark, JoAnn Carmin, and Dafna Eylon improved my thought processes. (Vivien was also my proofreader extraordinaire.) Irene Khoo, the IRM Divisional Secretary, and Ruby Visser, the Ph.D. Program Administrator, were available day in and day out to handle various word processing and bureaucratic crises, respectively. Finally, Dr. Alan Kraus, the Commerce Faculty's Ph.D. Advisor, convinced the Faculty of Graduate Studies not to pull the plug on my candidacy in the summer of 1994 because I wanted to teach again.

My Friends. Last but definitely not least, I thank my friends. (Many have been listed above.) In completing this thesis, I am in some ways now an expert on personal networks, and I take this opportunity to state that I have, without question, the best network of friends. I cannot possibly begin to thank each and every one of them (and I apologize to those that go unmentioned) -- time and space are working as restraints. However, there are several people who have been instrumental in helping me maintain that ever elusive balance in life for which we all strive.

Cathy DuBois and I made a pact one day far too many years ago to cultivate and nourish the right sides of our brains while we pursued our doctorates. I cannot speak for

myself, but Cathy has admirably fulfilled the intent of that pact. Professor David McPhillips shared his insights on life and the golf swing at times when I needed advice the most. Finally, Andrea Dovichi, Susan Hargrave, Joshua Friedlander, Kevin Nelson, Randy Sidhu, Duane van Beek, Pat Whalen, and Ron Zayac willingly accepted my phone calls and/or requests for lunch/dinner, a drink, a walk, a bike ride, etc., so that I could talk.

In closing, I have chosen to dedicate this document to four friends who, in one way or another, have been with me since this academic journey began. These four individuals are Larry Minner, Larry and Christie Schaffer, and the late Beverly Dahlgren. I would not have a past, a present, or a future if they had not taken the time, in their own idiosyncratic and very special ways, to befriend me and enrich my life.

Chapter One:  
INTRODUCTION and LITERATURE REVIEW

Little is known about the similarities and differences between men's and women's personal work networks, as there have been few in-depth explorations of the qualitative nature of work relationships, other than studies focusing on mentoring (Markiewicz & Devine, 1994). Ibarra (1992) argues that there is a need for empirical evidence and theory development in order to clarify the extent to which men's and women's personal work networks differ and the potential consequences of these differences. In particular, differences in work relationships and patterns can result in individuals' experiencing a divergent amount of social support, which is inextricably linked to job proficiency (Pinder & Schroeder, 1987).

A career is not a static endeavor. Individuals do not remain inert (i.e., in the same position, in the same location, and/or with the same employer) throughout their work lives. Instead, people experience career transitions that can lead to changes in their relationships at work. Understanding the similarities and differences between male and female personal work networks is essential if we are going to appreciate fully the role that social support (e.g., work-related information, career-related information, and/or advice) plays in helping individuals achieve and maintain high levels of proficiency in their jobs, particularly after career transitions. Work relationships may provide individuals with the social support that is necessary to help them cope with and adapt to the various challenges that invariably arise on the job.

This thesis focuses on men's and women's personal work networks. There are two primary research questions of interest. The first is: To what extent are men's and women's personal work networks similar and/or different? The second query is: What impact do promotions have on the similarities and differences between men's and women's personal work networks?

## NETWORKS DEFINED

Network research focuses on either personal networks or social networks, and the distinction between the two is important. In this thesis, the word "network" refers to the study of an individual's personal network. Aldrich (1989) defines a personal network as those persons with whom an individual has direct relations. A personal network is constructed from the viewpoint of a particular individual and can involve relationships with one's work, family, and/or friendship circles.

A social network, on the other hand, is defined as 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" (Mitchell, 1969, p. 2). Social network analysis is the study of linkages (or ties) among a defined set of individuals. With social network analysis, one can uncover systematic differences in the ways in which men and women are located in an organizational context (Ibarra, 1992). When studying social networks, of interest are issues such as how the various ties cluster among themselves, how dense these clusters are, and which individuals are the most central in relation to the defined set of persons.

The study of personal networks, unlike that of social networks, does not begin with a pre-defined set of individuals. Instead, a focal individual is identified and the direct ties of the focal individual are then identified for a given context, such as work, family, and/or friends. The personal networks of various individuals are then compared according to characteristics, such as the size of the network, the gender mix of the network, and the frequency of contact between the ties.<sup>1</sup> The present study focuses on the similarities and differences between men's and women's personal work networks.

---

<sup>1</sup>Personal networks are comprised of ties (or relationships) between the focal individual and those individuals with whom he/she associates. The terms "ties" and "relationships" are used interchangeably in this thesis.

## RELATIONSHIPS AND THE CORRELATION BETWEEN TIME AND PROFICIENCY

Personal networks are important to an individual's daily existence because human beings are social animals (see Brett, 1984; Lynch, 1977; Spierer, 1981). Much of the research to date on relationships has shown that individuals need to associate with others in order to cope with stress. Not surprisingly, the majority of research on social support is rooted in the stress literature (see Fenlason & Beehr, 1994; Ganster, Fusiler, & Mayes, 1986; House, 1981; Kaufman & Beehr, 1986; LaRocca, House, & French, 1980; Ullah, Banks, & Warr, 1985), where social support is hypothesized to either buffer or directly impact the individual's level of stress.<sup>2</sup>

Career transitions often impact personal work networks, and changes to work-related responsibilities and personal work networks have implications for how individuals adapt during the transition period (Sollie & Fischer, 1988). For example, consider the stress involved in learning a new job following a career transition.<sup>3</sup> It is important that individuals learn the "ropes" of their new jobs. The development of new relationships and the maintenance of old relationships in the workplace can have a major impact on the time required for an individual to become proficient in his or her job (Kaplan, 1984; Pinder & Schroeder, 1987).

Becoming and remaining job proficient is a primary concern to both the individual

---

<sup>2</sup>Ullah, Banks, and Warr (1985, p. 284) summarize the buffering and direct effects hypotheses:

The 'stress-buffering' model of social support posits an interaction between negative life events and support, such that the beneficial effects of support are only apparent during stressful life events; during periods when environmental stress is absent, social support is assumed to have no impact... An alternative, the 'direct effects' or 'independent effects' model, states that social support can itself promote good health, both in the absence and in the presence of stressful life events. This model predicts an overall effect of support on psychological health, rather than the interaction with life events which is predicted by the stress-buffering model.

<sup>3</sup>The range of possible career transitions is best highlighted by Louis (1980) who classified career transitions into five different types: (1) re-entry or entry into the work force, (2) taking a different role in the same organization, (3) moving to another organization, (4) changing professions, and (5) leaving the labor pool.



and the organization. The organization wants individuals who learn to perform the job at the highest possible level in the least amount of time, whereas individuals invariably want to gain confidence in their ability to do their jobs -- in the least amount of time. This increase in confidence can have a far-reaching and positive effect on one's levels of self-efficacy and self-esteem in the workplace. Workplace relationships are central to obtaining social support (i.e., direct guidance, non-directive support, positive social interaction, and tangible assistance; Barrera & Ainlay, 1983), and it is social support which, among other things, contributes to one's ability to learn the new job and deal with difficulties as they arise (Pinder & Schroeder, 1987).

#### TYPES OF WORK RELATIONSHIPS

Two distinct types of personal work relationships are defined in the existing literature. Ibarra (1992, 1993a) most recently, for example, advances the distinction between instrumental and expressive ties. She bases this distinction on the work of Lincoln and Miller (1979), Blau (1955), and Gouldner (1954) who wrote about instrumental and primary ties. Instrumental ties are work contacts that aid and/or are necessary for the individual to perform the tasks associated with his or her job. Instrumental ties involve the exchange of job-related resources, such as information, expertise, professional advice, political access, and material resources (Ibarra, 1993a).

Expressive ties are relationships with friends (Ibarra, 1993a). Krackhardt (1992) writes that expressive relationships involve the exchange of friendship and social support and are characterized by higher levels of closeness and trust than are those that are exclusively instrumental. Friendships can be seen as relationships that exist primarily for the individuals' personal satisfaction and enjoyment rather than for the fulfilment of a particular task or goal (Sapadin, 1988; Wiseman, 1986). However, both expressive and instrumental ties may enhance or impede the attainment of formal organizational goals (Lincoln & Miller, 1979). Moreover, ties can be instrumental and expressive at the same time.

Nieva and Gutek (1981) emphasize that both instrumental and expressive ties are important to the individual in that a person can receive support -- crucial to proficiency -- from anyone within or outside the work organization, regardless of whether the interactions are prescribed or emergent in nature. It is easy to overlook the importance of friends at work and the role they play in one's ability to perform well. However, informal interactions are "... critical to success at work because so much of the true requirements of the work situation are not codified into formal rules and regulations" (Nieva & Gutek, 1981, p. 51). Also, these informal interactions within an expressive dyad are "systems for making decisions, mobilizing resources, concealing or transmitting information, and performing other functions closely allied with work behavior" (Lincoln & Miller, 1979, p. 179).

Finally, instrumental relationships do not necessarily develop immediately after a career transition, though many instrumental ties are prescribed within the organization by task interdependence. The individual does not always step into his or her new role with full knowledge about who will be instrumental to his or her performance. Such knowledge develops over time. Therefore, individuals who quickly develop these instrumental ties may become proficient at their respective jobs more quickly as well.

Summary. Work relationships continually develop and change. Career transitions disrupt relationships, and the newly promoted or transferred individual is faced with developing or maintaining relationships that require formal interaction (i.e., instrumental ties) as well as informal interaction (i.e., expressive ties) in order to become, and stay, proficient in a new job.

#### PERSONAL WORK NETWORKS AND GENDER

Questions remain as to the similarities and differences between male and female personal work networks and how men and women go about building and maintaining their respective work networks following career transitions. Although there is a substantial amount of research on gender differences, there is a dearth of theoretical and empirical studies on personal work networks and on gender differences particular to personal work

networks. A literature search produced an extensive list of studies on gender differences in relation to work stress, leadership, depression, burnout, anger, adjustment to retirement, social support, mentoring, the effect of unemployment (e.g., psychological distress), perceived work competency, friendships in later life, job satisfaction, and creativity. However, there is scant research on gender network differences in the workplace, although more is known about gender relationship differences in people's overall personal networks (comprised of kin, friends, and co-workers). This research suggests that men and women move in different "relationship" worlds (Moore, 1990; Vaux, 1985). Studies of personal networks have found that women and men usually have networks of similar size (Fischer, 1982; Marsden, 1987); however, when compared to men, women have fewer ties to nonkin and more ties to kin, whereas men include more coworkers in their networks (Fischer & Olicker, 1983; Marsden, 1987; Moore, 1990; Wellman, 1985).

#### Theoretical Explanations for Gender Personal Network Differences

Moore (1990) argues that the differences between males and females are due to structural, rather than dispositional, factors. The structural perspective explains gender relationship differences by reference to opportunities and constraints arising out of women's and men's different locations in the social structure. The dispositional perspective reflects gender differences resulting from, for example, differing traits or leadership and decision-making styles (see George, 1991, 1993; Judge, 1992). Ibarra (1992, 1993a) and Ely (1994) address the importance of the structural and dispositional distinction in their work on workplace relationships.

Ely (1994, pp. 227-228) suggests that her analysis "demonstrates how structural features of a firm may affect the nature and quality of interpersonal relationships at work, casting doubt on wholly person-centered explanations for the difficulties often observed in workplace relationships among women." Ibarra (1993a) argues for the integration and empirical testing of these two complementary perspectives, and her study of homophilous ties exemplifies the dispositional perspective. Ibarra (1993a, p. 423) states that "...explanations based on the notion of preference of homophily ...can be tested and

extended by explicitly taking into account structural constraints on preferences."

Without specifically addressing the dispositional and structural perspectives, Sapadin (1988, p. 388) summarizes the research on men's and women's friendships:

... studies have been remarkable in the similarity of their findings. They report that female friendships involve more confiding, intimacy, personal concern and emotional interactions than do male friendships. The communication in women's friendships is more empathetic and nurturing; interaction is more dyadic than group oriented. Male friendships, in contrast, tend to be more group oriented. Males get close by doing things together and showing enthusiasm for shared activities. Communication is more guarded and less self-disclosing about personal thoughts and emotions. Men's interactions are more aggressive, competitive and oriented toward exchange of external information such as sports and work interests (e.g., Dickens & Perlman, 1981; Fischer & Narus, 1981; Reisman, 1981).

In short, Sapadin contends that women and men differ in the nature of their relationships and how their relationships develop. Women emphasize talking, emotional sharing, and discussing of personal problems with same-sex friends (Aukett, Ritchie, & Mill, 1988), and these relationships depend on emotional closeness (Bell, 1991). Men tend to emphasize shared activities, doing things with their male friends (Aukett et al., 1988) that correspond to an emphasis on group membership (Bell, 1991). Thus, men's ties are more instrumental, whereas women's are more expressive (Sollie & Fischer, 1988; Vaux, 1985). However, to what extent these gender differences are due to structural and/or dispositional differences remains unresolved.

Moreover, differences in gender communication patterns are key to relationship development and maintenance, and Tannen's (1986, 1990) research highlights why women and men seemingly move in different relationship worlds. Tannen indicates that, from birth, men and women are treated and spoken to differently.<sup>4</sup> As a result, they end up talking differently and moving in different worlds. For example, it has been only in the past few decades that questions have been raised about channelling girls into arts and boys into science (Hare-Mustin & Maracek, 1990a). Tannen notes that, from ages 5 to 15, children

---

<sup>4</sup>Ibarra (1993b) refers to this phenomenon as gender socialization.

play mostly with friends of their own sex (see Maltz & Borker, 1982), and in doing so, children learn how to have conversations and develop habits that continue into adulthood. For example, men's conversations simulate negotiations and seem to be attempts to achieve and maintain status, whereas women's conversations are more like negotiations for closeness, confirmation, support, and/or consensus (Tannen, 1986, 1990).

Summary. Women seem to have more intense, long-term, but fewer friends, whereas men tend to have more friends and less intimacy (Roberto & Kimboko, 1989). The opportunity for men to remain intimate with their friends is reduced, on average, as the number of friends in their personal networks increases. This is not necessarily a problem for men. Granovetter (1973, 1982) suggests that weak ties can extend a person's access to diverse social circles, thus increasing the social support (e.g., information) available to an individual. Both the structural and dispositional perspectives (and how these perspectives impact communication patterns and gender socialization) provide plausible explanations for gender differences in personal networks (Ibarra, 1993a); however, there is currently no theoretical model (or models) to guide personal network research.<sup>5</sup>

#### Presumed Gender Differences in Personal Work Networks

Moore (1990) has concluded that women's personal networks will become more like men's (in regards to kin versus nonkin composition) when they move into paid employment. In line with Blau (1988) and Kanter (1977), Moore (1990, p. 734) indicates that:

If men and women were in similar social structural positions their

---

<sup>5</sup>Aldrich (1994) acknowledged the lack of a clear, definitive theoretical perspective to guide researchers in the study of how and why men's and women's personal work networks may differ. He started his talk by asking the audience two questions: (1) If we believe that men's and women's personal work networks are similar, what has led us to this belief?, and (2) If we assume that men's and women's personal work networks differ, what has led us to this assumption? Audience members listed socialization differences, differential access, genetics and personality differences, social comparison theory, and differing role explanations in response to why men's and women's personal work networks would differ. Conversely, the same group noted that the lack of constraints, changing corporate (and business school) cultures, similar work requirements, genetics (i.e., distribution of male and female talent would be spread among companies), and external competition (for the best employees) would lead to similar personal work networks.

behavior would differ little. As more women move into paid employment, the genders' network composition can be expected to be more alike, with more close ties to non-kin, especially coworkers, and fewer ties to kin.

However, questions remain as to whether men's and women's personal work networks differ on other network characteristics (e.g., gender composition), and if so, are network characteristic differences also evident in men's and women's personal work networks?

Researchers (e.g., Kanter, 1977; Moore, 1990) have intimated that the interaction (or relationship) patterns of men and women differ in the workplace, which may explain why women have not enjoyed the same level of success in career advancement and development as men. Starting with Kanter (1977) and continuing with the recent work of Dreher and Ash (1990), attention has focused on explaining women's inability to break the "glass ceiling" and move up into the more senior positions in work organizations. Both Kanter and Moore argue that one reason for women's inability to break through to the upper levels of management lies in their networks, which are supposedly different from men's networks.

A logical conclusion from this assumption is that women need to modify their interaction patterns to mimic the interaction patterns of men in order to "succeed" (i.e., advance) in organizations. Yet, little empirical research has been published that specifically addresses the similarities and differences between men's and women's relationships at the workplace. Hare-Mustin and Marecek (1990a, p. 9) write that "... some social psychologists have pointed out that the perception of differences between men and women have been far greater than findings on the differences themselves." Consequently, there is a need for additional empirical evidence and theoretical development to clarify the ways by, and extent to which, men's and women's work networks differ (Ibarra, 1992) before attention shifts to the reasons and potential consequences of any observed differences.

## NETWORK STUDIES IN WORK ORGANIZATIONS

In one of the few empirical studies on personal work networks, Ibarra (1993b) specifically considered gender differences in managerial networks. She concluded that, although gender and advancement opportunity did not account for observed differences in work networks, men and women did use different approaches to derive similar network benefits at work (e.g., career-related support). High-potential women tended to have a higher incidence of very close, relationship-focused ties in comparison to high-potential men (Ibarra, 1993b). In studying 63 middle managers, each working for one of four companies, Ibarra (1993b) also found that men's and women's workplace relationships did not seemingly differ in relation to their networks' size, range, and multiplexity.<sup>6</sup> However, in reporting that men's and women's workplace relationships did not necessarily differ, Ibarra (1993b) lumped the ties together into one large network and did not segregate the ties between the support domains or the instrumental-expressive dichotomy. Not segregating ties, especially into the instrumental and expressive domains, may have masked the real similarities and differences between men's and women's workplace networks.

With the exception of Ibarra's (1993b) study, there is little research that looks specifically at the differences in work relationships between men and women, except for a preponderance of same-sex relationships (or degree of homophily) in the work setting. Same-sex relationship research in organizations, which provides support for Tannen's research on male and female communication patterns, dates back to the work of Kanter (1977). Kanter states that the majority of a manager's time is spent communicating, and the communication has to be rapid and accurate; therefore, there is a need for a common

---

<sup>6</sup>The "size" of a person's network is derived by the number of individuals listed by the focal individual.

"Range" refers to the degree of diversity of individuals listed in a personal network. For example, individuals could differ on the basis of function (i.e., are the individuals listed in the same functional department as the focal individual?), position (i.e., are the individuals at the same hierarchical level or a higher or lower hierarchical level as the focal individuals?), and/or location (do the individuals work at the same location as the focal individual?).

"Multiplexity" is the degree to which a relationship is multi-dimensional (e.g., a multiplex tie would serve both an instrumental and expressive role).

language that is easily understood and predictable. In effect, there is a need for communication homogeneity in organizations; however, developing communication homogeneity is easier for men because it is men who have in the past tended to fill the majority of managerial and supervisory positions.

Although women generally find it easier to associate and communicate with females (Kanter, 1977; Tannen, 1986, 1990), the majority of their instrumental relationships must involve men, making these relationships heterophilous. Ibarra (1992) studied work relationship homophily in one organization and concluded that men have homophilous relationships across their instrumental and expressive networks, whereas women exhibited a different pattern. In an attempt to obtain greater access to both expressive and instrumental ties, women must differentiate their relationship patterns by developing friendships with other women and instrumental relationships with men. Additionally, Lincoln and Miller (1979) found that sex and race appear to have a greater influence on the development of expressive ties in the workplace than on instrumental ties.

Ibarra (1993a, pp. 68-69) maintains that homophilous ties tend to be stronger than heterophilous ties, and concludes:

In sum, demography of the average American corporation is such that homophilous ties are less available, have less instrumental value, and require more time and effort to maintain (due to dispersion and turnover) for women and minorities than for their white male counterparts.

Consequently, women must work harder than men at developing and maintaining instrumental ties.

Finally, the findings of Aldrich, Reese, and Dubini (1989) and Brass (1985) are similar to those of Ibarra, and Lincoln and Miller (1979). Aldrich et al. (1989) found that the personal networks of male and female entrepreneurs are, for the most part, homophilous. Brass (1985) found that women are not well-integrated into men's networks -- especially in organizations' dominant coalitions. Consequently, women are seemingly tied to fewer influential men. One may conclude that even if women do develop work relationships with influential men, these ties are inherently weaker because they are



heterophilous in nature (Ibarra, 1993).

Because of women's presumed exclusion from men's personal work networks in general, some people have concluded from Brass' work that women are not good at building informal networks. To the contrary, Brass found that women can be good at building informal networks with other women and men can be good at building informal networks with other men (Brass, 1985). Yet, the fact remains that men retain the power in most organizations.

The relevant personal work network studies are summarized in Table 1.1 regarding their samples, data collection methods, and methods for deriving the individuals' networks. For example, Brass studied individuals in one organization (a newspaper), and though his findings relate to personal networks, he was more interested in the organization's social network structure (i.e., the centrality and criticality<sup>7</sup> of individuals within the organization). On the other hand, Aldrich et al. (1989) studied entrepreneurs' relationships outside of their respective organizations. These relationships included bankers, lawyers, accountants, consultants, and whomever else the respondents discussed plans for their business. Moore (1990) used the data gathered by the General Social Survey, which was comprised of 1,534 English-speaking Americans. In the General Social Survey, respondents were asked to list up to five individuals with whom they discussed important matters. These relationships were designated as either kin or nonkin relationships.

Summary. The studies by Ibarra (1992, 1993b) and Lincoln and Miller (1979) are the only true, within-organization personal work network studies, and these studies provide little cumulative information about differences in personal work networks. Ibarra's 1993b<sup>8</sup> study is the most informative in regards to men's and women's personal work

---

<sup>7</sup>Centrality and criticality are social network characteristics, not personal work network characteristics. Centrality represents the ease of access an individual has to others who are linked to the focal individual either directly or indirectly. Criticality reflects the extent to which a focal person controls the workflow (i.e., are there alternative routes through which work might flow if the focal individual is removed?).

<sup>8</sup>I did not have access to this paper until after my thesis study was designed and data collection had started.

**TABLE 1.1**  
Summary of Relevant Personal Work Network Empirical Studies

Study	Sample Source	Sample	Data Collection Method	Derivation of Networks	Dependent Variables
Ibarra, 1993b	Four Fortune/Service 500 companies	63 middle managers	Sociometric questionnaire; semi-structured interviews	Name people in the organization on the basis of five support domains: information, advice, friendship, career, cooperation	Range Constraint <sup>1</sup> Multiplexity Homophily Tie strength <sup>2</sup>
Ibarra, 1992	One public relations firm	94 full-time employees	Sociometric questionnaire	Name people in the organization on the basis of five support domains: influence, advice, communication, influence, friendship. There was no limitation of nominations; ten blank lines were provided.	Centrality Homophily Multiplexity
Moore, 1990	1985 General Social Survey	1,534 English-speaking Americans; 18 years old and older	Interviews	Name people with whom they have discussed "important matters" over the past six months; 85.6% named between one and five persons	Relationship of individuals listed
Aldrich, Reese, & Dubini, 1989	Entrepreneurs in North Carolina and Italy	264 in North Carolina, 59 in Italy	Survey	Name five persons (outside of the business) with whom they were most likely to turn for business advice; Estimation of number of people with whom they discussed their business plans	Network activity Network diversity: Cross-sex ties Network density <sup>3</sup>
Brass, 1985	Newspaper	140 non-supervisory employees	Questionnaire; supplemented by direct observation and interviews conducted before questionnaire administration	Name individuals comprising three types of networks: workflow, communication, friendship	Centrality Criticality Frequency of contact with others

**TABLE 1.1 (continued)**  
**Summary of Relevant Personal Work Network Empirical Studies**

Study	Sample Source	Sample	Data Collection Method	Derivation of Networks	Dependent Variables
Lincoln & Miller, 1979	Three research organizations, one rehabilitation center, and one clinic	314 respondents	Questionnaires	Name five persons in the organization with whom they have worked closely in the past month and five persons in the organization with whom they were close friends	Instrumental and primary network composition

<sup>1</sup>Constraint represents whether the focal individual has many, nonredundant, easily replaceable network ties (Ibarra, 1993b).

<sup>2</sup>Tie strength is established on the basis of: (1) the frequency of contact, (2) the emotional intensity and level of mutual confiding, (3) the level of reciprocity built into the relationship, and/or (4) the number of roles played by individuals (e.g., instrumental and expressive) (Granovetter, 1973; Krackhardt, 1992).

<sup>3</sup>Density is defined as the extent to which individuals listed know and/or work with one another.

network similarities and differences; however, her study falls short for one specific reason: Ibarra did not apply the instrumental-expressive dichotomy in testing for men's and women's personal work network differences. Though there were no significant gender differences in her respondents' personal work networks, gender differences in their expressive and instrumental networks may have been masked.

#### Purpose of the Current Study

We do not know the extent of similarities and differences between men's and women's personal work networks in regards to the size, range, density, and frequency of contact, because researchers: (a) have not studied the various personal work characteristics at the same time, (b) have severely limited the number of individuals a respondent could list (e.g., Lincoln & Miller, 1979; Moore, 1990); (c) have studied one organization in isolation, thus limiting the generalizability of their findings (e.g., Brass, 1985; Ibarra, 1992), and/or (d) have not utilized the instrumental-expressive dichotomy (e.g., Ibarra, 1992, 1993b). Consequently, there remains the opportunity to study in multiple organizations the personal work network characteristics of men and women. Research should first focus on how men's and women's personal work networks differ and should establish the existence or non-existence of differences in men's and women's personal work networks before researchers consider: (a) what conditions or dispositions create and reinforce gender network differences (if differences do, in fact, exist), and (b) the impact of personal work networks on social support, job proficiency and promotion opportunities, for example. The focus of this thesis is on the similarities and differences in men's and women's instrumental and expressive personal work networks.

## Chapter Two: RESEARCH QUESTIONS and HYPOTHESES

This thesis entails two studies. The first study explores the similarities and differences between men's and women's personal work networks. The second study explores the fluidity of men's and women's work networks following promotions. At present, there is scant network research on women in organizations (Ibarra, 1992) as well as a lack of information concerning the way by which personal networks develop naturally and change over time (Hays & Oxley, 1986). This limited network research coincides with the paucity of studies that have specifically explored individual personal work networks (Ibarra, 1992, 1993a; Markiewicz & Devine, 1994).

### THE SIMILARITIES AND DIFFERENCES OF MEN'S AND WOMEN'S PERSONAL WORK NETWORKS

The research on male and female personal networks consistently finds that women have stronger expressive ties and seek closeness, men whereas have stronger instrumental ties and seek group membership through activities and shared experiences (Bell, 1991; Sollie & Fischer, 1988). In effect, women are socialized to develop emotionally-based relationships while social norms tend to inhibit male closeness (Roberto & Kimboko, 1989). A global stereotype has arisen that in modern society, including at work, the masculine role is predominantly an instrumental one and men are seen as independent, competent, and rational, whereas the feminine role is predominantly expressive and women are seen as supportive, warm, and compassionate (Vaux, 1985).

Moreover, research to date has provided us with a dichotomy, in that men's and women's work networks can be divided into two segments involving instrumental ties and expressive ties. Ibarra (1993a, p. 79) states that instrumental and expressive network relationships affect "... the broader structural features of an individual's personal network and each is indicative of degrees of access to organization-wide instrumental and friendship

networks."

### Instrumental Ties

In order to effectively and efficiently complete the tasks associated with their jobs, men and women ought to have instrumental networks that are relatively similar. When men and women occupy similar positions, their job responsibilities and requirements would realistically result in their working with individuals with comparable hierarchical ranks and functional designations. If this does not occur, one sex could be at a disadvantage in the social support received. This could have an adverse impact on the level of proficiency an individual achieves and maintains at his or her job because not knowing the "right" people could ultimately hamper his or her performance. Unfortunately, except for the work on homophilous ties by Ibarra (1992, 1993b) and Lincoln and Miller (1979), there is no extant research with which to offer formal hypotheses on dependent variables, such as size, range, and density. Therefore, this thesis will provide the first empirical test to the following research question:

RQ1a. Do the instrumental work networks of men differ from the instrumental work networks of women?

### Expressive Ties

If there are differences between men's and women's work networks, these differences will more than likely be evident in their respective expressive networks. Because women are socialized to develop more dyadic, emotional relationships, women would seemingly be better at developing and maintaining strong expressive ties. On the other hand, men's ties are assumed to develop through activities, and consequently, men's expressive ties may be the result of their work roles. Evidence of men's developing expressive ties from their instrumental ties would be exhibited by the extent to which their instrumental and expressive ties overlap, thus creating a multiplex tie. On the other hand, Ibarra (1993a) writes that, until women comprise a higher percentage of management or supervisory positions, they will invariably have to look outside their work activities in order to develop expressive relationships with other women.

Where in the organization men and women look (or are able to look)<sup>1</sup> to develop workplace friendships would seemingly impact the expressive relationships they develop. Consequently, the expressive networks of men and women may differ on a number of key dependent variables, including: number of expressive ties, gender of ties, overlap of ties between the instrumental and expressive networks, range (both in terms of function and position), and density. I hypothesize:

H1a. The expressive work networks of men differ from the expressive work networks of women.

### MEN'S AND WOMEN'S WORK NETWORKS FOLLOWING PROMOTIONS

Following a promotion, an individual has to cope with and adapt to a wide range of possible changes (i.e., a new work setting, new tasks, and/or new co-workers). One of the most pervasive changes involves the resulting transformations to an individual's relationships. Kaplan (1984, pp. 50-51) writes:

Every time managers change jobs... they must rebuild their networks... (and) general managers spend the first six months in a new job investing heavily in forming new bonds. The more different the new job is from the manager's previous experience, the more overhauling the network will need.

Although Kaplan does not specifically state this, one of the reasons for changes to an individual's relationships is that a new job presents individuals with new task interdependencies involving new people. Newly-promoted individuals must build working relationships with these co-workers if they are to succeed in their new positions. By changing jobs, a number of instrumental ties will no longer be useful or necessary and will more than likely become latent -- regardless of whether one is male or female.

#### Instrumental Ties

A major task facing newly-promoted individuals is developing relationships with the individuals with whom they share task interdependencies. Once individuals have had

---

<sup>1</sup>The structure and demographics of an organization could hinder an individual's ability to develop friendships at the workplace.

sufficient time to rebuild their work relationships, the instrumental networks of men and women in comparable positions ought to be similar. Again, in order to get their jobs done, men and women would have relatively similar instrumental networks. If this is not the case, then one sex may be at a disadvantage in achieving proficiency on the job. The literature provides little help in distinguishing the possible differences between men's and women's instrumental networks in relation to size, range, and density; consequently, this thesis will provide the first empirical test to the following research question:

RQ1b. Do the instrumental work networks of men differ from the instrumental work networks of women following a promotion?

### Expressive Ties

Kanter (1977) and Moore (1990) have intimated that women may need to mimic the male style of building work networks if they are to have the same career success as men. However, I have argued that men's and women's instrumental work networks should not necessarily differ. That is, women need to create similar expressive work networks as men. The question is: Do women who enjoy career successes (i.e., promotions) have expressive work networks similar to those of their male counterparts? I argue no. For women to build similar expressive work networks, women would need to develop networks that include more males (i.e., less homophilous ties) that are less dyadic and more dense. Women would end up with expressive networks that included more superiors and subordinates and ties with less functional range in their expressive networks.

Therefore, I hypothesize:

H1b. The expressive work networks of men differ from the expressive work networks of women following a promotion.

Furthermore, two important changes to one's expressive work networks can be hypothesized to result following a promotion. First, men might experience more turnover<sup>2</sup>

---

<sup>2</sup>The term "turnover" was chosen to reflect the fluid nature of work networks. Following a career transition a personal work network undergoes change, as individuals either remain in the network or are dropped from it. At the same time, new individuals are added to the personal network.



in their expressive work networks than women following promotions because men's expressive relationships may emanate from their instrumental relationships. One could argue that men stand to lose a number of their expressive relationships because of the instrumental-expressive network overlap. In effect, the activities associated with the maintenance of certain established expressive ties will most likely change. The expressive tie may become latent without the "instrumental" activity providing the impetus for a given relationship. Women, who tend to separate their expressive and instrumental relationships (Ibarra, 1993a), could maintain more of their expressive ties than could men.

The second phenomenon involves women specifically. If there is any change in women's expressive ties, it would be in terms of the positional range their expressive ties exhibit.<sup>3</sup> As women move up the organizational hierarchy, it is very likely that they could and should develop more influential expressive relationships. Lincoln and Miller (1979) and Miller (1986) found that high-status individuals have more extensive network connections, thus linking these individuals to high-status people. I hypothesize:

H2. Men experience more turnover in their expressive work networks than do women following promotions.

H3. The range (in terms of position) of women's expressive networks prior to a promotion increases following a promotion.

In summary, this thesis includes two research questions, two composite hypotheses, and two specific hypotheses. The research questions pertain to whether differences exist between men's and women's instrumental work networks, whereas two of the four hypotheses specifically test for differences on multiple dependent variables between men's and women's expressive work networks. The remaining two hypotheses focus on two post-promotion outcomes -- (a) the turnover in men's and women's expressive networks and (b) the increase in the positional range of women's expressive work networks. The research models, outlining the variables associated with these

---

<sup>3</sup>The same would not necessarily be true for women's instrumental networks, given my contention that men's and women's instrumental networks should be comparable.

research questions and hypotheses, are discussed in the next chapter.

### Chapter Three: RESEARCH MODELS

On the basis of Research Questions 1a and 1b and Hypotheses 1a and 1b, I examined four research models. These models reflected the instrumental and expressive dichotomy and the gender differences within the non-transition and promotion samples. Table 3.1 outlines the four models. The research questions and hypotheses, with the exception of hypotheses 2 and 3, were composite in nature. The associated models for studying the instrumental and expressive work networks of individuals, on the basis of the dependent variables, were intended to build evidence as to whether we could infer the existence of substantial or minimal similarities or differences between the workplace networks of men and women.

#### Non-Transition/Instrumental Network Model

Table 3.1 lists the variables associated with the non-transition/instrumental network model. The dependent variables<sup>1</sup> can be classified into three groups. The first group represents the size of the network (i.e., the number of people listed) and the gender of these individuals. The second group involves the range of the people. Range is represented by the work location of the people, the number of people in the same function as the focal individual, the number of different functions from which these individuals are drawn, and the hierarchical rank and range of these people. The final dependent variable is the density of the ties (i.e., the degree to which the individuals listed know and work with one another).

Gender is the focal predictor variable in this thesis. However, gender is not the only predictor variable of interest. Other variables include a covariate, three plausible control variables, and a possible moderator variable.

Initially, the number of people listed by each study participant is a dependent

---

<sup>1</sup>The operationalizations of the dependent variables are discussed in Chapter 5: Data Collection.

**TABLE 3.1**  
**Thesis Research Models**

Model	Research Question or Hypothesis	Sample
Non-Transition/ Instrumental	Do the instrumental work networks of men differ from the instrumental work networks of women?	Managers or supervisors who have been in their positions at least one year.
Non-Transition/ Expressive	The expressive work networks of men differ from the expressive work networks of women.	Managers or supervisors who have been in their positions at least one year.
Promotion/ Instrumental	Do the instrumental work networks of men differ from the instrumental work networks of women following promotions?	Individuals recently promoted.
Promotion/ Expressive	The expressive work networks of men differ from the expressive work networks of women following promotions.	Individuals recently promoted.

**FIGURE 3.1**  
**Non-Transition/Instrumental Network Model of Variables<sup>1</sup>**

<u>Predictor Variables</u>	<u>Dependent Variables</u>
Covariate: Number of Individuals Listed  Independent: Gender of Study Participant  Control: Job Category Job Level  Moderator: Company	Instrumental Network Size and Gender Mix: Number of Males Listed Number of Females Listed  Range: Location of Individuals Listed Number of Individuals Listed in Same Function Number of Different Functions Hierarchical Rank of Individuals Listed Hierarchical Range of Individuals Listed  Density

---

<sup>1</sup>The operationalizations of these variables and the variables listed in the figures that follow this one will be presented in Chapter Five.

variable; however, it should covary with every other dependent variable. The total number of people listed by the focal person directly impacts, for example, the number of male and female individuals listed, the number of individuals at various locations, the number of individuals in the same function, and so on.

Of the three possible control variables, the job category<sup>2</sup> and the job level<sup>3</sup> of each study participant's position are the most salient. It is quite possible that males and females have different job responsibilities at different hierarchical levels which could have implications for the networks they develop. This relates directly to the aforementioned structural argument of Moore (1990). Possible differences include jobs involving expert or administrative roles, as opposed to more managerial or decision-making roles (Dreher & Ash, 1990; Kanter, 1977). Women often dominate (or are assumed to dominate) the administrative roles, whereas men tend to dominate the decision-making or managerial roles (Dreher & Ash, 1990). Furthermore, fewer promotions occur within the expert or administrative ranks, which Dreher and Ash (1990) argue would partially explain why men have experienced more promotions than women. A priori, the existence of gender segregation into jobs involving different roles and at different hierarchical levels in the organization could result in different instrumental work networks; consequently, both the job category and job level of the study participants were controlled, as shown in Figure 3.1.

As for the other control variable, time in current position may impact how the work networks of individuals develop in the workplace. Moreover, it is conceivable that the time a person has been in his or her current position could impact "the cumulative knowledge" the person acquires about both the organization and the job. This knowledge could include how his or her position fits in the established workflow of the organization, or who to go to to get help with a work task or work-related problem. Though intuitively important, time in

---

<sup>2</sup>In this thesis, respondents were asked whether their jobs were purely managerial, professional, technical, administrative in nature, or a mix of managerial and either professional, technical or administrative roles.

<sup>3</sup>Job level relates to the position being designated as either executive, senior management, middle management, first-line supervisor, or other.

current position is excluded from the model. To be included in the non-transition study, individuals had to have been in their positions at least one year, and consequently, individuals should have acquired the requisite knowledge about how their jobs fit into the workflow patterns of the organization.

Finally, there is the issue of the companies from which the sample is drawn. Intuitively, company would be cast as a moderator in that "company" has no presumed a priori relationship to the dependent variables of interest.<sup>4</sup> However, it is quite likely that varying company (or industry) characteristics could moderate the relationship between gender and the work network characteristics of individuals, and therefore, the possibility of a company moderator effect would need to be tested.<sup>5</sup>

In summary, Figure 3.1 represents the non-transition/instrumental network model. The effect of gender, number of instrumental people listed, job category, job level, and possible company moderator will be used to account for the variance associated with each of the dependent variables.

#### Promotion/Instrumental Network Model

The promotion/instrumental network model is similar to the non-transition, instrumental network model -- with the exception of dropping company as a moderator

---

<sup>4</sup>Lindley and Walker (1993) define a moderator effect as an interaction between a predictor variable and a moderator variable, such that the relationship between the predictor [X] and an outcome variable [Y] differs depending upon the level of the moderator [Z]; the effect of X on Y is conditional upon the level of Z. A moderator should not be correlated with either the outcome variable(s) or predictor variable(s).

<sup>5</sup>Ibarra (1993b, 1994) controlled for company-specific effects, arguing that the four firms included in the study differed on a variety of factors including industry, performance, and organizational culture. Three dummy variables were included to ensure that network effects could be observed net of company effects not measured directly.

variable because the sample for the promotion study will be drawn from one organization.

A representation of the model can be found in Figure 3.2.<sup>6</sup>

#### Non-Transition/Expressive Network Model

The variables for the non-transition/expressive network model are listed in Figure 3.3. The dependent variables include the same dependent variables as the non-transition, instrumental network model with a few additions. First, there are the total number of people listed and the gender make-up of those people. In addition, there are the number of expressive ties that are also instrumental ties, which addresses the extent to which the ties overlap, along with the number of people who are seen socially outside of work and the number of women seen socially outside of the office. Second, the range variables remain the same with the inclusion of the number of both subordinates and supervisors listed as expressive ties. Density of the expressive ties is also considered, as is the frequency of contact of the focal individual with the people listed.

Moreover, as with the instrumental network model, gender remains the focal independent variable with number of expressive ties listed a covariate, job category and job level as control variables. Company serves as a moderator variable. Two additional control variables need to be considered. First, the individuals who were my data site contacts consistently argued that child-rearing responsibilities play a pronounced role in influencing who becomes and remains a friend. Child-rearing responsibilities can impact not only the number of expressive ties in one's work network, but also the frequency of contact with

---

<sup>6</sup>Two other control variables were considered for the promotion/instrumental ties model. These control variables included: (1) tenure with company and (2) number of previous positions. The time an individual has been with an employer and the number of previous promotions or positions with the employer are critical variables when we talk of rebuilding a network. This thesis is not concerned with how one goes about rebuilding, or how quickly they go about rebuilding their network. The promotion sample's instrumental networks will be measured at the time of the promotion and at least eight months following the promotion. It is conceivable that people with longer company tenures have more knowledge about how the organization operates and could then apply this knowledge during the first few months in their new positions, thus helping them rebuild their instrumental networks more quickly. However, the effect of company tenure and the number of previous positions should diminish greatly six months to a year after the promotion.



**FIGURE 3.2**  
**Promotion/Instrumental Network Model of Variables**

**Predictor Variables**

**Covariate:**  
 Number of Individuals Listed

**Independent:**  
 Gender of Study Participant

**Control:**  
 Job Category  
 Job Level

**Dependent Variables**

**Instrumental Network Size and Gender Mix:**  
 Number of Males Listed  
 Number of Females Listed

**Range:**  
 Location of Individuals Listed  
 Number of Individuals Listed in Same Function  
 Number of Different Functions  
 Hierarchical Rank of Individuals Listed  
 Hierarchical Range of Individuals Listed

**Density**

**FIGURE 3.3**  
**Non-Transition/Expressive Network Model of Variables**

**Predictor Variables**

**Covariate:**  
 Number of Individuals Listed

**Independent:**  
 Gender of Study Participant

**Control:**  
 Job Category  
 Job Level  
 Child-rearing Responsibility  
 Race

**Moderator:**  
 Company

**Dependent Variables**

**Expressive Network Size and Gender Mix:**  
 Number of Males Listed  
 Number of Females Listed  
 Number of Overlapping Instrumental and Expressive Ties  
 Number of Overlapping Instrumental and Expressive Female Ties  
 Number of Individuals Listed Seen Outside of Work  
 Number of Females Seen Outside of Work

**Range:**  
 Location of Individuals Listed  
 Number of Individuals in Same Function  
 Number of Different Functions  
 Hierarchical Rank of Individuals Listed  
 Hierarchical Range of Individuals Listed

**Density**

**Frequency of Contact**

people -- especially outside the workplace. Ibarra (1993b, pp. 28-29) indicates that "... sociologists... have found that life-course factors such as child-bearing account for significant gender differences..." in personal networks. The second control variable is race. Like women, minorities have reduced opportunities to develop homophilous expressive ties in comparison to their white male counterparts (Ibarra, 1993; Lincoln & Miller, 1979).

In summary, the non-transition/expressive (see Figure 3.3) model is as follows: The effects of gender, number of individuals listed, job category, job level, child-rearing responsibilities, race, and possible company moderator will be used to account for the variance associated with each of the dependent variables.

#### Promotion/Expressive Network Model

The promotion/expressive network model (see Figure 3.4) is similar to the non-transition model -- with the exception of dropping company as a moderator variable. The reason for this is that the sample for the promotion study was drawn from only one organization.

#### Hypotheses 2 and 3

The dependent variable for Hypothesis 2 is tie turnover, with gender the independent variable. Company tenure must be added as a control variable to the model. Conceivably, those individuals with longer tenure have more time to develop and maintain expressive ties that have weathered other career transitions within the company. If so, there is the chance that individuals with longer tenure have more stable expressive tie networks than those with shorter tenure. Therefore, the turnover in expressive tie networks may be reduced for those with longer company tenure. Hypothesis 2 is represented in Figure 3.5. Finally, Hypothesis 3 compares the hierarchical rank and range of the women's expressive ties prior to the promotion and nine months following the promotion.

**FIGURE 3.4**  
**Promotion/Expressive Network Model of Variables**

**Predictor Variables**

**Covariate:**  
 Number of Individuals Listed

**Independent:**  
 Gender of Study Participant

**Control:**  
 Job Category  
 Job Level  
 Child-rearing Responsibility  
 Race

**Dependent Variables**

**Expressive Network Size and Gender Mix:**  
 Number of Males Listed  
 Number of Females Listed  
 Number of Overlapping Instrumental and Expressive Ties  
 Number of Overlapping Instrumental and Expressive Female Ties  
 Number of Individuals Listed Seen Outside of Work  
 Number of Females Seen Outside of Work

**Range:**  
 Location of Individuals Listed  
 Number of Individuals in Same Function  
 Number of Different Functions  
 Hierarchical Rank of Individuals Listed  
 Hierarchical Range of Individuals Listed

**Density**

**Frequency of Contact**

**FIGURE 3.5**  
**Hypothesis 2 Model of Variables**

**Predictor Variables**

**Independent:**

**Gender of Study Participant**

**Control:**

**Tenure with Company**

**Dependent Variables**

**Expressive Tie Turnover:**

**Number of Individuals Added**

**Number of Individuals Dropped**

**Number of Individuals Remaining**

## Chapter Four: POPULATIONS AND SAMPLES

There were two populations of interest for study in this thesis. Managers or supervisors who had not undergone a formal career transition in the past year comprised the first population. This population was used to examine the similarities and differences between men's and women's work networks. The second population was individuals who had recently been promoted within a given organization; this population was used to study the impact that promotions can have on men's and women's work networks.

### THE DATA SITES

Sixty major Canadian companies were contacted through letters written to the president/CEOs, human resource vice-presidents, or human resource managers. These letters<sup>1</sup>, outlining the thesis study, were signed by either Michael Goldberg, Dean of the Faculty of Commerce and Business Administration at the University of British Columbia, or by Dr. Craig Pinder, my thesis advisor. From these 60 letters, seven organizations expressed an interest in participating in the study. Four organizations were ultimately included. A fifth organization, a major utilities company, was dropped from the study for two reasons: (1) a major corporate reorganization was about to be announced and the employees would have been quite suspicious of any company-approved questionnaire requesting information about their work relationships, and (2) several of the associations, which represented many of the company's managers or supervisors, had instructed their members not to fill out any company (or company-approved) questionnaires until further notice.

For both the non-transition and promotion studies, the samples had to come from organizations with (a) a mix of men and women in managerial or supervisory positions and

---

<sup>1</sup>Copies of these letters can be found in Appendix A.

(b) operating sites of at least 200 people. The reasoning behind this requirement was that in smaller organizations, or in organizations with small operating sites, it is much easier for any particular employee to know practically "everyone." The work networks of men and women in such organizations would be very similar, regardless of the sex of the individual. Furthermore, there would be little change to individuals' work relationships following a transition in smaller organizations.

Data collection consisted of administration of a questionnaire to the managers or supervisors at three organizations<sup>2</sup>, representing the banking, forestry, and insurance industries. With the non-transition study, the original intent was to sample up to 100 or 150 individuals from each of the four organizations while maintaining, if possible, a 50-50 gender split. This was not the intention, however, with the promotion study. All the promotion study participants came from the same organization to control for varying definitions of what comprises a promotion. A review of the literature for a common, established definition of "promotion" was unsuccessful, and even the data site contacts were unable to provide their companies' definitions of "promotion." Consequently, one company was chosen that had enough promotions within a three-month period in order to provide a sample of approximately 100 individuals. The banking company agreed to provide a list of employees who had been promoted within the past two to three months. Again, a 50-50 gender split was desired for the promotion study.

#### Non-Transition Sample

Table 4.1 provides the number of individuals receiving questionnaires in each of the three organizations. All three organizations provided lists of managers or supervisors who had not undergone formal career transitions in the past 12 months. When possible, names were randomly selected from the lists with the use of a random numbers table.

All 203 people listed -- 133 from the insurance company's headquarters and 70

---

<sup>2</sup>Data were also collected from a fourth organization in the telecommunications industry, but this company was dropped from the data analysis. Only 51 names were provided, and even after a follow-up letter, only 14 questionnaires (from nine males and five females) were returned.

**TABLE 4.1****Male and Female Participation by Company in Non-Transition Sample**

Company	Males	Females	Total
Bank Total	117	117	234
Personal and Commercial <sup>1</sup>	74	76	150
Investment and Corporate	43	41	84
Forestry Total	107	38	145
Headquarters	68	30	98
Division A	14	3	17
Division B <sup>2</sup>	25	5	30
Insurance Total <sup>3</sup>	135	68	203
Headquarters	85	48	133
Claim Centers	50	20	70

<sup>1</sup>Of the 150 employees included in the study, 50 males and 50 females were randomly selected from a list of 153 males and 148 females, respectively. The remaining 50 names came from a separate list representing the bank's largest branches. All 24 males and 26 of 51 randomly chosen females received a questionnaire.

<sup>2</sup>The 25 males include five men in similar positions as the five females plus 20 randomly chosen males from a list of 148 men.

<sup>3</sup>The male-female totals are crude estimates, as the lists provided did not note the sex of the individual. The lists were scanned for possible female names.



from the company's largest claim centers in the Lower Mainland of Vancouver, B.C. -- received a questionnaire. Unfortunately, the lists provided did not note the sex of the individuals. (The lists provided were scanned, and approximately 68 names appeared to belong to females.)

The forest company provided an original list with 521 names, representing 11 different divisions. Only five of the 11 divisions had more than one female in a managerial or supervisory position, and only three divisions had more than two female managers or supervisors meeting the established criteria. To ensure the highest participation rate of females in relation to males, the company's headquarters and the two divisions with more than two females were selected to participate in the study.

Finally, the study participant names from the bank were provided by two divisions -- the Personal and Commercial Division and the Corporate and Investment Division. Originally, names were to come from the bank's corporate and regional center sites with at least 200 people; however, the two data site contacts argued that the bank was organized into regions and that the majority of banking managers and supervisors worked with others throughout the region and not necessarily with fellow employees at their actual work sites. In other words, bank employees developed instrumental and expressive ties within these regions of well over 200 individuals.

Table 4.2 provides the average number of ties listed by each study participant by company for the three site location designations and substantiates the claims of the two data site contacts. The percentage of ties from different operating sites (in relation to the total number of ties) for both instrumental and expressive ties was approximately double that for the banking study participants in comparison to the study participants from the forestry and insurance companies.

#### Promotion Sample

To study the impact of formal career transitions on individual's personal work networks, I chose to look at promotions for two reasons. The first was the "glass ceiling effect," and women's alleged inability to break through to the upper levels of management.

**TABLE 4.2**

**Instrumental Network and Expressive Network Site Location  
of Individuals Listed by Company**

	Banking	Forestry	Insurance	p-values <sup>1</sup>
<b>INSTRUMENTAL</b>				
Same Site	3.43	7.20	7.18	< .001
Different Site/Same City	2.83	0.93	3.34	< .001
Different Site/Different City	3.43	3.18	0.53	< .001
Percentage at Different Site	65%	36%	35%	
<b>EXPRESSIVE</b>				
Same Site/Same City	3.66	6.17	6.26	< .001
Different Site/Same City	2.51	0.53	2.43	< .001
Different Site/Different City	2.23	1.30	0.67	< .001
Percentage at Different Site	56%	23%	33%	

<sup>1</sup>The Kruskal-Wallis one-way analysis of variance was used to test for between-company differences.

Both Kanter (1977) and Moore (1990) have argued that one reason for women's inability to break through to the upper levels of management lies in their networks, which are supposedly different from men's networks.

The other reason involved my intent to study the most specific career transition possible, and with that in mind, this thesis was designed to study promotions in situ. It is obvious that a career transition, involving an individual's transferring to another work location within the same company or moving to an entirely new organization, could result in major changes to one's work network. However, the extent of changes to a network following a promotion in situ may not be as great. Though individuals may find themselves working with (and developing ties) with new individuals, they can still maintain contact with individuals (especially expressive ties) because they are remaining at the same work site. The main reason for looking at promotions in situ was this: If there are extensive changes to one's work network following a promotion in situ, then it would be quite likely there are changes in one's network following a promotion to other operating sites.

Of the four participating organizations, the bank was the only organization that could provide a large enough number of employees who had been recently (within the past two to three months) promoted; however, few of these promotions were in situ. Of the 33 promotion respondents, only eight individuals remained at the same site following their promotions. Given the time constraints associated with completing a doctoral thesis and collecting the promotion data<sup>3</sup>, it was not feasible to limit the study to only those individuals who had received promotions in situ. Consequently, all 39 males and 61 randomly chosen females (from a list of 123) in the personal and commercial division received a questionnaire. From the investment and corporate division list, all 31 males and 31 females received a questionnaire. The lists provided by both divisions did not note

---

<sup>3</sup>As will be discussed in Chapter 5, the promotion sample received two questionnaires. The first questionnaire was sent as closely to the time of their promotions as possible so that a representation of their instrumental and expressive networks prior to the promotion could be obtained. The second questionnaire followed approximately eight months later. The intent of the follow-up questionnaire was to obtain a representation of their instrumental and expressive networks following their promotions.

whether the promotions were or were not in situ.

### Summary

A total of 582 individuals comprised the non-transition sample and 162 individuals the promotion sample. Though the names came from specified strata (e.g., managers or supervisors who had not undergone career transitions in the past year, or newly promoted managers or supervisors), many were not randomly chosen as study participants.

Consequently, the non-transition and promotion samples can be portrayed only as convenience samples, and this places limits on the generalizability of the findings of both the non-transition and promotion studies.

## Chapter Five: DATA COLLECTION

Data collection consisted of the administration of a sociometric questionnaire to the non-transition and promotion samples.<sup>1</sup> The non-transition sample received the questionnaires through the respective companies' internal mail systems, and each individual was instructed to fill out the questionnaire and return it in a self-addressed stamped envelope directly to the author. Participation was completely voluntary and confidentiality was assured.<sup>2</sup>

People in the promotion sample filled out two questionnaires. The first questionnaire was distributed through the company's internal mail system to the recently promoted bank employees. The second questionnaire followed a minimum of eight months after the promotion, and only those 43 individuals who had returned the first questionnaire received the follow-up questionnaire. The participants had been told of the follow-up questionnaire in the first questionnaire, and they filled out the follow-up questionnaire without any access to information provided by them in the first questionnaire. The questionnaires were distributed through the company's internal mail system and when completed were returned directly to the author. Participation was completely voluntary and confidentiality was assured.

The decision to use a questionnaire as the sole data collection method was based on the goal to sample from multiple organizations as many managers or supervisors in as timely a fashion as possible. With the exception of Lincoln and Miller (1979), past research on

---

<sup>1</sup>Questionnaires were sent out on the following dates: Forestry, February 8, 1994; Insurance, March 14, 1994; Mobile Data, April 7, 1994; Banking (both non-transition and promotion), April 25, 1994. The promotion follow-up questionnaires were distributed on November 21, 1994.

<sup>2</sup>Copies of the two cover letters included with the questionnaires are in Appendix A. The first letter was signed by a participating company's representative (e.g., human resources manager or vice president). The second letter was signed by my advisor, Dr. Craig Pinder.

personal work networks had been conducted in single organizations (Brass, 1986; Ibarra, 1992). Recently, Ibarra (1993b, 1994) focused on individuals in four Fortune 500 companies; however, the total number of study participants was only 63.

### THE QUESTIONNAIRES

The initial questionnaire (see Appendix A), received by both the non-transition and promotion samples, consisted of four parts and was modeled after the grid format used by Tracy and Whittaker (1990). The grid format had individuals list the names of people in their networks before providing such information (regarding each individual listed) as the length of time they have known each individual, how often he or she saw each individual, and the support provided by each person.

#### The Non-Transition Questionnaire

Part One of the questionnaire consisted of some preliminary questions regarding the participants' work relationships. Participants provided the names of their supervisors as well as the names of anyone in the organization who had served them in a mentor or developmental capacity.<sup>3</sup> Participants also noted the number of individuals they directly supervised and the percentage of their subordinates who were male or female.

In writing the questionnaire, I considered Part One a warm-up to Parts Two and Three. These two sections, requesting the participants to list up to 15 instrumental and 15 expressive ties, provided the data directly related to the research questions and hypotheses of this study. The primary reason for having the study participants list 15 individuals for both their instrumental and expressive work networks was to keep the time required to complete the questionnaire manageable (Tracy & Whittaker, 1990). Moreover, a better estimate of the size of personal work networks would be calculated by having study participants list 15 individuals, instead of five as did Lincoln and Miller (1979). In Part Two,

---

<sup>3</sup>These data were collected for possible future study.

participants were requested to list up to 15 names of instrumental ties<sup>4</sup> on the basis of the following, explicit instructions:

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your company whom you consider to be useful in performing the tasks required of your current job.

Task-related relationships include those in your organization who aid you and/or are necessary for you to perform the tasks required in your job. In other words, you rely on these individuals to help you do your job. (Please note that you may interact with these individuals on a daily basis or as infrequently as once a week or month.) Moreover, these individuals provide you with job-related resources (e.g., information, expertise, professional advice, and/or material resources).

Please exclude your manager(s)/supervisor(s) as well as all of your subordinates from this list.

Please break the seal on this part of the questionnaire upon completing your list and provide the requested information in relation to each individual you have listed.

Two critical points must be made regarding the instructions. First, in listing the people who comprised their instrumental ties, respondents were asked to exclude their superior(s) and subordinates. The reasoning behind this request was that the respondents were to look beyond their immediate supervisors and subordinates in relation to instrumentality because superiors and subordinates would always be instrumental to the manager's or supervisor's performance. The second point involved the participants' generating their complete lists of individuals prior to breaking a seal that kept the instrument closed. This seal was included to prevent the participants from "looking ahead" before having read the instructions. There was also the fear that respondents might knowingly suppress the number of individuals listed if they first saw the amount of additional information required for each tie they listed. Once the list of instrumental ties was complete, the seal<sup>5</sup> was to be broken and the following information regarding each tie was

---

<sup>4</sup>Asking the study participants to first list their instrumental ties followed the order applied by Lincoln and Miller (1979). Furthermore, in the questionnaire, the term "instrumental" was replaced with "task-related." Though "instrumental" is the established construct in the literature, the term "task-related" was better understood by those individuals who participated in the pilot testing of the questionnaire.

<sup>5</sup>The seal did not prevent respondents from adding names afterwards, however.

to be provided:

- (1) sex;
- (2) time known;
- (3) the work location of the individual;
- (4) the individual's occupational title;
- (5) whether the individual worked in the same functional department;
- (6) the department name of the individual if he/she worked in a different functional department;
- (7) the hierarchical position of the individual in relation to the study participant; and
- (8) who else on the list did the participant and each tie associate with in order to complete tasks associated with the respondent's job.

Operationalizations of instrumental network dependent variables. The tie information entered in Part Two provided the dependent variable data for the instrumental network size and the gender mix, range, and density of these instrumental ties for each respondent. The operationalizations of these dependent variables can be found in Table 5.1. The majority of the variable operationalizations are self-explanatory. With the exception of hierarchical rank, hierarchical range, and density, the actual values for the variables were derived by simply counting, for example, the number of people listed by the respondent, the number of people working at the same site as the respondent, and the number of different functions (excluding the function of the respondent) represented by the people listed.

The hierarchical rank value, as calculated, represents the extent to which the people were at the same hierarchical level<sup>6</sup> as the respondent. A value greater than zero reflects a network with people who, on average, are one or more hierarchical levels above the respondent. A negative value depicts a network in which the majority of ties emanate from hierarchical levels below the respondent. Hierarchical range complements the hierarchical rank value in that it represents the extent to which a respondent's ties come from two or more levels above to two or more levels below the respondent. A value of zero reflects a network where all the ties are at the same hierarchical level as the respondent. A further

---

<sup>6</sup>Respondents were asked to consider whether each tie was: (1) at least two levels above, (2) one level above, (3) at the same level, (4) one level below, or (5) at least two levels below him or her in the organization's hierarchy.



**TABLE 5.1**

Operationalizations of Dependent Variables: Instrumental Network

	Actual Range	Calculation
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed <sup>1</sup>	0 to 18	Count
Number of Males Listed	0 to 14	Count
Number of Females Listed	0 to 12	Count
<b>Range:</b>		
Number of Individuals per Location		
Same Site	0 to 17	Count
Same City/Different Site	0 to 15	Count
Different City/Different Site	0 to 15	Count
Number of Individuals Listed in Same Function	0 to 15	Count
Number of Different Functions	0 to 12	Count
Hierarchical Rank (Average rank of individuals listed)	-2.0 to 2.0	$((2 * \# \text{ of individuals two or more levels above}) + (1 * \# \text{ of individuals one level above}) + (0 * \# \text{ of individuals at same level}) + (-1 * \# \text{ of individuals one level below}) + (-2 * \# \text{ of individuals two or more levels below})) / (\# \text{ of individuals listed})$
Hierarchical Range (Average range of individuals listed)	0 to 2.0	$((2 * \# \text{ of individuals two or more levels above}) + (1 * \# \text{ of individuals one level above}) + (0 * \# \text{ of individuals at same level}) + (1 * \# \text{ of individuals one level below}) + (2 * \# \text{ of individuals two or more levels below})) / (\# \text{ of individuals listed})$
Density	0.0 to 1.0	$(\# \text{ of dyadic links listed}) / ((\text{number of individuals listed})(1 - \text{number of individuals listed}))$

<sup>1</sup> Several respondents listed more than 15 individuals.

illustration could find a respondent with a hierarchical rank value of zero but a hierarchical range value of two. The interpretation of this example is a respondent who has an equal number of ties at two or more levels above and two or more levels below his or her own hierarchical level.

Density is defined as the degree to which a person's network ties all have network connections with one another. A network where the people listed do not interact with any other person would have a density of zero. A perfectly dense (1.0) network is one in which all people listed interact with one another.

Part Three of the questionnaire was identical to Part Two, except it asked the respondents to list up to 15 expressive ties.<sup>7</sup> The specific instructions for Part Three were:

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your organization whom you consider to be "friends" of yours.

Friends are defined as those individuals with whom you frequently or often interact for personal satisfaction and enjoyment rather than just for the fulfilment of a particular task or goal. Those listed would include: (1) people you see socially outside of work, and (2) those people you spend time with socially at work (e.g., at lunch and coffee breaks) but do not see outside of work.

Therefore, you are to include anyone whom you consider to be a friend -- even if you listed them as a task-related relationship on the previous question.

Also, if you consider any supervisors and/or subordinates as friends, please be sure to list them.

Please break the seal upon completing your list of friends and provide the requested information in relation to every individual you have listed.

Two key elements of the expressive instructions were that (1) they were to include names from the instrumental ties list and (2) they could also list those supervisors or subordinates they considered to be friends. Upon completing the list and breaking the seal,

---

<sup>7</sup>In the questionnaire, the term "expressive" was replaced with "friendship." Though "expressive" is the established construct in the literature, the term "friendship" was better understood by those individuals who participated in the pilot testing of the questionnaire.

the respondents were asked to provide, to the best of their ability, the following information regarding each tie:

- (1) sex;
- (2) time known;
- (3) whether they saw this person socially outside of work;
- (4) the work location of the individual;
- (5) the individual's occupational title;
- (6) whether the individual worked in the same functional department;
- (7) the department name of the individual if he/she worked in a different functional department;
- (8) the hierarchical position of the individual in relation to the study participant;
- (9) whether this was an individual they managed/supervised;
- (10) how often they were in contact with the individual; and
- (11) who else on the list did the participant and each tie associate with socially.

Operationalizations of the expressive network dependent variables. Again, the tie information entered in Part Three provided the dependent variable data for the expressive network size and the gender mix, range, frequency of contact, and density of the these expressive ties for each respondent. The operationalizations of these dependent variables are listed in Table 5.2. With the exception of frequency of contact, the dependent variables in Table 5.2 are either self-explanatory or are identical to the instrumental network dependent variables discussed in Table 5.1.

Frequency of contact<sup>8</sup> represents, on average, the amount of contact a respondent has with his or her expressive ties. A frequency of contact value of "five" would be interpreted as respondents having daily contact with all of the individuals listed, while a value of "two" would reflect respondents having contact with their set of ties approximately twice a month, on average.

Part Four concluded the questionnaire and was comprised of demographic questions relating to the respondent and his or her current employment status.

---

<sup>8</sup>Respondents were asked how often they had contact with each tie. The response set was: (1) Daily, (2) Three times per week, (3) Once per week, (4) Twice a month, or (5) Less than once per month. In calculating the frequency of contact, the values were reverse coded.

**TABLE 5.2****Operationalizations of Dependent Variables: Expressive Network**

	Actual Range	Calculation
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed <sup>1</sup>	0 to 16	Count
Number of Males	0 to 15	Count
Number of Females	0 to 14	Count
Number of Overlapping Ties	0 to 10	Count
# of Female Overlapping Ties	0 to 7	Count
# of Individuals Seen Outside of Work	0 to 15	Count
# of Females Seen Outside of Work	0 to 14	Count
<b>Range:</b>		
<b>Number of Individuals per Location</b>		
Same Site	0 to 15	Count
Same City/Different Site	0 to 14	Count
Different City/Different Site	0 to 10	Count
Number of Individuals Listed in Same Function	0 to 15	Count
Number of Different Functions	0 to 10	Count
Hierarchical Rank (Average rank of individuals listed)	-2.0 to 2.0	$((2 * \# \text{ of individuals two or more levels above}) + (1 * \# \text{ of individuals one level above}) + (0 * \# \text{ of individuals at same level}) + (-1 * \# \text{ of individuals one level below}) + (-2 * \# \text{ of individuals two or more levels below})) / (\# \text{ of individuals listed})$
Hierarchical Range (Average range of individuals listed)	0 to 2.0	$((2 * \# \text{ of individuals two or more levels above}) + (1 * \# \text{ of individuals one level above}) + (0 * \# \text{ of individuals at same level}) + (1 * \# \text{ of individuals one level below}) + (2 * \# \text{ of individuals two or more levels below})) / (\# \text{ of individuals listed})$
Density	0.0 to 1.0	$(\# \text{ of dyadic links listed}) / ((\text{number of individuals listed})(1 - \text{number of individuals listed}))$

<sup>1</sup> Several individuals listed more than 15 individuals.

**TABLE 5.2** (continued)

Operationalizations of Dependent Variables: Expressive Network

	Actual Range	Calculation
Frequency of Contact	0.0 to 5.0	$\begin{aligned} & ((5 * \# \text{ of individuals seen daily}) + (4 * \\ & \# \text{ of individuals seen three times per week}) \\ & + (3 * \# \text{ of individuals seen once a week}) \\ & + (2 * \# \text{ of individuals seen twice a month}) \\ & + (1 * \# \text{ of individuals seen less than once} \\ & \text{per month})) / (\# \text{ of individuals listed}) \end{aligned}$

### The Promotion Questionnaires

The first promotion questionnaire was similar to the non-transition questionnaire, and the operationalizations of the dependent variables were identical. Except for several questions<sup>9</sup> added to the first and fourth sections, the only other change involved the instructions to Part Two -- the section where the respondents listed their instrumental ties. In Part Two, the respondents were asked to "... list up to 15 individuals within your company whom you consider to be useful in performing the tasks required of your job PRIOR TO YOUR RECENT PROMOTION." This change to the instructions was critical because many of the respondents had recently (within the past two to three months) assumed their new positions. To be able to test for changes to their instrumental networks following the promotions, the respondents had first to provide a representation of their networks prior to assuming their new positions.<sup>10</sup>

The follow-up questionnaire was a shortened version of the first promotion questionnaire, and consisted of three parts. Parts One and Two asked them to list up to 15 instrumental and 15 expressive ties. When listing the 15 instrumental ties, the instructions

---

<sup>9</sup>These questions were unrelated to the thesis' research questions and hypotheses. In Part One, the questions asked the study participants to: (a) list the names of those individuals who were instrumental in helping the study participants secure their promotions, and (b) explain how these individuals were helpful. In Part Four, the additional questions asked about the study participants' new salaries and new work locations following the promotions.

<sup>10</sup>Given the sample and data collection method, I had to place confidence in the respondents' abilities to recall their instrumental networks prior to their promotions on the basis of the questionnaires' receipt coming within two months of the promotions. The non-transition bank respondent sample listed an average of 9.6 instrumental individuals, compared to 7.5 individuals listed by the promotion bank respondent sample. The bank non-transition and promotion respondent sets listed 8.1 and 8.8 expressive individuals, respectively.

Informant accuracy in self-reports was debated in the 1980s (see Bernard, Killworth, Kronenfeld, & Sailer, 1984). Freeman and Romney (1987), in an attempt to address these concerns, empirically tested informants' ability to recall past interaction events. They found that individuals' representations of their social structure (i.e., the relatively prolonged and stable pattern of interpersonal relations) were systematically biased toward the established norm of their interactions. In other words, informant accuracy is decidedly inaccurate when individuals try to reconstruct interaction patterns for a given event; however, accuracy is much improved when individuals try to reconstruct their stable pattern of interpersonal relations.

specifically stated that they "... list up to 15 individuals within your company whom you consider to be useful in performing the tasks required of your CURRENT JOB." Part Three consisted of several demographic questions used as a check on the respondent. Examples of both promotion questionnaires are in Appendix A.

Eight months was deemed to be a long enough time period for changes in relationships to stabilize following the promotions studied. Katz (1980) writes of three stages following an actual career transition: (1) a relatively brief socialization stage, (2) the innovation stage, and (3) the adaptation stage. Social concerns dominate the socialization stage. The concerns are related to inclusion and becoming a contributing member of the work group (Katz, 1980). The innovation stage, with its emphasis on task performance, begins up to six months following a career transition with the adaptation stage occurring up to three years after the transition.

Katz argues that following a career transition, such as a promotion, transitioners are most concerned with meeting relatedness needs, and he posits that this concern is most evident in the first six months following the transition. I assumed that in order for an individual to eventually become proficient in his or her job, the majority of the changes to one's work relationships should occur by the start of the innovation stage. Employees will want to be proficient before their annual performance appraisals -- which are likely to occur 12 months after assuming the new position. If so, stability in their work networks should occur between the sixth and twelfth months. Since there was no empirical research providing a validated estimate as to when networks become stable following a career transition, the post-promotion data were collected eight months following the actual promotion.

#### Pilot Testing of the Questionnaire

Early versions of the non-transition questionnaire were critiqued by my thesis supervisory committee as well as by fellow doctoral students. During the summer of 1993 a questionnaire was given to three of my friends to complete under my observation. These three friends worked at the same major, daily Northern Californian newspaper that I had

once been employed by, and these three individuals were chosen for two specific reasons. First, I had knowledge of their personal work networks and could check for the exclusion of ties (e.g., by oversight). Second, the friends would not have been bashful about questioning indecipherable or confusing instructions or questions.

The questionnaire was then revised and sent to the data site contacts for review. One manager at the telecommunications company filled out the questionnaire in the author's presence. Otherwise, the final round of feedback came from the data site contacts. I met for over an hour with the insurance data site contact at which time each and every question was reviewed. The author and one of the banking site contacts reviewed the questionnaire at length by phone. Ultimately, each contact at the four data sites approved the questionnaire.

#### Reliability of the Questionnaire

Tracy and Whittaker (1990) made no mention of the reliability of the grid format, and Ibarra (1993b) did not discuss the reliability of the sociometric questionnaire she used to study manager networks. In that questionnaire, Ibarra (1993b) had respondents list names of contacts representing each of five support domains: information, advice, friendship, career, and cooperation. Marsden (1990) states that network indices are largely reliable when measures are taken to facilitate an individual's capacity to recall and report his or her network links. Reliability is increased when respondents are asked about fixed roles (e.g., friendships and task-related relationships) (van Groenou, van Sonderen, & Ormel, 1990). Van Groenou et al. (1990) found that asking individuals to name network ties that are based on exchange or affective feelings had a lower test-retest reliability in comparison to the fixed-role approach. I used a fixed-role approach when asking respondents to list names. In comparison, Ibarra's (1993b) approach was a mix of the exchange-, affective-, and fixed-role approaches.

Furthermore, van Groenou et al. (1990) maintain that four weeks is a reasonable time to test for the reliability of a questionnaire studying individuals' personal networks. However, demonstrating the reliability of this sort of instrument is troublesome. Network



boundaries are flexible and within a short period of time changes can occur to the content of relations (van Groenou et al., 1990). Within an organization, individuals are transferred, promoted, demoted, or leave the organization, which in turn impacts the make-up of their own personal work networks as well as the work networks of others.

In an attempt to test the stability of the instrumental and expressive lists, 20 reliability check questionnaires<sup>11</sup> were mailed to randomly selected non-transition respondents from the forestry and insurance companies one month after the original questionnaires were returned. Table 5.3 provides the correlation coefficients for the demographic information. In all cases, the test-retest correlations were above 0.90.<sup>12</sup> However, as seen in Table 5.4, there was variation within a month's time in the instrumental and expressive lists provided by the respondents. Though there were no significant differences between men and women and the relative size of men's and women's networks did not change from Time 1 to Time 2, on average, 3.48 instrumental ties were added while 3.81 were dropped. With expressive ties, 1.71 ties were added while 2.00 ties were dropped.

Given the high correlation coefficients for the demographic information, coupled with the lack of male-female differences on the number of ties added or dropped in one's month time, there was no reason to assume that the respondents in this study had not reliably filled out the questionnaires to the best of their ability. However, the question remains whether these changes were due to respondent oversight, to the natural evolution of networks, or to both. If simple oversight is a problem, researchers will have to take steps in the future to reduce this oversight, possibly by providing respondents with lists of names or with the chance to revisit and amend the lists at a later date.

---

<sup>11</sup>An example of the questionnaire can be found in Appendix A.

<sup>12</sup>Explanations for these "less than perfect" 1.0 correlations include: (1) employees writing down having worked for their employer 1-1/2 years versus one year, and (2) the birthdays of children occurring within the test-retest period.

**TABLE 5.3**

Reliability of Respondent's Demographic Information:  
Reliability Check Sample (n = 20)

Demographic Variables	Correlation Coefficients
Gender	1.00
Time with Employer	0.92
Education Level	1.00
Number of Children	1.00
Age of Oldest Child	0.97
Age of Youngest Child	0.92

**TABLE 5.4**

Number of Individuals Remaining in, Added to, and Dropped from Respondents' Instrumental and Expressive Networks<sup>1</sup>: Reliability Check (n = 20)

	Instrumental Ties					Expressive Ties				
	T1	T2	Same	Add	Drop	T1	T2	Same	Add	Drop
Male	9.7	9.8	6.1	3.7	3.6	8.3	8.2	6.6	1.6	1.6
Female	11.3	10.5	7.3	3.2	4.0	9.6	9.1	7.2	1.9	2.4
Overall	10.5	10.1	6.7	3.5	3.8	8.9	8.6	6.9	1.7	2.0

<sup>1</sup>The time between Time 1 and Time 2 was approximately one month.

**TABLE 5.5**

Non-Transition Study Questionnaire Response Rates

	Mailed	Returned Completed	Response Rate	Male <sup>1</sup>	Female <sup>1</sup>
Banking	234	83	35.5%	39 (33.3%)	44 (37.6%)
Forestry	145	60	41.4%	42 (39.3%)	18 (47.4%)
Insurance	203	99	48.8%	67 (49.6%)	32 (47.1%)
Total	582	242	41.6%	148 (41.2%)	94 (42.3%)

<sup>1</sup>Listed are the number of returned questionnaires and the response rates for both sexes.

### Response Rates

Table 5.5 provides specific information on the non-transition respondent sample with the overall and company response rates. Nearly 42% of those receiving a non-transition questionnaire returned a completed form.<sup>13</sup> From the first data collection in the promotion study, 43 completed questionnaires were returned (for a 26.5% response rate). Of these 43 respondents, only 33 (20 females and 13 males) completed the follow-up promotion questionnaire.

Though not "high," there are several plausible explanations for the non-transition and promotion study response rates. First, the questionnaire did take 30 to 45 minutes to fill out, and this, coupled with the busy schedule of managers and supervisors, had to suppress the response rate. Second, several individuals considered the request to provide specific names of individuals a sensitive issue, and returned the questionnaires without completing them.

In an attempt to increase the response rate, reminder letters<sup>14</sup> were distributed at three of the data sites a minimum of two weeks after the initial receipt of the questionnaires. The higher response rate at the insurance company could more than likely be attributed to the use of electronic mail. All managers and supervisors at the insurance company received two e-mail messages from the individual serving as my data site contact.<sup>15</sup> The first message informed them that they may receive a company-endorsed questionnaire studying personal work networks. The second message reminded the managers and supervisors of the questionnaires and followed two weeks after receipt of the questionnaires.

---

<sup>13</sup>Thirteen of the 582 questionnaires sent out were returned but were excluded from the study because they were either incomplete or incorrectly filled out.

<sup>14</sup>A copy of this follow-up letter is in Appendix A.

<sup>15</sup>This individual was employed by the human resources department.

Chapter Six:  
DATA ANALYSIS STRATEGY and RESULTS

The same format employed in the previous chapters is followed in this chapter with the non-transition study results preceding those of the promotion study. The variable means and standard deviations are reported for the entire non-transition sample variables and the intercorrelations<sup>1</sup> among these variables are in Appendix B. The presence of multicollinearity was tested with the variance inflation factor (VIF) (Neter, Wasserman & Kutner, 1985). The VIF values for all expressive and instrumental network predictor variable sets, including the interaction terms<sup>2</sup>, were less than four. The majority of the VIF values were less than two, indicating no serious multicollinearity problems (Kutner et al., 1985).

The normality of the dependent variables was also tested (see Appendix B, Table B.14): only 5 of 29 variables, the hierarchical rank and hierarchical range (in the instrumental and expressive networks network) and the frequency of contact (in the expressive network), were normally distributed. Finally, Appendix C provides an overview and related tables regarding the demographic comparison of the non-transition study and promotion study respondent samples. The male-female differences were the most salient to this thesis, and there were a number of significant differences in the non-transition study (see Appendix C); however, the majority of the differences had no relevance to the research questions or hypotheses in Chapter Two. The lone exception was job category, which is being controlled in the research models, where 20.4% of the women were in administrative or administrative/management roles, compared to only 8.8% for the men. Moreover, women were less likely to categorize their jobs as professional/management or

---

<sup>1</sup>Correlations were calculated using the Spearman rank correlation coefficient method.

<sup>2</sup>The interaction terms were created by multiplying the two company dummy variables with the other predictors variables. Before creating the interaction terms, all first-order variables were first centered to attenuate for possible multicollinearity affects (Aiken & West, 1991).

technical/management in comparison to men, 20.4% to 38.5%, respectively.

### THE NON-TRANSITION STUDY

Differences in men's and women's instrumental and expressive networks were first tested using the non-parametric Mann-Whitney U procedure because of the non-normally distributed dependent variable data. The Mann-Whitney U is one of the most powerful non-parametric tests and is a useful alternative to the *t*-test when the researcher wishes to avoid the *t*-test's assumptions of normally distributed data and homogeneity of variances (Siegel, 1956). With large samples, the Mann-Whitney U is also more powerful than the Kolmogorov-Smirnov Test (Siegel, 1956). Table 6.1 provides the instrumental network dependent variable means and standard deviations for men and women; Table 6.2 the expressive network dependent variable means and standard deviations for men and women.

Men and women differed significantly on only the gender composition and the density of their instrumental networks. Men's instrumental networks were more homophilous (7.24 males and 3.64 females, on average) and higher in density, whereas the gender composition of women's instrumental networks (5.62 men and 4.61 women, on average) was more differentiated. Relating these findings to the research question in Chapter Two, men's and women's instrumental networks do not seem to differ greatly.

More gender significant differences were identified in the expressive networks, including:

- [1] gender composition -- men's and women's expressive networks tended to be homophilous;
- [2] the number of different functions represented by the individuals listed -- women tended to derive more expressive ties from functional departments different from their own;
- [3] the inclusion of supervisors in the expressive network -- men appeared to include more supervisors in their expressive networks than did women;
- [4] the frequency of contact with the people listed -- men invariably had more frequent contact with their expressive ties than did the women;
- [5] the location of the expressive ties -- a larger proportion of the women's expressive ties tended to come from work sites different from their own; and
- [6] density of the ties -- the men's expressive networks invariably exhibited higher density in comparison to the women's expressive networks.

**TABLE 6.1****Mann-Whitney U Non-Parametric Results:****Male versus Female Instrumental Network Dependent Variables (n = 242)**

Dependent Variables	Male Means/(SD)	Female Means/(SD)	Non- Parametric p-values
<b>Network Size and Gender Mix:</b>			
Number of Individuals Listed	10.89 (3.89)	10.22 (4.48)	.310
Number of Males	7.24 (3.24)	5.62 (3.54)	.007
Number of Females	3.64 (2.29)	4.61 (2.65)	.003
<b>Range:</b>			
Number of Individuals Listed per Location			
Same Site	6.20 (4.77)	5.43 (4.88)	.180
Same City/Different Site	2.50 (3.70)	2.66 (3.24)	.350
Different City/Different Site	2.18 (3.34)	2.18 (3.53)	.980
Number of Individuals in Same Function	4.51 (3.67)	3.88 (3.62)	.140
Number of Different Functions	3.72 (2.79)	3.96 (2.77)	.480
Hierarchical Rank	-0.08 (0.59)	-0.05 (0.63)	.920
Hierarchical Range	0.86 (0.41)	0.89 (0.41)	.550
Density	0.29 (0.26)	0.21 (0.20)	.039

**TABLE 6.2****Mann-Whitney U Non-Parametric Results:****Male versus Female Expressive Network Dependent Variables (n = 242)**

Dependent Variables	Male Means/(SD)	Female Means/(SD)	Non-Parametric p-values
<b>Network Size and Gender Mix:</b>			
Number of Individuals Listed	8.38 (4.62)	8.81 (4.05)	.470
Number of Males	5.97 (3.71)	3.50 (2.68)	< .001
Number of Females	2.46 (2.08)	5.31 (3.22)	< .001
Number of Overlapping Ties	2.61 (2.18)	2.34 (1.88)	.510
Number of Overlapping Females	0.69 (1.07)	1.20 (1.27)	.001
# of Ties Seen Outside of Work	4.21 (3.69)	4.70 (3.81)	.286
# of Female Ties Seen Outside of Work	1.00 (1.54)	3.12 (3.06)	< .001
<b>Range:</b>			
Number of Individuals Listed per Location			
Same Site	5.79 (4.23)	4.70 (3.66)	.062
Same City/Different Site	1.60 (2.62)	2.55 (3.22)	.007
Different City/Different Site	1.21 (1.95)	1.58 (2.53)	.380
Number of Individuals in Same Function	5.28 (4.13)	4.64 (3.70)	.280
Number of Different Functions	2.18 (2.03)	2.72 (2.19)	.044
Hierarchical Rank	-0.31 (0.67)	-0.41 (0.61)	.140
Hierarchical Range	0.91 (0.43)	1.02 (0.36)	.028
Number of Supervisors	0.38 (0.51)	0.23 (0.43)	.034
Number of Subordinates	1.37 (1.78)	1.30 (1.57)	.840
Density	0.24 (0.22)	0.16 (0.19)	.002
Frequency of Contact	3.66 (0.84)	2.97 (0.93)	< .001

These findings lend support to composite Hypothesis 1a that men's expressive networks do differ from those of women.

Though interesting, the non-parametric results were not very informative given the models outlined in Chapter Three. Boneau (1960, p. 49) writes that non-parametric techniques:

... quite generally... couple their freedom from restricting assumptions with a disdain for much of the information contained within the data... tests which make no assumptions about the distribution from which one is sampling will tend not to reject the null hypothesis when it is actually false as often as will those tests which do make assumptions.

Information contained within the data but not included in the non-parametric tests include the effect of the company as a possible moderator variable and the other control variables (e.g., job category, job level, child-rearing responsibilities and/or race). At issue is: Do these gender differences, identified in the non-parametric analyses, remain when one controls for these variables? To answer this question, more sophisticated statistical analyses were necessary.

#### The Use of Multiple Regression

On the basis of the arguments of Cohen (1968), I used multiple regression analysis instead of analysis of variance. In choosing between multiple regression and analysis of variance, Cohen writes of their theoretical equivalence (as their null hypotheses are mathematically equivalent), but then argues for the practical advantages of multiple regression. Cohen (1968) states that if there are other independent variables of interest (e.g., main effects, interactions, covariates), they are more easily added to the model by means of multiple regression. Moreover, multiple regression is a general variance-accounting procedure in the study of natural variation, which is at the heart of this thesis; analysis of variance is better for artificial or experimentally manipulated variation (Cohen, 1968).

The use of multiple regression requires the following assumptions: (1) normally distributed dependent scores, and (2) equal variances for each dependent variable at each x



point (Kerlinger & Pedhazur, 1973). When these assumptions are not met, interpreting results becomes problematic. For example, are the results significant due to differences between the means, or are the results due to the violations of the assumptions (Boneau, 1960)? That question is a concern in this study. However, there is evidence that the ordinary  $t$  and  $F$  tests are nearly immune to the violation of assumptions or can easily be made so if precautions are taken (Boneau, 1960). Violation of the homogeneity of variance assumption is "drastically disturbing" to the distribution of  $ts$  and  $Fs$  if the sample sizes are not the same for all groups (Boneau, 1960). Boneau (1960, p. 56) states "... it would seem that the combination of unequal variances and unequal sample sizes might play havoc with  $F$  test probability statements."

Though increasing the sample size has the effect of off-setting the effects of the skew associated with the data, a combination of unequal sample sizes and unequal variances "automatically produces inaccurate probability statements which can be quite different from the nominal values" (Boneau, 1960, p. 56). Unequal sample sizes are especially problematic when the larger sample has the larger variance (Boneau, 1960). Such a situation could result in a more conservative  $F$  test, whereas larger samples with smaller variances could produce a higher percentage of "significant"  $Fs$  than expected (Boneau, 1960). In this thesis, there was no singular variance pattern between the male and female respondent samples (see Tables 6.1 and 6.2).

Kerlinger and Pedhazur (1973, p. 47) maintain that there is "... no need to assume anything to calculate  $rs$ ,  $bs$ , and so on." It is only when we make inferences from a sample to a population that we must pause and think of assumptions. Homogeneity of variance is important when regression results are used in statistical estimation procedures. As described in Chapter Four, the non-transition sample is a convenience sample, and I have already acknowledged that my ability to make inferences to the population of managers and supervisors is severely limited.

#### The Regression Models

Cohen (1968) argues that one needs to specify the regression model (or models) to

be tested before conducting statistical analyses, and this requires an incisive prior conceptual analysis of the research problem. With both the instrumental and expressive work networks, this was done (see Chapter Three).

Disregarding for the moment the possible company moderator effect, the instrumental and expressive statistical models involve regressing the covariate (number of individuals listed for either the instrumental or expressive networks), gender of the respondent, and the control variables (e.g., the respondent's job category, job level, race, and/or child-rearing responsibilities) on each dependent variable. This statistical model will be referred to as the "Base Model." Testing for company effects requires two additional regression models. The first of these models will be known as the "Shift Model;" it tests for company main effects. The second model, known as the "Moderator Model," tests for company interaction effects.

To reiterate, there are three regression models of interest when testing for gender and company effects.

- (1) The Base Model. No company effects tested. Predictor variables include: Covariate, independent variable, and control variables.
- (2) The Shift Model. Company main effects. Predictor variables include: Covariate, independent variable, and control variables (including company as a control variable).
- (3) The Moderator Model. Company interaction effects. Predictor variables include: Covariate, independent variable, control variables (including company as a control variable), and interaction variables (created by multiplying each covariate, independent variable, and other control variables by the company control variable(s)).

Table 6.3 presents the operationalizations of each of the predictor variables.

Each model provides the variance explained for each dependent variable.

Comparisons can then be made between: (1) the Moderator Model and the Base Model, (2) the Moderator Model and the Shift Model, and (3) the Shift Model and the Base Model.

These comparisons test for the increase in variance explained for each dependent variable in the instrumental or expressive networks through the use of ordinary least squares regression.

**TABLE 6.3**  
**Predictor Variable Operationalizations**

	Variable Types	Variable Values
Covariate: # of Ties Listed	Count	0 to 18 [Instrumental] 0 to 16 [Expressive]
Independent: Gender	Dummy	0 if Male 1 if Female
<b>Control<sup>2</sup>:</b>		
Job Category/Manager	Dummy	1 if Manager, Manager/Professional, Manager/Technical 0 if Manager/Administrative, Administrative, Technical, Professional, or Other
Job Category/Administrative	Dummy	1 if Manager/Administrative, Administrative 0 if Manager, Manager/Professional, Manager/Technical, Technical, Professional, or Other
Job Category/Technical, Professional, or Other	Dummy	Omitted
Job Level/Sr. Management	Dummy	1 if Executive or Senior Manager 0 if Middle Manager, First-Line Supervisor, or Other
Job Level/Middle Manager	Dummy	1 if Middle Manager 0 if Executive, Senior Manager, First-Line Supervisor, or Other
Job Level/First-Line Supervisor	Dummy	1 if First-Line Supervisor 0 if Executive, Senior Manager, Middle Manager, or Other
Job Level/Other	Dummy	Omitted
Child-Rearing Responsibility	Dummy	1 if Children 18 years old or younger 0 if No Children or Children over 18 years old
Race	Dummy	1 if Non-Caucasian 0 if Caucasian
<b>Moderator:</b>		
Company/Forest	Dummy	1 if Employed by Forestry Company 0 if Employed by Bank or Insurance Companies
Company/Bank	Dummy	1 if Employed by Bank 0 if Employed by Forestry or Insurance Companies

The first comparison is between the Moderator and the Base Models, and this comparison tests whether there are any significant main and/or interaction company effects. If there are company effects, additional comparisons can be made as to whether there are company moderator effects (Moderator Model versus Shift Model) and/or company main effects (Shift Model versus Base Model).

One of the equations for the influence of additional explanatory variables on the mean of each dependent variable uses the calculated R-squared for each model (Kmenta, 1971, p. 371):

$$F = [(R^2_q - R^2_k)/(1 - R^2_q)] * [(n - Q)/(Q - K)]$$

where:            q denotes the model with the greater number of predictor variables;  
                       k denotes the model with the lesser number of predictor variables;  
                       n = the number of respondents;  
                       Q = the number of predictor variables in the larger model; and  
                       K = the number of predictor variables in the smaller model.

Degrees of freedom for tabulated value of F is Q-K, n-Q.

The equation is equivalent to:

$$F = [(SSR_q - SSR_k)/(Q - K)] / [(SSE_q)/(n - Q)] \text{ (Kmenta, 1971, p. 370); and}$$

$$F = [(SSE_k - SSE_q)/(K - Q)] / [(SSE_q)/(n - Q)] \text{ (Neter et al., 1985, p. 91).}$$

As outlined in Chapter Three, there were seven predictor variables (excluding the constant) in the instrumental network Base Model. The number of predictor variables increased to nine in the Shift Model with the addition of the two company dummy variables and to 23 in the Moderator Model with the addition of the interaction terms. For the expressive network models, the Base Model had nine predictor variables, the Shift Model had 11 predictor variables, and the Moderator Model had 29 predictor variables.

A primary concern when conducting statistical analyses is to maintain power; 23 and 29 predictor terms (for the instrumental and expressive Moderator Models, respectively), given a sample of 242 individuals, diminishes greatly the statistical power. Cohen (1968) writes that with a few factors one can generate a very large number of

distinct independent variables, and such features of data in an analysis "must be resisted," and Cohen (1968, p. 442) states that "... each esoteric issue posed to the data costs a degree of freedom which is lost from the error estimate... enfeebling the statistical power of the analysis." Cronbach (1975, p. 119) adds: "... once we attend to interactions, we enter a hall of mirrors that extends to infinity." Thus, Cohen (1968) argues aggressively against studies with "prodigious numbers" of independent variables as well as dependent variables. Unfortunately, the large number of dependent variables in this thesis could not be avoided.

With the addition of the interaction terms, the instrumental and expressive personal work network models were no longer conceptually parsimonious. There was also the concern of statistical power. Therefore, I reduced the number of predictor variables for both the instrumental and expressive network models after first creating a hierarchy for the set of predictor variables. The covariates, gender and job category were the most important variables in the instrumental model (see Chapter Three). By excluding job level, the Moderator Model had 14 predictor variables (including interaction terms) instead of 23. For the expressive network, the covariate and gender were essential to test the hypothesis, and I decided that job category and child-rearing responsibilities were more important than the individual's race and job level on the basis of the discussion in Chapter Three. Previous research has indicated that most gender differences in network properties disappear when structural variables such as hierarchical rank are controlled (Ibarra, 1993b, 1992; Moore, 1990). The expressive network Moderator Model had 17 predictor variables (including

interaction terms) instead of 29. Figures 6.1 and 6.2 present the "revised" models.<sup>3</sup>

#### Results of Company and Gender Effects

The R-squared for the three regression models are listed in Table 6.4 (instrumental networks) and Table 6.5 (expressive networks). Tables 6.6 (instrumental networks) and Table 6.7 (expressive networks) present the calculated *F*-statistics for the model comparisons. The Moderator versus Base Model comparison results highlight the effect the respondent's company had on the variance explained for each instrumental network and each expressive network dependent variable. Significant ( $p < .05$ ) company main and/or interaction effects were found in nine of the 11 instrumental network dependent variables and 12 of 18 expressive network dependent variables. The respondent's company had a significant main effect (Shift versus Base Model comparison) on 9 of 11 instrumental network dependent variables and 10 of 18 expressive network dependent variables. Significant company interaction effects were found for three instrumental variables and six expressive variables. The "company" effect is further illustrated in Tables 6.8 and 6.9. The pattern of gender differences for the instrumental and expressive dependent variables was not consistent among the three companies.

These model comparison results reveal that company effects need to be controlled when comparing men's and women's work personal networks. Minimally, company as a main effect must be controlled through the use of dummy variables. Beta coefficients (and their standard errors) for the three models on all the dependent variables are presented in Appendix D. Considering the shift model, which tested for company main effects, a

---

<sup>3</sup>There were no significant differences between men and women in regards to race (95.2% of the men and 90.3% of the women listed themselves as caucasian) and job level (19.6% of the men and 13.8% of the women listed themselves as an executive or senior manager; 34.5% of the men and 41.5% of the women listed themselves as middle management; and 36.5% of the men and 40.4% of the women listed themselves as first-line supervisors).

There were significant differences when one considered the job category and child-rearing responsibilities for the respondents. Cross-tabulations revealed that 20.8% of the women and 8.8% of the men worked in administrative/administrative management roles. Only 39.4% of the women had children 18 years or younger compared to 60.8% of the men.

**FIGURE 6.1**  
Non-Transition/Instrumental Network Model

Predictor Variables

Covariate:  
Number of Individuals Listed

Independent:  
Gender of Study Participant

Control:  
Job Category

Moderator:  
Company

Dependent Variables

Instrumental Network Size and  
Gender Mix:  
Number of Males  
Number of Females

Range:  
Location of Individuals Listed  
Number of Individuals in Same Function  
Number of Different Functions  
Hierarchical Rank of Ties  
Hierarchical Range of Ties

Density

**FIGURE 6.2**  
Non-Transition/Expressive Network Model

Predictor Variables

Covariate:  
Number of Individuals Listed

Independent:  
Gender of Study Participant

Control:  
Job Category  
Child-rearing Responsibility

Moderator:  
Company

Dependent Variables

Expressive Network Size and  
Gender Mix:  
Number of Males  
Number of Females  
Number of Overlapping Instrumental and  
Expressive Ties  
Number of Overlapping Instrumental  
and Expressive Female Ties  
Number of Individuals Listed Seen Outside  
of Work  
Number of Females Seen Outside of Work

Range:  
Location of Ties  
Number of Individuals in Same Function  
Number of Different Functions  
Hierarchical Rank of Ties  
Hierarchical Range of Ties

Density

Frequency of Contact

**TABLE 6.4**

Base, Shift, and Moderator Model Regression R-Squared:  
Instrumental Network Dependent Variables (n = 242)

Dependent Variables	n	Base Model: R-Squared <sup>1</sup>	Shift Model: R-Squared <sup>2</sup>	Moderator Model: R-Squared <sup>3</sup>
# of Individuals Listed	242	.008	.038	.095
# of Males	242	.695	.720	.730
# of Females	242	.409	.456	.476
Location of Individuals Listed:				
Same Site	240	.319	.391	.414
Different Site/Same City	240	.064	.125	.159
Different Site/Different City	240	.058	.242	.266
# of Individuals in Same Function	241	.135	.185	.239
# of Different Functions	241	.317	.331	.355
Hierarchical Rank	241	.030	.064	.128
Hierarchical Range	241	.041	.096	.129
Density	227	.080	.084	.154

<sup>1</sup>Base Model: There are five explanatory variables (including the constant) in the instrumental ties model.

<sup>2</sup>Shift Model: There are seven explanatory variables (including the constant) in the instrumental ties model.

<sup>3</sup>Moderator Model: There are 15 explanatory variables (including the constant) in the instrumental ties model.



**TABLE 6.5**

Base, Shift, and Moderator Model Regression R-Squared:  
Expressive Network Dependent Variables (n = 242)

Dependent Variables	n	Base Model: R-Squared <sup>1</sup>	Shift Model: R-Squared <sup>2</sup>	Moderator Model: R-Squared <sup>3</sup>
# of Individuals Listed	242	.015	.033	.044
# of Males	242	.715	.726	.766
# of Females	242	.580	.596	.655
# of Overlapping Ties	242	.299	.339	.378
# of Overlapping Females	242	.168	.172	.219
# of Individuals Listed Seen Outside of Work	238	.435	.440	.474
# of Female Seen Outside of Work	238	.338	.349	.400
Location of Individuals Listed:				
Same Site	238	.482	.522	.555
Same City/Different Site	238	.177	.223	.273
Different City/Different Site	238	.119	.226	.265
# of Individuals in Same Function	238	.477	.514	.563
# of Different Functions	236	.196	.248	.324
Hierarchical Rank	234	.078	.091	.131
Hierarchical Range	234	.026	.110	.174
# of Supervisors	238	.073	.076	.160
# of Subordinates	238	.228	.251	.313
Density	224	.054	.060	.090
Frequency of Contact	224	.166	.186	.220

<sup>1</sup>Base Model: There are six explanatory variables (including the constant) in the expressive ties model.

<sup>2</sup>Shift Model: There are eight explanatory variables (including the constant) in the expressive ties model.

<sup>3</sup>Moderator Model: There are 18 explanatory variables (including the constant) in the expressive ties model.

**TABLE 6.6**

Comparison of Regression Models:  
Instrumental Network Dependent Variables (n = 242)

Dependent Variables	Moderator vs. Base Model: F-Statistic <sup>1</sup>	Moderator vs. Shift Model: F-Statistic <sup>2</sup>	Shift vs. Base Model: F-Statistic <sup>3</sup>
# of Individuals Listed	2.793**	2.448*	3.693*
# of Males	2.932**	1.093	10.256***
# of Females	2.933**	1.093	10.259***
Location of Individuals Listed:			
Same Site	3.631***	1.075	13.818***
Same City/Different Site	2.528***	1.144	8.023***
Different Site/Different City	6.368***	0.917	28.251***
# of Individuals in Same Function	3.078**	1.977	7.240*
# of Different Functions	1.341	1.077	2.388
Hierarchical Rank	2.542**	2.055*	4.333*
Hierarchical Range	2.299*	1.080	7.156**
Density	1.874	2.210*	0.505

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

<sup>1</sup>Moderator-Base Model Level of Significance: Instrumental ( $F_{10, > 120}$  at the .05% level = 1.91, at the .01 level = 2.47, at the .001 level = 3.24).

<sup>2</sup>Moderator-Shift Model Level of Significance: Instrumental ( $F_{8, > 120}$  at the .05% level = 2.02, at the .01 level = 2.66, at the .001 level = 3.55).

<sup>3</sup>Shift-Base Model Level of Significance: Instrumental ( $F_{2, > 120}$  at the .05% level = 3.07, at the .01 level = 4.70, at the .001 level = 7.32).

**TABLE 6.7**

Comparison of Regression Models:  
Expressive Network Dependent Variables (n = 242)

Dependent Variables	Moderator vs. Base Model: F-Statistic <sup>1</sup>	Moderator vs. Shift Model: F-Statistic <sup>2</sup>	Shift vs. Base Model: F-Statistic <sup>3</sup>
# of Individuals Listed	0.696	0.334	2.194
# of Males	4.047***	3.843***	4.518*
# of Females	4.053***	3.848***	4.527*
# of Overlapping Ties	2.355**	1.383	7.098**
# of Overlapping Females	1.214	1.349	0.530
# of Individuals Listed Seen Outside of Work	1.379	1.445	1.031
# of Female Seen Outside of Work	1.896*	1.872	1.946
Location of Individuals Listed:			
Same Site	3.017**	1.639	9.634***
Same City/Different Site	2.421**	1.501	6.871**
Different City/Different Site	3.617***	1.148	15.862***
# of Individuals in Same Function	3.563***	2.451*	8.581***
# of Different Functions	3.462***	2.479**	7.864***
Hierarchical Rank	1.100	1.004	1.581
Hierarchical Range	3.232***	1.685	10.648***
# of Supervisors	1.898*	2.201*	0.363
# of Subordinates	2.274*	1.963*	3.676*
Density	0.684	0.665	0.789
Frequency of Contact	1.199	0.888	2.770

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

<sup>1</sup>Moderator-Base Model Level of Significance: Instrumental ( $F_{12, > 120}$  at the .05% level = 1.83, at the .01 level = 2.34, at the .001 level = 3.02).

<sup>2</sup>Moderator-Shift Model Level of Significance: Instrumental ( $F_{10, > 120}$  at the .05% level = 1.91, at the .01 level = 2.47, at the .001 level = 3.24).

<sup>3</sup>Shift-Base Model Level of Significance: Instrumental ( $F_{2, > 120}$  at the .05% level = 3.07, at the .01 level = 4.70, at the .001 level = 7.32).

**TABLE 6.8**  
Comparison of Respondent Sample versus Individual Company Comparisons Results:  
Instrumental Network Dependent Variables (n = 242)

Dependent Variables	Combined Non- Parametric <sup>1</sup> p-values	Combined Regression Shift Model p-values	Bank Non- Parametric <sup>1</sup> p-values	Forestry Non- Parametric <sup>1</sup> p-values	Insurance Non- Parametric <sup>1</sup> p-values
# of Individuals Listed			.016		
# of Males	.007	< .001	.003		.048
# of Females	.003	< .001		.010	.001
Location of Individuals Listed:					
Same Site					
Same City/Different Site					
Different City/Different Site			.024		
# of Individuals in Same Function					
# of Different Functions			.064	.061	.061
Hierarchical Rank					
Hierarchical Range					
Density	.039	< .05		.016	

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.

**TABLE 6.9**  
Comparison of Respondent Sample versus Individual Company Results:  
Expressive Network Dependent Variables (n = 242)

Dependent Variables	Combined Non- Parametric <sup>1</sup> p-values	Combined Regression Shift Model p-values	Bank Non- Parametric <sup>1</sup> p-values	Forestry Non- Parametric <sup>1</sup> p-values	Insurance Non- Parametric <sup>1</sup> p-values
# of Individuals Listed					
# of Males	.000	< .001	.005		.000
# of Females	.000	< .001	.001	.001	.000
# of Overlapping Ties					
# of Overlapping Females	.001	< .01		.002	.020
# of Individuals Listed Seen Outside of Work					
# of Female Seen Outside of Work	.000	< .001	.006	.018	.000
Location of Individuals Listed:					
Same Site	.062	< .05			
Same City/Different Site	.007		.020		
Different City/Different Site					
# of Individuals in Same Function		< .10			
# of Different Functions	.044			.017	.057
Hierarchical Rank			.073		
Hierarchical Range	.028	< .10			
# of Supervisors	.034	< .05	.071		.058
# of Subordinates					
Density	.002	< .05		.020	.071
Frequency of Contact	.000	< .001	.048	.084	.000

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.

significant ( $p < .05$ ) bank and/or forestry company main effect was found for 10 of the eleven instrumental dependent variables<sup>4</sup> and for 8 of 18 expressive network dependent variables<sup>5</sup>.

Gender differences. The regression results confirm the gender instrumental network differences found through the Mann-Whitney U non-parametric tests (Table 6.10). Men had developed more homophilous instrumental networks (consisting of 7.24 men and 3.64 women, compared to 5.62 men and 4.61 women for the women respondents) that were higher in density (0.29 versus 0.21;  $p = .039$ ). Research Question 1a asked: Do the instrumental work networks of men differ from the instrumental work networks of women? Beyond the gender composition and density differences, men and women did not differ significantly on the remaining instrumental network characteristics.

The results from the expressive network non-parametric tests and regression analyses (Table 6.11) are not as consistent as the instrumental network findings. For the most part, the regression models confirm the Mann-Whitney U non-parametric results. The majority of men's and women's expressive ties were homophilous. Men's expressive networks averaged 5.92 males, women 3.50 males ( $p < .001$ ). Women's expressive networks averaged 5.31 females, men 2.46 females ( $p < .001$ ). Women saw more women outside of the office (3.12 versus 1.00;  $p < .001$ ) and had more female overlapping ties (between their instrumental and expressive networks) than did men (1.20 versus 0.69,  $p < .001$ ), and women had less contact with their friends in comparison to men (2.97 versus 3.66,  $p < .001$ ).

The results were not as consistent between the non-parametric tests and regression analyses when one considers the location and hierarchical range of the people listed, as well

---

<sup>4</sup>The lone exception was density.

<sup>5</sup>These nine expressive network dependent variables included: number of overlapping expressive and instrumental ties, number of individuals listed at same site, number of individuals listed at different site/same city, number of individuals listed at different site/different city, number of individuals listed at same function, number of different functions listed, hierarchical range of individuals listed, and frequency of contact.

**TABLE 6.10**  
**Gender Comparison of Non-Parametric and Regression Models Results:**  
**Instrumental Network Dependent Variables (n = 242)**

Dependent Variables	Male Means	Female Means	Non-Parametric <sup>1</sup> p-values	Base Model Betas	Shift Model Betas	Moderator Model Betas
# of Individuals Listed	10.89	10.22				
# of Males	7.24	5.62	.007	-1.043***	-0.898***	-0.977***
# of Females	3.64	4.61	.003	1.043***	0.898***	0.978***
Location of Individuals Listed:						
Same Site	6.20	5.43				
Same City/Different Site	2.50	2.66				
Different City/Different Site	2.18	2.18				
# of Individuals in Same Function	4.51	3.88				
# of Different Functions	3.72	3.96				
Hierarchical Rank	-0.08	-0.05				
Hierarchical Range	0.86	0.89				
Density	0.29	0.21	.039	-0.077*	-0.70*	

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

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.

TABLE 6.11

Gender Comparison of Non-Parametric and Regression Models Results:  
Expressive Network Dependent Variables (n = 242)

Dependent Variables	Male Means	Female Means	Non-Parametric <sup>1</sup> p-values	Base Model Betas	Shift Model Betas	Moderator Model Betas
# of Individuals Listed	8.38	8.81				
# of Males	5.92	3.50	.000	-2.610***	-2.425***	-2.341***
# of Females	2.46	5.31	.000	2.610***	2.425***	2.341***
# of Overlapping Ties	2.61	2.34				
# of Overlapping Females	0.69	1.20	.001	0.437**	0.417**	0.373*
# of Individuals Listed Seen Outside of Work	4.21	4.70				
# of Female Seen Outside of Work	1.00	3.12	.000	1.958***	1.817***	1.765***
Location of Individuals Listed:						
Same Site	5.79	4.70	.062	-1.364**	-0.924*	-0.915*
Same City/Different Site	1.60	2.55	.007	0.810*		
Different City/Different Site	1.21	1.58				
# of Individuals in Same Function	5.28	4.64				
# of Different Functions	2.18	2.72	.044	-0.944*	-0.725*	-0.791*
Hierarchical Rank	-0.31	-0.41				
Hierarchical Range	0.91	1.02	.028	0.120*	0.089#	
# of Supervisors	0.38	0.23	.034	-0.143*	-0.151*	-0.127#
# of Subordinates	1.37	1.31				
Density	0.24	0.16	.002	-0.081**	-0.072*	-0.075*
Frequency of Contact	3.66	2.97	.000	-0.727***	-0.687***	0.724***

# p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.



as the number of supervisors considered to be friends, and the density of the networks. One particularly anomalous finding was that the number of different functions from which a respondent drew his or her expressive ties was significant in the regression analyses, but not in the non-parametric tests. However, the number of individuals working in the same function as the respondent was significant in the non-parametric tests, but not in the regression analyses.

Hypothesis 1a posited that men's expressive work networks would differ from women's expressive networks. One could conclude that the expressive networks of men do differ from the expressive networks of women. The "strongest" differences involve the gender composition network characteristics (e.g., number of males listed, number of overlapping female ties); however, the number of male-female personal work network differences diminishes greatly when one excludes the results which attest to the degree of same-sex individuals found in the expressive networks.

Control variables and interaction terms. Few control variables' (e.g., child-rearing and job level) beta coefficients were significant (see Appendix D). Considering the Shift Model (which controlled for company main effects), the child-rearing beta coefficients were not significant on any of the expressive network dependent variables. In comparison to the child-rearing control variable, more job category control variables (i.e., the administrative vs. management dichotomy) were significant. Holding an administrative position impacted significantly the number of males and females in both the instrumental and expressive networks and the number of expressive individuals who worked at the same sites as the respondent. In fact, women who held administrative positions had, on average, 2.5 less males in their instrumental networks and 3.7 less males in their expressive networks than did their male counterparts. Furthermore, the location of expressive individuals, the positional rank of the expressive individuals, and the number of subordinates included in the expressive networks were affected if the individuals were working in non-administrative management positions.

Overall, there were more significant ( $p < .05$ ) interaction beta coefficients, but the

majority of these significant coefficients involved the "company x covariate (number of individuals listed)" interaction terms. Only 9 of the possible 58 "gender x company" beta coefficients were significant.<sup>6</sup> There were only 5 significant "company x control variable" beta coefficients.<sup>7</sup> Finally, 11 of 54 "company x covariate" interaction terms were significant.<sup>8</sup>

### THE PROMOTION STUDY

The promotion study first examined the same research question and hypothesis as did the non-transition study, the only difference between the two studies being the population studied. Male and female dependent variable means are listed in Tables 6.12 and 6.13. These means are from the data collected in the second (or follow-up) questionnaire, and the results from the non-parametric tests and regression analyses are also provided in the same tables.

There were no significant differences (at the .05 level) between men's and women's instrumental networks, though the size of the networks, the number of males in the networks, and the number of individuals listed at a different site and different city did approach significance ( $p < .10$ ). Expressive network significant differences included the

---

<sup>6</sup>The significant "gender x company" beta coefficients included: instrumental (gender x bank -- size); expressive (gender x bank -- number of males listed, number of females listed, number of individuals listed working at a different site in a different city, number of individuals listed working in the same function, and number different functions listed; gender x forest -- number of males listed, number of females listed, and number of females seen outside of work).

<sup>7</sup>The significant "company x control variable" beta coefficients included: instrumental (manager x forest -- same function); expressive (children x bank -- number of males listed, number of females listed; administrative x forest -- hierarchical range; and manager x bank -- hierarchical range).

<sup>8</sup>The significant "company x covariate" beta coefficients included: instrumental (bank -- number of individuals listed at same site; forest -- number of individuals at same hierarchical rank); expressive (bank -- number of males listed, number of females listed, number of individuals listed at same site, number of individuals listed at different site/different city, and number of individuals listed in same function; forest -- number of overlapping expressive and instrumental ties, number of individuals listed working at a different site/same city, number of individuals listed in same function, number of different functions listed).

**TABLE 6.12**Gender Non-Parametric<sup>1</sup> and Regression Results:

Promotion Sample Instrumental Network Dependent Variables (n = 33)

Dependent Variables	Male Means/(SD)	Female Means/(SD)	Non- Parametric p-values	Regression Model Betas
# of Individuals Listed	10.23 (4.89)	7.10 (4.12)	.056	
# of Males	6.00 (3.63)	3.35 (3.15)	.053	
# of Females	4.23 (2.24)	3.75 (2.57)		
Location of Individuals Listed:				
Same Site	1.54 (2.26)	2.85 (3.65)		2.12 <sup>#</sup>
Same City/Different Site	4.46 (5.46)	3.30 (3.61)		
Different City/Different Site	4.23 (4.87)	0.95 (1.23)	.091	-2.86 <sup>*</sup>
# of Individuals in Same Function	3.46 (3.99)	3.05 (2.63)		
# of Different Functions	3.38 (1.76)	2.60 (2.62)		
Hierarchical Rank	0.02 (0.86)	-0.06 (0.81)		
Hierarchical Range	0.98 (0.42)	1.01 (0.47)		
Density	0.27 (0.27)	0.38 (0.34)		

# p &lt; .10; \* p &lt; .05

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.

**TABLE 6.13**

Gender Non-Parametric<sup>1</sup> and Regression Results:  
Promotion Sample Expressive Network Dependent Variables

Dependent Variables	Male Means/(SD)	Female Means/(SD)	Non-Parametric p-values	Regression Model Betas
# of Individuals Listed	9.23 (5.04)	8.05 (4.24)		
# of Males	4.23 (3.12)	2.05 (1.76)	.035	-1.79*
# of Females	5.00 (3.79)	6.00 (3.42)		1.79*
# of Overlapping Ties	3.08 (2.36)	2.35 (1.46)		
# of Overlapping Females	1.69 (1.49)	1.75 (1.29)		
# of Individuals Listed Seen Outside of Work	5.62 (4.43)	4.10 (2.83)		
# of Female Seen Outside of Work	3.08 (3.66)	3.00 (2.42)		
Location of Individuals Listed:				
Same Site	2.08 (1.61)	3.20 (3.16)		
Same City/Different Site	3.15 (3.89)	3.75 (3.57)		
Different City/Different Site	4.00 (4.44)	1.10 (2.05)	.034	-2.61*
# of Individuals in Same Function	5.15 (4.53)	4.15 (3.23)		
# of Different Functions	2.08 (1.80)	2.15 (1.60)		
Hierarchical Rank	-0.58 (0.56)	-0.37 (0.62)		
Hierarchical Range	1.06 (0.33)	0.94 (0.40)		
# of Supervisors	0.38 (0.51)	0.25 (0.44)		
# of Subordinates	1.23 (1.30)	1.75 (2.05)		
Density	0.26 (0.25)	0.27 (0.30)		
Frequency of Contact	3.07 (0.85)	3.30 (1.07)		

# p < .10; \* p < .05

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed

number of males and the number of individuals listed at a different site in a different city on the basis of Mann-Whitney U non-parametric tests.

With only 33 respondents, the promotion models, which included a covariate, an independent variable and control variables (as outlined in Chapter 3), could not be tested using regression analysis without compromising statistical power. Consequently, only the covariate and the gender of the individuals were included as predictor variables in the regression analyses. The lone significant result for both the instrumental and expressive networks (Tables 6.12 and 6.13) was that the women tended to draw fewer expressive ties from different sites in different cities in comparison to the men. On the basis of the regression analyses, the gender composition of the expressive networks differed between men and women. Basically, the personal work networks of the men and women did not differ.

Hypothesis 2. Two additional hypotheses were tested in the promotion study. The first studied the turnover in men's and women's expressive networks following promotions. Analysis was limited by the operationalization of turnover and the small respondent sample. The 33 respondents were compared<sup>9</sup> on the number of individuals added to, dropped from, and remaining in their expressive networks after their promotions. Means are listed in Table 6.14. The expressive networks for both genders remained relatively the same size from the first data collection to the second. However, there was turnover in the expressive networks of both men and women. Though there were no significant gender differences as to the degree of turnover, men and women added approximately four individuals on average while dropping approximately four people from their expressive networks. Regression analyses were conducted with the gender of the respondent and time with employer serving as predictor variables. There were no significant beta coefficients for the dependent variables: individuals added to, dropped from, or remaining in the network.

No formal hypothesis was offered as to the extent of turnover in men's and

---

<sup>9</sup>The Wilcoxon related-sample method was used to compare men and women.

**TABLE 6.14**

**Gender Comparison of Turnover in Expressive and Instrumental Networks:  
Promotion Respondent Sample (n = 33)**

	Ties Added	Ties Dropped	Ties Remaining	Time 1 Size	Time 2 Size
<b>Expressive Network:</b>					
Male Means	4.08	4.25	3.58	7.83	7.67
Female Means	3.86	4.24	5.14	9.38	9.00
p-value <sup>1</sup>	.94	.64	.12	.31	.47
<b>Instrumental Network:</b>					
Male Means	7.25	5.33	2.08	7.42	9.33
Female Means	6.33	5.76	1.71	7.48	8.05
p-value <sup>1</sup>	.46	.46	.46	.68	.52

<sup>1</sup>Mann-Whitney U non-parametric test.

women's networks; however, the results are provided in Table 6.14. Again, there were no gender differences in the number of individuals added, dropped, and remaining 8 months following the promotions. Only two individuals on average remained in the instrumental networks, and overall, the networks grew in size following the promotion, though not significantly.

Hypothesis 3. This hypothesis considered the change in the hierarchical rank and range of women's expressive networks. It was posited that following promotions the positional range of women's ties would increase. Related-sample, non-parametric tests were conducted comparing the hierarchical rank and range of women's ties between Time 1 and Time 2. There was no significant hierarchical rank change, -0.40 in Time 1 versus -0.37 in Time 2. A significant hierarchical range change was found as the positional range of the women's ties dropped from 1.20 to 0.94 ( $p = .028$ ).

In summary, this thesis set out to explore the extent of similarities and/or differences in men's and women's personal work networks. Few differences were found in men's and women's instrumental networks. There were more differences between their expressive networks. Discussion of the results follows in the next chapter.

## Chapter Seven: DISCUSSION and SUMMARY

The tables presented in Chapter Six and its corresponding appendices belie the simple intent of this thesis, which was to study the similarities and differences of men's and women's personal work networks. The assumption currently established in the literature is that there are differences between men's and women's personal work networks.

Considering the results from the present non-transition study, there were few differences between men's and women's instrumental work networks; however, there were differences between men's and women's expressive work networks. In discussing the results and their possible implications, this chapter is divided into four sections: (1) the non-transition study, (2) the promotion study, (3) the thesis' limitations, and (4) the status of (and future for) personal work network research.

### THE NON-TRANSITION STUDY

This study was designed to explore gender personal network similarities and differences, and I begin by reviewing the gender difference results.

#### Gender Effects

The lack of significant gender differences in the instrumental networks was not surprising. In order to effectively and efficiently complete the tasks associated with their jobs, men and women should have relatively similar instrumental networks. In this study, men and women reported similar size networks, comprised of people from similar locations, functions, and hierarchical levels. The men's networks had greater density, and this result corroborates past research that demonstrated that men tend to be more activity- and group-oriented with others in their networks (Aukett et al., 1988; Sapadin, 1988).

The intriguing instrumental network result was the gender composition of men's and women's networks. Men's instrumental work networks displayed greater homophily than did the women's instrumental work networks. This finding coincides with those of Ibarra



(1992, 1993b). At issue is whether it is "problematic" for women's networks to have a higher proportion of women than men. Because women tend to be outside the dominant coalition, thanks in part to the glass ceiling effect (see Morrison, White, & Van Velsor, 1987), networks with greater female representation could be dominated by women with lower positional rank. Yet, this was not the case in this study, as the men and women respondents did not differ in the hierarchical rank or range of their instrumental ties. Moreover, in both the men's and women's expressive networks, women accounted for fewer than 50% of the individuals listed (45% for the women respondents and 33% for the men).

Gender differences were most evident in men's and women's expressive networks, as discussed below.

Expressive network size. The men from the three organizations did not list more expressive ties than did the women. Though not significant, women had slightly larger expressive networks (8.81 versus 8.38). This finding is contrary to that of Mayhew and Levinger (1976), who concluded that women tend to develop more intense ties than men, and consequently, it may be harder for women to maintain as many expressive ties as men.

One plausible explanation for the lack of differences between the sizes of men's and women's expressive networks is the expressive tie definition provided in the questionnaires (see Chapter Five). The definition is an "activity-oriented" (or allegedly male) definition, and consequently, the definition ignores the "emotion-sharing" (or allegedly female) aspects of friendship. Specifically, women tend to disclose more personal information and establish more emotionally intimate friendships (Aukett et al., 1988; Sapadin, 1988). It is possible that a more complete definition of friendship may have led the sample respondents -- especially the women -- to list different individuals (while excluding others), thus resulting in expressive networks differing in size between the genders.

Homophily. The results of this study confirmed the differentiated gender pattern of men's and women's expressive networks. Men's expressive networks had, on average, 5.92 males and 2.46 females; women's expressive networks, 3.5 males and 5.31 females.

This homophilous pattern is particularly significant when one considers the sex of those individuals who were listed as both instrumental and expressive ties, and the sex of those individuals seen socially outside of work. Ibarra's work (1992, 1993a) demonstrated that men and women maintain more homophilous ties in their expressive networks than in their instrumental networks, on the basis of the exchange of resources. Lincoln and Miller (1979) concluded that ascribed attributes influence expressive ties more than instrumental ties because social homogeneity makes communication easier and behavior more predictable, and fosters relationships of trust and reciprocity.

When considering a respondent's expressive network, the individuals listed were more likely to be of the same gender as the respondent. This trend of same-sex friends was also evident if these friends were seen outside of the workplace and/or were also listed as instrumental. It is possible that those ties, which overlap between the instrumental and expressive networks and are also seen outside of work, represent the strongest ties.<sup>1</sup> This is critical because Granovetter (1982) indicates that stronger ties invariably exhibit a greater motivation to be of assistance, and thus, this would mean that men and women end up relying the most on same-sex individuals within the workplace.

Overlap between instrumental and expressive networks. The male and female respondents did not differ significantly on the number of overlapping ties between their instrumental and expressive networks. This result is also contrary to past research, as men supposedly acknowledge who their friends are on the basis of what they do with them (Roberto & Kimboko, 1989), and consequently, men tend to develop expressive ties through their involvement in various organizational activities (i.e., work activities). Ibarra (1993a) argued that women invariably have to look outside their work activities in order to develop expressive relationships with other women (Ibarra, 1993a), thus decreasing the

---

<sup>1</sup>Tie strength is established on the basis of: (1) the frequency and recency of contact, (2) the emotional intensity and level of mutual confiding, (3) the level of reciprocity built into the relationship and/or (4) the number of roles played by the individuals (e.g., instrumental and expressive in the case of this study) (Granovetter, 1973; Krackhardt, 1990).

likelihood of overlapping ties.

However, this may not necessarily be correct, as individuals may have some choice in deciding with whom they work. The individuals with whom one works are not entirely prescribed by the task interdependencies of the organization's work flow, and individuals, in general, may have some leeway in developing instrumental ties. The fact that there may be working relationships, prescribed by the company's structure, does not preclude individuals from developing additional, non-prescribed instrumental ties. If so, these additional instrumental ties could come from already established expressive ties. Expressive networks are invariably more homophilous, and overlapping ties tend to be homophilous. Therefore, the extent of homophily in overlapping relationships could be the result of homophilous expressive ties becoming instrumental ties instead of the instrumental ties becoming expressive ties. For example, a woman could develop a friendship with another woman in the organization, and even though there was no task interdependence between the two at the start of their friendship, the friendship could end up being instrumental to their performing their respective jobs.

Range. The results of this study attest to the greater functional range in women's expressive networks. Women tend to have expressive networks with higher functional range because they must look outside their work activities in order to develop friendships (Ibarra, 1993a, 1993b). Though not significant, the number of expressive ties working in the same function was lower for women in comparison to men (4.64 versus 5.28,  $p = .280$ ), but the number of different functions from which the expressive ties were drawn was greater for women (2.72 versus 2.18,  $p = .044$ ). Furthermore, the men were more likely to include their supervisors (but not their subordinates) in their personal work networks than were women (.38 versus .23,  $p = .034$ ). This finding corresponds to the belief that men supposedly develop friendships on the basis of doing things with people (Sapadin, 1988). Yet, with a higher proportion of supervisors in their expressive networks, the hierarchical rank of men's expressive ties did not differ significantly in comparison to the women. This is contrary to Brass' conclusion (1985) that men tend to have ties with

higher positional range because men invariably comprise the dominant coalition in most organizations.

Density. Men and women did differ significantly in the density of their expressive networks (.24 for men versus .16 for women,  $p = .002$ ). Logically, if men do develop relationships through activities and shared experiences, then one could posit that men's work networks are more dense than those of women. On the other hand, women develop more dyadic relationships that would not necessarily develop into dense clusters of relationships.

Frequency of Contact. Finally, men and women did differ significantly in the frequency of contact that they had with the individuals listed in their respective expressive networks. Through their various activities (including work), men would seemingly have a greater chance to be in contact with their friends. Women would not necessarily have the same frequency of contact with their friends because of the dyadic, intense nature of their ties. This difference in the frequency of contact could partially explain why men and women have expressive personal work networks of similar size. Women could maintain as many ties as men, even though these ties may be more intense and dyadic, because the frequency of contact is lower for women in comparison to men.

#### Interpreting the Instrumental and Expressive Network Differences

The expressive network non-parametric tests and regression analyses were consistently significant when one considers the gender of the ties, the density of the ties, and the frequency of the contact with the individuals listed. These results paralleled the instrumental network results, and corroborated previous research findings (Ibarra, 1992, 1993b; Lincoln & Miller, 1979). Both Ibarra (1992, 1993b) and Lincoln and Miller (1979) found that men's instrumental and expressive networks were homophilous, whereas women's expressive networks were homophilous but their instrumental networks exhibited a more differentiated pattern.

The lack of extensive gender personal work network differences may appear counter-intuitive to some. This is especially true if we start with the assumption that there

should be differences. From the outset, I have argued that such an assumption may be incorrect, and the results of the non-transition study cast doubt on the viability of the gender personal work network differences assumption. Disregarding the possible limitations or methodological deficiencies of this study, company effects and time effects provide two possible explanations for the lack of differences between men and women.

Company effects. Companies will differ in the total number of women employed, the number of women in management positions, the number of operating sites, the number of hierarchical levels, the number of functional departments, and the emphasis placed on working with others. These company differences will impact the networks that develop within the workplace. In testing for company main and interaction effects, I found that an employee's company was an important predictor variable. Company characteristics may impact the structure of the personal work networks, and consequently, company characteristics will need to be considered in future studies that compare and contrast men's and women's personal work networks.

The data analyses did not find consistent gender differences among the three companies. The only consistent gender finding (see Tables 6.8 and 6.9) was that, regardless of the company, there were more gender differences among the dependent variables in the expressive networks than in the instrumental networks. The instrumental network differences included: the number of males and females listed and the density of the networks. On the other hand, the expressive network differences included: the number of males and females listed, the number of overlapping females, the number of women seen outside of work, the work location of the individuals listed, the number of individuals working in the same function as the respondent, the number of different functions listed, the number of supervisors listed, the density of the network, and the frequency of contact.

The forestry company results provide a graphic example of how company characteristics can impact the networks of both men and women. The forestry company is a male-dominated industry. There are few women managers and supervisors, and there are few women employees who work in the mills. The small proportion of women employees

has an impact on the number of women listed in women's expressive networks. Within the forestry company, women's expressive work networks, on average, had nearly five men and four women. The women in the insurance and banking companies had a clear majority of female-to-male friends (bank: 5.3 females to 3.1 males; insurance: 6.0 females to 3.3 males).

Lincoln and Miller (1979) concluded that one's sociometric characteristics (e.g., sex, race, level of authority) tend to have a greater impact on the expressive relationships that a person develops in the workplace, whereas structural characteristics (e.g., the formal division of labor) tend to have a greater impact on the development of instrumental networks. Yet, I would argue that explaining differences in personal work networks is dependent upon the characteristics of both the individual and the company. For example, the extent that individuals develop ties with individuals of the same sex is the result of induced homophily and choice homophily (Ibarra, 1993b). Women associating with other women is not only dependent upon having just men to work with (i.e., induced homophily), but is also dependent upon their wanting to associate with other women (i.e., choice homophily).

The relative effect (and importance) of choice versus induced homophily is open to debate and further study. What cannot be overlooked in future research is the role that company or industry-specific characteristics play. In this thesis, company was confounded by industry. The response sample was drawn from three companies with very different normative missions that affected the gender composition of the organizations. The forestry company represents an industry that is production-oriented, where the work is physically demanding. The insurance company, though providing a service, is cost-control oriented, while the bank is service-convenience oriented.

Future research will have to consider the effects the company (or industry) have on personal work networks; however, there is no clear answer, on the basis of this study's results, as to whether there is a company main effect (shift model) or a company interaction effect (moderating effect). With a main effect, the inclusion of company dummy variables

would explain additional variance for each of the dependent variables, whereas a moderator effect would mean that the relationships between the predictor variable (i.e., gender) and the dependent variables would depend upon the moderator variable (i.e., the company).

Minimally, there is a company main effect (shift model) because at least one of the company dummy variables was significant in all eleven instrumental network variables and 10 of the 18 expressive network variables. Either the bank and/or the forest company dummy variable was significant on 9 of 11 instrumental variables and on 8 of 18 expressive variables, adding further evidence of company main effects. The introduction of interaction terms (in the Moderator Regression Model) resulted in significant company interaction effects for three instrumental network and six expressive network variables. However, the probability of finding these significant company interaction effects was increased for two reasons. First, in creating the Moderator Model, up to 10 interaction terms were added to the Shift Model. Second, the majority of the R-squared in the Shift Model were below .50. It is likely that adding that many interaction terms when much of the variance remained unexplained (on all of the dependent variables studied) would increase the likelihood of a significant interaction effect.

There is limited evidence to suggest that attention should be paid to the possibility of interaction effects. However, these company interactions are difficult to interpret. Yet, company as a main effect is a definite confound and will have to be considered in future research. Of the three models tested, I consider the shift model, which controls for company main effects, the most viable for future research.

Time effects. In discussing the results with the individuals who served as contacts at the data sites, I found that they were surprised by the lack (and size) of differences between men's and women's personal work networks, and one question kept coming up: "I wonder what the results would have looked like 10 years ago?" These individuals honestly believed that there may have been more gender differences in personal work networks 10 years ago, and they may have been right. Consider for a moment that there have been profound changes in the economy (i.e., changes in the supply and demand of

certain jobs), workforce demographics (i.e., more women moving into the labor force for myriad reasons), and the law (i.e., equal opportunity and affirmative action legislation in the United States). We have also seen an influx of women attending business schools and an increase in networking seminars for women. Finally, over the past 10 years, more women have been moving into management positions, though still not in proportion to their representation in the workforce.

Given these on-going changes, one could ask how long will the personal work networks differences discussed above generalize to the organizations in this study?

Cronbach (1975, pp. 122-123) writes:

Generalizations decay. At one time a conclusion describes the existing situation well, at a later time it accounts for rather little variance, and ultimately it is valid only as history. The half-life of an empirical proposition may be great or small. The more open a system, the shorter the half-life of relations within it are likely to be.

An example of Cronbach's point is Kanter's assertion of gender personal work network differences. In 1977, Kanter's assertions were correct. However, in the almost 20 years since her seminal piece, Men and Women of the Corporation, was published, no one would dare to argue that times have not changed. With changing times have come changing personal work networks. There may have been more pronounced personal work network differences between men and women 10 years ago (e.g., average hierarchical rank of individuals listed); however, today, considering these organizations only, gender may not be as important as company characteristics in explaining the differences in personal work networks.

If men's and women's personal work networks have become more comparable in the past 10 years, the question of interest is "Why?" Possible explanations include, but are not limited to: (a) the effects of career transitions, (b) changing organizational structures, and/or (c) changing individual characteristics. For example, more women are moving into supervisory and managerial positions, organizations have become leaner with a greater emphasis on teamwork, and consequently, men and women have become more accustomed



to working together.

Significant differences in men's and women's personal work networks were found, and these differences were limited to the gender composition, density, and frequency of contact. Consequently, the results do not attest to the current assumption that there are vast differences between men's and women's personal work networks.

I have argued that the lack of extensive differences may be due to company/industry or time effects. However, true differences may have also been masked by variable operationalizations used in the analysis of the data. The lack of significant child-rearing responsibilities findings provides one such example. In testing for child-rearing responsibilities, a dummy variable was created. Individuals with children 18 years old or younger constituted one group. Individuals with no children or children older than 18 years of age comprised the other. It is possible that having young children may have a greater impact on expressive networks than having teenage children. If so, differences may have been concealed by creating one category for child-rearing responsibilities.

### THE PROMOTION STUDY

The promotion study results provide little information, given the research questions and hypotheses and the small sample size. There were no significant differences found between the instrumental and expressive networks of the 33 respondents; however, that does not mean that there were no differences. Differences may not have been detected due to sampling deficiencies. The respondent sample was very small (33 individuals out of a possible sample of 162), and these results may not adequately represent the company from which the sample was drawn. Yet, even if there had been significant differences, the generalizability within the bank would have been limited because of the sample size. There were few male and female differences prior to the promotions,<sup>2</sup> and one would think that,

---

<sup>2</sup>From the data provided at (or near) the time of their promotions, the men and women differed significantly on: the number of individuals listed and the number of males listed in their instrumental networks; and the number of males and the hierarchical range of the ties listed in their expressive networks.

prior to the promotions and even 8 months after the promotions, the respondents' expressive and instrumental networks would exhibit some of the same differences found in the non-transition study. This is especially true when we consider homophily. The non-transition study corroborates the significant findings from past research that men and women develop homophilous expressive networks; however, this association pattern was not evident in the promotion study expressive networks.

Hypothesis 2 posited that there would be more turnover (i.e., the number of individuals added and dropped) in the expressive networks of the male respondents than in the women's expressive networks, but the results did not support this hypothesis. (There were no significant differences in the changes between men's and women's instrumental networks either.) Again, the small sample may have adversely impacted my ability to detect gender differences, but the results are still interesting because of the extent of the changes. Eight months following the promotions, the average number of instrumental ties remaining was approximately two (or roughly 27% of the individuals listed as instrumental prior to the promotion). The percentage of ties remaining in the expressive networks was 45% for the men and 55% for the women.

It would seem likely that these changes would affect the social support present and available in the individuals' instrumental and expressive personal work networks. Following their promotions, individuals are "learning the ropes" of their new jobs; however, fellow workers, who in the past have provided advice, support, and friendship, are not available or able to provide support. It is ironic that at the very time an individual would need social support, changes to his or her network may prevent him or her from receiving the support.

Finally, Hypothesis 3 considered the change in hierarchical rank in women's expressive networks. It was posited that, following their promotions, the positional rank of the women's ties would increase (and thus become more comparable) to those of the men. However, following the promotions, the hierarchical ranks of the women's ties were higher than the men's, though the difference was not significant. The small respondent sample could explain this. Alternatively, this hypothesis was based upon the assumption that the

positional rank of women's expressive networks would be lower than that of the men. The non-transition study found there to be no hierarchical rank differences between men and women, even though the men and women of the bank non-transition respondent sample exhibited a greater positional rank difference that neared significance ( $p = .073$ ). In other words, this hypothesis now appears meaningless when we consider the hierarchical rank findings of the non-transition study. If the average hierarchical rank of men's and women's expressive networks did not differ greatly prior to the promotion, there was no opportunity for women to improve the hierarchical rank of their expressive networks following promotions when compared to men.

The findings of the non-transition study would have definitely helped in the design of the promotion study. The non-transition study results, coupled with the turnover findings in the promotion study, may help in the design of future studies, as the need remains for further research on the effects of promotions (and other career transitions) on men's and women's personal work networks.<sup>3</sup>

Personal work network ties do not remain static, and this poses an interesting challenge to network research. At the individual level, networks change or evolve either gradually or quite abruptly, depending upon individual career transitions and/or organization-wide reorganizations. Progress in theory development can come about only with a better understanding of how personal work networks change and how quickly they change over time. Such an understanding is important if we are to understand the impact changes to personal work networks have on social support availability. However, changes to personal work networks are also occurring as the result of societal changes. In effect, there could be events occurring at the individual, company/industry, and societal level that affect the characteristics of personal work networks. Any theory development will have to address the evolution of networks over time if the findings are to have any sustained

---

<sup>3</sup>Research on the evolution of networks will have to incorporate frequent, repeated measures. Testing for differences eight months apart will not be sufficient, as subtle changes (and the reasons behind these changes) may be missed.

generalizability.

Future research questions or issues have become evident. First, does the amount of turnover (i.e., the number of ties lost and added) in individuals' personal work networks depend upon the type of career transition (e.g., promotion versus lateral move)? Second, how much time is needed to "rebuild" one's personal work network following a career transition, and does the amount of time differ between companies/industries? Third, how quickly are expressive ties lost following a career transition that involves a geographic move? Finally, how do the changes in a personal work network, following a career transition, compare to the normal changes that networks undergo?

### LIMITATIONS

There are a number of limitations associated with the research reported in this thesis. First, both the non-transition and promotion studies used convenience samples, so the generalizability of the results beyond the three companies comprising the sample is limited. Moreover, the promotion study respondent sample was not sufficiently large, so again, the findings cannot be generalized beyond the actual respondents.

Second, the correlation design prevents any discussion of the causation of differences (e.g., structural or dispositional factors) between men's and women's personal work networks. Instead, the cross-sectional design provides a "snapshot" of personal work networks, and "... accepts the natural range of variables, instead of shaping conditions (like manipulative research) to represent a hypothesis" (Cronbach, 1975, p. 124). In the promotion study, data were collected over a period of time; however, the tracking of the changes was hampered by the sample size.

Third, the thesis considered several sociometric variables (e.g., age, job category, child-rearing responsibility) in an attempt to isolate personal work network differences. However, there was no attempt to study individual psychometric differences (e.g., shyness, aggressiveness, sociability) and/or skill-level differences (e.g., ability to meet people and maintain on-going relationships). Furthermore, there was evidence of company effects on

personal work networks; however, no specific company variables (e.g., the number of hierarchical levels at each organization, the number of women employed, and/or the number of women in managerial or supervisory positions) were studied. All that is known is that the gender of the individual and the company he or she works for may affect the development of his or her personal work network. We do not know what characteristics specific to the gender of the individual or to the company affect the make-up of personal work networks.

Fourth, I did not consider indirect personal network links, and consequently, the detection of deeper structural differences between genders was not possible (Ibarra, 1993b). Individuals are indirectly tied through their direct ties to many other individuals who work in (and outside) the organization. What differences there are in one's instrumental and/or expressive networks (and the impact of these differences) may be either magnified or attenuated by studying both indirect and direct ties. For example, one's direct ties may not be able to provide needed information that will help him or her to land an important account; however, someone he or she is directly tied with may know someone else in the company who can provide the information. In effect, indirect ties can make up for deficiencies (or gender differences) in the direct ties of individuals, and consequently, studying the impact of direct ties and not indirect ties on social support would be incomplete (Ibarra, 1993b).

Finally, there are concerns surrounding the reliability of individual network representations of direct ties via questionnaires. The reliability check conducted in this thesis demonstrated that a large number of direct ties were added and dropped<sup>4</sup> only one month after the respondents had first provided a representation of their instrumental and expressive networks. There is no concrete evidence that these changes to their personal

---

<sup>4</sup>Approximately 3.5 ties were added and 3.8 dropped, on average, from the instrumental network. In the expressive network, roughly 1.7 ties were added and 2.0 were dropped.

work networks in one month's time were due to actual network changes<sup>5</sup>, to oversight, or to both. Until respondent oversight can be ruled out, the reliability of participant self-reports remains a concern. In the future, researchers may have to provide respondents with lists of names or with the chance to revisit and amend the lists at a later date to ensure an accurate representation of their personal work networks.

## THE STATUS AND FUTURE OF PERSONAL WORK NETWORK RESEARCH

This thesis set out to address gaps and assumptions in the literature regarding men's and women's personal work networks. In conducting the non-transition and promotion studies, more questions about personal work networks (and weaknesses in current research) have been uncovered, and these questions (and research weaknesses) attest to the great research potential surrounding personal work networks. What follows is an attempt to structure these myriad questions with two global questions. The first question is: What is meant by the term "personal work networks?" The second is: What role(s) do personal work networks play in individuals' lives (i.e., what do we get from personal work networks)?

### Personal Work Networks

Current research, including this thesis, has simplified what is meant by the term "personal work networks" in order to collect data. Consequently, this research has focused on within-company, direct ties, which simplifies the construct of personal work networks. This simplification has made the study of personal work networks easier; however, this same conceptualization has failed to address and to acknowledge adequately the complexity of personal work networks.

What is clearly missing in the study of personal work networks is an understanding of how and where people work. Researchers (myself included) have studied large,

---

<sup>5</sup>Test-retest methods used to establish self-report reliability may be inadequate. A test-retest correlation may be attenuated because personal work networks may undergo considerable membership changes over a period of time (e.g., one month).

hierarchically organized companies, thus aiding themselves in the study of within-company, direct ties. Work, though, is not necessarily hierarchically organized. For example, within many organizations, there are ever-changing project management teams and/or temporary committee assignments. Many companies are forming domestic and international alliances with other organizations. Also, the increasing numbers of people telecommuting have altered work arrangements. How and where people work with others has varying effects on the characteristics of individuals' personal work networks (i.e., the gender and racial make-up, range, density, and frequency of contact).

Instrumental and expressive work relationships are not limited to being within a single organization. Individuals can have external and internal instrumental and expressive work relationships. Aldrich's research (see Aldrich, 1989; Aldrich et al., 1989) studied entrepreneurs' instrumental relationships (e.g., accountants, bankers, lawyers, suppliers) outside of the organization.

External work relationships may be especially critical to individuals who own or who are employed by small organizations.<sup>6</sup> Smaller businesses may have to rely on outsourcing of certain functions (e.g., marketing, sales, production, or administration, for example) because they do not have the human resources to staff each and every position. Many large businesses are also relying more and more on outsourcing (Harris, 1993). There are estimates that three out of ten large American industrial firms now outsource half their manufacturing (Bridges, 1994). Some interesting questions include:

What do the personal work networks of individuals working for small versus large organizations look like (i.e., how similar or different are the personal work networks on the various network characteristics)?

What is the percentage of internal to external relationships in the instrumental and expressive work networks of individuals working for small versus large organizations?

Do individuals working in different functional departments of large organizations have differing percentages of internal to external relationships

---

<sup>6</sup>Small businesses employ more individuals than do large businesses. In fact, within the past 10 years, the proportion of the work force employed by Fortune 500 companies has fallen from 30% to 13% (Harris, 1993).

in their instrumental and expressive work networks?

Do the instrumental and expressive work networks differ between individuals working part-time versus full-time?

Such questions would force researchers to consider both internal and external relationships and the personal work network differences between individuals working for small or large organizations.

Direct versus indirect ties. Thus far, I have discussed internal-external and instrumental-expressive relationships, but these are only two ways to represent ties. Current research focuses on direct ties, but as noted in the limitations section, research could also study indirect ties, as support and resources can flow to people from individuals with whom they are indirectly tied. However, who qualifies as an indirect tie is at issue. Milgram (1967) concluded from his small-world problem studies that each individual is separated, on average, from every other person by six individuals. Consequently, should all individuals not directly tied to a focal person be considered as an indirect tie? I would argue no.

The indirect ties most salient to our understanding are likely those individuals separated by one person (i.e., a direct tie) or two people (i.e., a direct and indirect tie). These are the individuals who could, more than likely, provide us with needed support or benefits in a timely fashion. The remaining individuals would comprise a pool of potential relationships. These are individuals who could eventually become part of our networks (as either direct or indirect ties) depending upon the circumstances. Such circumstances could involve, for example, a person changing professions and coming to work for the same company and in the same department which employs me. This would be an example of a previously potential tie changing into a direct tie. Or, this person could form a working relationship with my superior, thus turning a once potential tie to an indirect tie.<sup>7</sup>

Further complicating the study of personal work networks is the fact that direct ties

---

<sup>7</sup>This example highlights how quickly a person's personal work network can change when one considers both direct and indirect ties.



can become latent. For example, an individual could be instrumental to my job performance, and I would list him/her when asked to generate a list of instrumental ties. However, this individual may have been instrumental at one time to my job performance, but is no longer. Such a relationship would now be latent, and I would not, in all likelihood, list him/her when asked to generate a list of instrumental ties. Yet, though this relationship is currently latent, it is relatively easy to re-establish the relationship in the future because of my past experience working with the person. In effect, personal work network relationships can be labelled as direct, direct but latent, indirect, or potential.

Ultimately, the study of "personal work networks" will have to focus on more than just direct, within-company relationships. By expanding what is meant by a personal work network, the characteristics of an individual's personal work network may change. Such changes will have an effect on the comparisons subsequently made between individuals on these personal work network characteristics. First, we have no idea how large personal work networks are when considering both direct and indirect ties. Second, questions remain as to how many direct ties a person can handle, as previous studies have limited the number of instrumental and expressive relationships a respondent could provide. Finally, the inclusion of external and indirect ties (in conjunction with internal, direct ties) may increase the location, functional, and hierarchical individuals in the networks along with attenuating the homophily, density and frequency of contact. (As will be discussed below, a more complete representation of what a personal work network is will also affect the role (and our interpretation of that role) of personal work networks.)

The evolution of personal work networks. I have been arguing to this point that the study of personal work networks (and its focus on direct, within-company ties) has been incomplete. What is also missing from our understanding of personal work networks is how they develop and change over time. Questions can be generated concerning the fluidity of personal work networks. For example, how many individuals are added and become latent in a given time period, say a month, six months, or a year.

Numerous questions also remain regarding how individuals become part of (or leave)

another individual's personal work networks. What or who plays a critical role in the development of a relationship between two people? Is it the company's structure? The matching of comparable traits or values between two individuals through social comparison? Or, is it events such as transfers or promotions? To what extent does an individual have a say in the building of his/her personal work networks? How strategic can individuals be in building instrumental versus expressive relationships with other people?

#### Roles of Personal Work Networks

A better understanding of what is meant by the term "personal work network" and how individual personal work networks are similar or different and how they change over time is necessary if we are to understand the roles of personal work networks. The study of personal work network differences between individuals (especially between males and females) in isolation is informative and interesting to a point. It was noted in the introduction that understanding the similarities and differences is critical, because differences in association patterns at work can affect the opportunities<sup>8</sup> and amount of social support available to individuals. In other words, having information on the similarities and differences of personal work networks may provide a better understanding of the availability of social support, as gender research has overlooked the differences in social resources that men and women have at their disposal (Hare-Mustin & Marecek, 1990b).

More than just social support. The real potential for personal work network research is through the combining of the study of personal work network characteristics and the affect of these characteristics on what individuals receive from their personal work networks. Up to this point, the term "social support" has been used to represent the "benefits" received by individuals through their associations with other people. Like the term "personal work networks," social support is a complex construct.

Support can be viewed as a physical, emotional, or symbolic contribution to

---

<sup>8</sup>Recent research (Ibarra, 1993b, 1995) has focused on explaining the effect personal work network differences have on differential career opportunities and outcomes for women and minorities.

individuals increasing their net stockpile of emotional capacity to cope with change (Walter & Marks, 1981), thus intended to enhance the well-being of the recipient (Shumaker & Brownell, 1984). Heller and Swindle (1983) note that "... social support is increasingly viewed as a multidimensional construct, consisting of social network resources, types of supportive exchanges, perceptions of support availability, and skills in assessing and maintaining supportive relationships." Types of social support include emotional, appraisal, informational (including feedback), and instrumental (Walter & Marks, 1981).

However, by focusing solely on social support (when studying personal work networks), researchers will miss some very important positive and negative benefits and/or outcomes. It is true that networks provide for the exchange of support, but personal work network relationships are also sources of status, innovations, competition, motivation, peer pressure, and conflict. Moreover, personal work network relationships allow individuals to pool resources when attempting to complete complex tasks.

Consequently, personal work networks can be portrayed as systems -- exchange systems, diffusion systems, learning systems, and/or activation systems. Tangible and intangible benefits and outcomes, including social support, flow through these systems. The effect of one individual becoming part of or leaving one's network can be quite profound. On the positive side, an individual, who had recently undergone some advanced training, could share this new information with fellow work colleagues and friends. Also, a person looking for a job could increase his/her credibility (and ultimately his/her potential job prospects) by using the name of a direct tie ("So-and-so said that you would be the best person to talk with regarding possible job opportunities.") On the negative side, personal work networks can also be sources of conflict, peer pressure, and norms. Smith (1989) provides an excellent illustration of the effects of conflict movement through a social network.

This discussion on personal work networks and what personal work networks provide to individuals is by no means comprehensive. Instead, it should provide the impression that personal work networks are sources of support, opportunities, benefits, and

outcomes that are not always completely positive.

I return now to an earlier point, that the study of network similarities and differences is important, but incomplete. A clearer understanding of personal work networks and their characteristics is essential if we are to study the impact network characteristics have on the resources<sup>9</sup> provided by personal work networks. The real potential of and interest in personal work network research lies in researching such questions as:

Which network, instrumental or expressive, is best at providing resources, such as support, status, or credibility?

Which resources (and in what proportions) emanate from internal versus external personal work network relationships?

Which resources (and in what proportions) emanate from direct versus indirect relationships?

How important is tie strength in the exchange or transfer of various resources?

How important is location, functional, and/or hierarchical range in the exchange or transfer of various resources?

How important is the frequency of contact in the exchange or transfer of various resources?

Are the resources provided by personal work network relationships to individuals really comparable when their personal work networks are similar?

What are the characteristics of personal work networks that shield individuals from negative resources?

Is one type of network (i.e., instrumental-expressive or internal-external) more important in the resources provided to one gender than that of the other gender?

How immune is the availability of resources to changes (specifically the loss of individuals) to personal work networks?

The number of questions increases dramatically when we consider internal-external, instrumental-expressive, and/or direct-indirect relationships. What I am suggesting in raising these questions is that the study of personal work network characteristics provides

---

<sup>9</sup>From this point forward, I use the word "resources" to reflect the support, opportunities, and outcomes that are exchanged, transferred, or shared in personal work networks.

researchers with many research opportunities.

Two warnings. When considering these questions, however, there are two important warnings. First, there is the tendency for researchers to focus on the effect of differences without considering the similarities. This is particularly true in gender research. Hare-Mustin and Marecek (1990b, p. 30) write:

... the view of male and female as different and opposite and thus as having mutually exclusive qualities transcends Western culture and has deep historical roots... (there is an) inclination to emphasize differences...

The examination of gender differences obscures the examination of gender similarities, and such questions about gender differences "often imply a trait view of behavior that obscures situational influences on behavior" (Unger, 1990, p. 104). Similarities in network characteristics may not necessarily guarantee similar benefits to individuals (Burt, 1992). Personal network characteristic differences need to be studied for their effect on resources; however, individual differences and situational differences must also be examined at the same time.

Second, to talk of personal work network relationships without differentiating whether they are instrumental or expressive, internal or external, or direct or indirect may mask important similarities and/or differences between individuals (e.g., genders, minorities). For example, how would a researcher explain differential resource outcomes after finding that the personal work networks of these individuals did not differ? Notwithstanding possible methodological deficiencies, individual differences in recognizing, accepting, and reporting these resources may provide one explanation. However, the response to the question would differ if I added that, in conducting the study, the researcher considered only internal and direct instrumental ties, ignoring indirect, external ties.

## SUMMARY

The non-transition study, even with its limited generalizability, does provide

evidence that men's and women's personal work networks may not be all that different when we consider personal work network characteristics other than gender composition and density and the frequency of contact between individuals in the network. The non-transition study also attests to possible company-industry and/or time effects on the characteristics of personal work networks.

The future study of personal work networks will not be easy, as there is more to the study of personal work networks than just direct, within-company relationships. External, indirect ties also play critical roles in the resources provided to individuals because of their association patterns. Ultimately, research will have to focus on the positive and negative resources that flow through personal work networks, regardless of network similarities and differences. Differences between men's and women's personal work network characteristics (and how men and women develop and nurture their personal work networks) may impact the resources that are derived from a person's network; however, differences in how men and women use their personal networks are also important to our understanding of what resources reach individuals.

## REFERENCES

Aiken, L.S., & West, S.G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage.

Aldrich, H., & Reese, P.R. (October 1994). Gender gap, gender myth: Does women's networking behavior differ significantly from men's? Presented at the University of British Columbia, Faculty of Commerce and Business Administration, Vancouver, B.C.

Aldrich, H. (1989). Networking among women entrepreneurs. In O. Hagan, C. Rivchun & D. Sexton (Eds.), Women-owned businesses (pp. 103-132). New York: Praeger.

Aldrich, H., Reese, P.R., & Dubini, P. (1989). Women on the verge of a breakthrough: Networking among entrepreneurs in the United States and Italy. Entrepreneurship & Regional Development, 1, : 339-356.

Aukett, R., Ritchie, J., & Mill, K. (1988). Gender differences in friendship patterns. Sex Roles, 19, 57-66.

Barrera, M., Jr., & Ainlay, S.L. (1983). The structure of social support: A conceptual and empirical analysis. Journal of Community Psychology, 11, 133-143.

Bell, R.A. (1991). Gender, friendship network density, and loneliness. Journal of Social Behavior and Personality, 6, 45-56.

Bernard, H.R., Killworth, P.D., Kronenfeld, D., & Sailer, L. (1984). The problem of informant accuracy: The validity of retrospective data. Annual Review of Anthropology, 13, 495-517.

Blau, P.M. (1988). Inequality and heterogeneity: A primitive theory of social structure. New York: Free Press.

Blau, P.M. (1955). The dynamics of bureaucracy. Chicago: University Press.

Boneau, C.A. (1960). The effects of violations of assumptions underlying the *t* test. Psychological Bulletin, 57, 49-64.

Brass, D.J. (1985). Men's and women's networks: A study of interaction patterns and influence in an organization. Academy of Management Journal, 28, 327-343.

Brett, J.M. (1984). Job transitions and personal and role development. Research in Personnel and Human Resources Management, 2, 155-185.

Bridges, W. (1994). Job shift: How to prosper in a workplace without jobs. Reading, MA: Addison-Wesley Publishing Co.

Burt, R.S. (1992). Structural holes: The social structure of competition. Cambridge, MA: Harvard University Press.

Cohen, J. (1968). Multiple regression as a general data-analytic system. Psychological Bulletin, 70, 426-443.

Cronbach, L.J. (1975). Beyond the two disciplines of scientific psychology. American

Psychologist, 30, 116-127.

Dreher, G.F., & Ash, R.A. (1990). A comparative study of mentoring among men and women in managerial, professional, and technical positions. Journal of Applied Psychology, 75, 539-546.

Dickens, W., & Perlman, D. (1981). Friendship over the life cycle. In S.W. Duck & R. Gilmour (Eds.), Personal relationships 2: Developing personal relationships (pp. 91-122). New York: Academic Press.

Ely, R. (1994). The effects of organizational demographics and social identity on relationships among professional women. Administrative Science Quarterly, 39, 203-238.

Fenlason, K.J., & Beehr, T.A. (1994). Social support and occupational stress: Effects of talking to others. Journal of Organizational Behavior, 15, 157-175.

Fischer, C. (1982). To dwell among friends. Chicago: University of Chicago.

Fischer, C., & Oliner, S. (1983). A research note on friendship, gender, and the life cycle. Social Forces, 62, 124-132.

Fischer, J., & Narus, L. (1981). Sex roles and intimacy in same sex and other sex relationships. Psychology of Women Quarterly, 5, 444-455.

Freeman, L.C. & Romney, A.K. (1987). Words, deeds and social structure: A preliminary study of the reliability of informants. Human Organization, 46, 330-334.

Harris, T.G. (1993). The post-capitalist executive: An interview with Peter F. Drucker. Harvard Business Review, 71(3), 115-122.

Heller, K. & Swindle, R.W., Jr. (1983). "Social networks, perceived social support, and coping with stress." In R.D. Felner, L.A. Jason, J. Moritsugh, & S.S. Farber (Eds.), Preventive psychology: Theory, research, and practice in community intervention (pp. 87-103). New York: Pergamon Press.

Ganster, D.C., Fusilier, M.R., & Mayes, B.T. (1986). role of social support in the experience of stress at work. Journal of Applied Psychology, 71, 102-110.

George, J.M. (1992). The role of personality in organizational life: Issues and evidence. Journal of Management, 18, 185-213.

George, J.M. (1991). State or trait: Effects of positive mood on prosocial behaviors at work. Journal of Applied Psychology, 76, 299-307.

Gouldner, A.W. (1954). Patterns in industrial bureaucracy. New York: Free Press.

Granovetter, M. (1982). The strength of weak ties: A network theory revisited. In P.V. Marsden & N. Lin (Eds.), Social structure and network analysis (pp. 105-133). Beverly Hills, CA: Sage.

Granovetter, M. (1973). The strength of weak ties. American Journal of Sociology, 6, 1360-1380.

Hare-Mustin, R.T., & Marecek, J. (1990a). On making a difference. In R.T. Hare-Mustin & J. Marecek (Eds.), Making a difference: Psychology and the construction of



gender (pp. 1-21). New Haven, CN: Yale University Press.

Hare-Mustin, R.T., & Marecek, J. (1990b). Gender and the meaning of difference: Postmodernism and psychology. In R.T. Hare-Mustin & J. Marecek (Eds.), Making a difference: Psychology and the construction of gender (pp. 22-64). New Haven, CN: Yale University Press.

Hays, R.B., & Oxley, D. (1986). Social network development and functioning during a life transition. Journal of Personality and Social Psychology, 50, 305-313.

House, J.S. (1981). Work stress and social support. Reading, MA: Addison-Wesley.

Ibarra, H. (1993a). Personal networks of women and minorities in management: A conceptual framework. Academy of Management Review, 18, 56-87.

Ibarra, H. (1993b). Untangling the web of interconnections: An exploration of competing explanations for gender differences in Managerial Networks. Working Paper #93-044, Harvard Business School.

Ibarra, H. (1992). Homophily and differential returns: Sex differences in network structure and access in an advertising firm. Administrative Science Quarterly, 37, 422-447.

Judge, T.A. (1992). The dispositional perspective in human resource management. In G.R. Ferris & K.M. Rowland (Eds.), Research in Personnel and Human Resources Management (pp. 197-232). Vol. 10. Greenwich, CN: JAI Press.

Kanter, R.M. (1977). Men and women of the corporation. New York: Basic Books.

Kaplan, R.E. (1984). Trade routes: The manager's network of relationships. Organizational Dynamics, 12, 37-52.

Katz, R. (1980). Time and work: Toward an integrative perspective. Research in Organizational Behavior, 2, 81-127.

Kaufman, G.M., & Beehr, T.A. (1986). Interactions between job stressors and social support: Some counterintuitive results. Journal of Applied Psychology, 71, 522-526.

Kerlinger, F.N., & Pedhazur, E.J. (1973). Multiple regression in behavioral research. New York: Holt, Rinehart, and Winston, Inc.

Kmenta, J. (1971). Elements of econometrics. New York: Macmillan.

Krackhardt, D. (1992). The strength of strong ties: The importance of philos in organizations. In N. Nohria & R.G. Eccles (Eds.), Networks and organizations: Structure, form and action (pp. 216-239). Cambridge, MA: Harvard Business Press.

LaRocca, J.M., House, J.S., & French, J.R.P., Jr. (1980). Social support, occupational stress, and health. Journal of Health and Social Behavior, 21, 202-218.

Lincoln, J.R., & Miller, J. (1979). Work and friendship ties in organizations: A comparative analysis of relational networks. Administrative Science Quarterly, 24, 181-199.

Lindley, P., & Noble Walker, S. (1993). Theoretical and methodological differentiation of moderation and mediation. Nursing Research, 42, 276-279.

Louis, M.R. (1980). Career transitions: Varieties and commonalities. Academy of Management Review, 5, 329-340.

Lynch, J.J. (1977). The broken heart: The medical consequences of loneliness. New York: Basic Books.

Maltz, D.N., & Borker, R.A. (1982). A cultural approach to male-female miscommunication. In J.J. Gumperz (Ed.), Language and social identity (pp. 196-216). Cambridge: Cambridge University Press.

Markiewicz, D., & Devine, I. (June 1994). Women's friendships in the changing work environment: Implications for organizational settings and employee well-being. Presented at ASAC, Halifax, Nova Scotia.

Marsden, P.V. (1988). Network data and measurement. Annual Review of Sociology, 16, 435-463.

Marsden, P.V. (1987). Core discussion networks of Americans. American Sociological Review, 52, 122-131.

Mayhew, B.H., & Levinger, R.L. (1976). Size and density of interaction in human aggregates. American Journal of Sociology, 82, 86-110.

Milgram, S. (1967). The small world problem. Psychology Today, 1, 62-67.

Mitchell, J.C. (1969). The concept and use of social networks. In J.C. Mitchell (Ed.), Social networks in urban situations (pp. 1-50). Manchester, England: University of Manchester Press.

Morrison, A.M., White, R.P., & Van Velsor, E. (1987). Breaking the glass ceiling: Can women reach the top of America's largest corporations? Reading, MA: Addison Wesley.

Moore, G. (1990). Structural determinants of men's and women's personal networks. American Sociological Review, 55, 726-735.

Neter, J., Wasserman, W., & Kutner, M.H. (1985). Applied linear statistical models: Regression, analysis of variance, and experimental design. Homewood, IL: Irwin.

Nieva, V.F., & Gutek, B.A. (1981). Women and work: A psychological perspective. New York: Praeger.

Pinder, C.C., & Schroeder, K.G. (1987). Time to proficiency following job transfers. Academy of Management Journal, 30, 336-353.

Reisman, J. (1981). Adult friendships. In S.W. Duck & R. Gilmour (Eds.), Personal relationships 2: Developing personal relationships (pp. 205-230). New York: Academic Press.

Roberto, K.A., & Kimboko, P.J. (1989). Friendships in later life: Definitions and maintenance patterns. International Journal of Aging and Human Development 28, 9-19.

Sapadin, L.A. (1988). Friendship and gender: Perspectives of professional men and women. Journal of Social and Personal Relationships, 5, 387-403.

Shumaker, S.A. & Brownell, A. (1984). Toward a theory of social support: Closing

conceptual gaps. Journal of Social Issues, 40, 11-36.

Siegel, S. (1956). Nonparametric statistics for the behavioral sciences. New York: McGraw-Hill.

Smith, K.K. (1989). The movement of conflict in organizations: The joint dynamics of splitting and triangulation. Administrative Science Quarterly, 34, 1-20.

Sollie, D.L., & Fischer, J.L. (1988). Career entry influences on social networks of young adults: A longitudinal study. Journal of Social Behavior and Personality 3, 205-225.

Spierer, H. (1981). Coping with transitions. In A.C. Eurich (Ed.), Major transitions in the human life cycle (pp. 45-52). Lexington, Mass.: Lexington Books.

Tannen, D. (1990). You just don't understand. New York: Ballentine Books.

Tannen, D. (1986). That's not what I mean! New York: Ballentine Books.

Tracy, E.M., & Whittaker, J.K. (1990). The social network map: Assessing social support in clinical practice. Families in Society: The Journal of Contemporary Human Services, 71, 461-470.

Ullah, P., Banks, M., & Warr, P. (1985). Social support, social pressures and psychological distress during unemployment. Psychological Medicine, 15, 283-295.

Unger, R.K. (1990). Imperfect reflections of reality: Psychology constructs gender. In R.T. Hare-Mustin & J. Marecek (Eds.), Making a difference: Psychology and the construction of gender. New Haven, CT: Yale University Press.

van Groenou, M.B., van Sonderen, E., & Ormel, J. (1990). Test-retest reliability of personal network delineation. In K.C.P.M. Knipscheer & T.C. Antonucci (Eds.), Social network research: Substantive issues and methodological questions (pp. 121-136). Rockland, MA: Swets & Zeitlinger.

Vaux, A. (1985). Variations in social support associated with gender, ethnicity and age. Journal of Social Issues, 41, 89-110.

Walter, G.A. & Marks, S.E. (1981). Experimental learning and change. New York: John Wiley & Sons.

Wellman, B. (1985). Domestic work, paid work and net work. In S. Duck & D. Perlman (Eds.), Understanding personal relationships (pp. 159-191). London: Sage.

Wiseman, J.P. (1986). Friendships: Bonds and binds in a voluntary relationship. Journal of Social and Personal Relationships, 3, 191-211.

Appendix A:  
LETTERS AND QUESTIONNAIRES

## LETTER 1

### Dean Goldberg's Data Site Approach Letter

Dear

One of my senior faculty members in the HRM/Organizational Behavior group -- Prof. Craig Pinder -- is currently initiating two new research projects related to [1] intra-company transfers and [2] men's and women's work networks. I am writing to you on his behalf to see whether I can interest you and your company in these studies and to secure the participation of a number of your employees.

The first study is directed at the issue of whether intra-company transfer experiences can contribute to growth, learning, and development of individual employees who are moved. Craig's work on this topic over the past 17 years has impressed upon him how widely-spread the belief is that moving people around the various locations at which an organization conducts business is "good for" both the organization and its employees. The purpose of the new project is to examine the actual learning process of employees -- how and what employees learn -- so that the degree to which the transfer experiences have contributed to the employees' personal and professional development can be assessed. In view of the enormous financial and human costs associated with moving people, Craig believes employers can stand to benefit from an assessment of the value they receive in return for the considerable costs of transfers.

The second study is actually doctoral dissertation research being conducted by Mr. Richard Stackman, one of Prof. Pinder's Ph.D. students, working under his supervision. This dissertation is ground-breaking in that it is one of the first studies to answer some very basic questions in regards to work networks. Richard is interested in studying the similarities and differences of male and female work networks as they exist within organizations -- both prior to and following vertical promotions. This dissertation could be the basis for future studies which examine how people's networks impact employees' ability to become and remain proficient in their jobs as well as secure future advancement within their organizations. One of the ultimate goals for this stream of research is to demonstrate that these differences may be beneficial, and that both sexes may actually learn something from the other in how they should go about building and maintaining their work networks. Finally, Craig and Richard hope to learn a great deal about the way people deal with being promoted, regardless of their gender.

To reiterate, the purpose of these two studies is to [1] advance the understanding of the role of transfer experiences in the personal and professional development of Canadian managerial, professional, and technical personnel and [2] advance the understanding of the similarities and differences of men's and women's work networks.

Should you elect to have your organization participate, a sample of your employees would be administered questionnaires. The particular questionnaire used would depend upon whether the employee [1] is being transferred, [2] is being promoted, or [3] has not undergone any career transition in the past year. As has been the case in his past research, Craig is seeking to gain the involvement of employees of several organizations from a variety of industries within Canada.

As you know, one of the primary goals of my deanship is to further develop the working relationships between the academic and business communities. One way of accomplishing

LETTER 1 (continued)

Dean Goldberg's Data Site Approach Letter

this is for academics to conduct research within the business community that is of particular interest to the business community. I think that the research projects Craig is proposing are directed toward this goal.

Professor Pinder ensures me that the amount of time and effort required by your own staff in executing the study will be minimal. It will be Mr. Stackman's job over the coming academic year to make these projects "go." Craig wants me to emphasize that the confidentiality of data provided by individual employees will be ensured. Likewise, no organizational data [or results] will be provided to anyone outside the respective participating companies: results will be reported by industry or in aggregate form only.

Both Craig and Richard say that they can make participation attractive to those organizations that do participate through what is learned about men's and women's work networks as well as about the developmental value of the transfer experience of your particular personnel. In previous studies, Craig has obtained complete data from over 800 employees, working for seven different firms in a variety of industries. Dr. Pinder has considerable experience at presenting the results of both current and previous findings that have emerged from his 17 years of work in this area, and he is prepared to provide such information with any of the participating companies. I am enclosing a copy of an article Craig wrote for the management periodical Organizational Dynamics that summarizes many of his past findings.

In closing, I hope you will consider engaging your company in our new studies, and that you will contact Craig Pinder or myself if you have any questions about them. Both Craig and Richard are willing to meet with you or any representatives of your company for the sake of securing your participation in either or both of these projects. Craig Pinder can be reached at [604] 822-8374; Fax 822-8517. Thank you for considering this request.

Sincerely yours,

Michael A. Goldberg  
Dean

## LETTER 2

### Dr. Pinder's Data Site Approach Letter

Dear

Over the past 17 years, I have been involved in a series of studies dealing with employee mobility and organization policies concerning the transfer of personnel. I am presently undertaking, with one of my Ph.D. students, several new projects related to [1] transfers and [2] men's and women's work networks. I am writing to see whether I can interest you and your firm in these studies and to secure the participation of a number of your employees. As in the previous studies, I hope to gain the involvement of employees of several organizations from a variety of industries throughout Canada.

Let me describe the projects. The first study is directed at the issue of whether intra-company transfer experiences can contribute to growth, learning, and development of individual employees who are moved. My work on this topic over the years has impressed me with how widely-spread the belief is that moving people around the various locations at which an organization conducts business is "good for" both the organization and its employees. The purpose of my new project is to examine the actual learning process of employees -- how and what employees learn -- so that I can assess the degree to which their transfer experiences have, in fact, contributed to their personal and professional development. In view of the enormous financial and human costs associated with moving people, I believe employers can stand to benefit from an assessment of the value they receive in return for the considerable costs of transfers.

The second study is being undertaken by Mr. Richard Stackman, one of my Ph.D. students working under my supervision, as his doctoral dissertation. This dissertation is ground-breaking in that it is one of the first studies to answer some very basic questions in regards to work networks. He is interested in studying the similarities and differences of male and female work networks as they exist within organizations -- both prior to and following vertical promotions. Moreover, having begun to isolate these differences and similarities, this dissertation could be the basis for future studies which examine how people's networks impact employees' ability to become and remain proficient in their jobs as well as secure future advancement within their organizations. One of the ultimate goals for this stream of research is to demonstrate that these differences may be beneficial, and that both sexes may actually learn something from the other in how they should go about building and maintaining their work networks. We also hope to learn a great deal about the way people deal with being promoted, regardless of their gender.

We are currently developing new questionnaires to address the issues associated with the two studies. (We will be happy to send you draft copies, when they are ready, should you wish to pursue the matter of participating in the research.) Should you elect to have your organization participate, the questionnaires would be administered to a sample of your employees who [1] have been transferred at least once, [2] are being promoted, or [3] have not undergone any career transition in the past year. We will minimize the amount of time and effort required of your own staff in executing these studies: Mr. Stackman's full-time job over the coming year is to make these projects "go."

I wish to make it clear that our goals in these two projects are purely academic rather than economic, although the findings should have considerable applied value for participating companies. Our purpose is to [1] advance our understanding of the role of transfer experiences in the personal and professional development of Canadian managerial,

LETTER 2 (continued)

Dr. Pinder's Data Site Approach Letter

professional, and technical personnel and [2] advance our understanding of the similarities and differences of men's and women's work networks. I also believe that we can make participation attractive to those organizations that do participate through what is learned about men's and women's work networks as well as about the developmental value of the transfer experience of your particular personnel.

In previous studies I have obtained complete data from over 800 employees, working for seven different firms in a variety of industries. I have considerable experience at presenting the results of both current and previous findings that have emerged from my 17 years of work in this area, and I am quite prepared to provide such information with any of the participating companies. I have published an article in the management periodical Organizational Dynamics (1989) that summarizes many of my findings. I would be pleased to send you a copy of that paper to illustrate where my work has been in the past.

In closing, I hope you will consider engaging your company in our new studies, and that you will contact me if you have any questions about them. I am willing to meet with you for the sake of securing the participation of any organizations that might consider. Feel free to call me at [604] 822-8374; Fax 822-8517.

Sincerely yours,

Craig C. Pinder  
Professor



**LETTER 3**

First Cover Letter Included with Questionnaire

Signed by Data Site Company Official

Mr. Richard Stackman, a doctoral student at the University of British Columbia, has approached [company's name] with the intention of conducting a research study using [company's name] managers and supervisors as participants. After careful review of the research proposal, the decision was made to grant Mr. Stackman access to our employees.

I would appreciate it if you gave careful consideration to filling out the enclosed questionnaire at your earliest convenience. Granted, you are busy with your job. However, the company receives numerous requests each year from prospective researchers, and this request is one research study in which [company's name] is definitely interested in participating.

A cover letter from Mr. Stackman's advisor, Dr. Craig Pinder, is enclosed, and I would like to emphasize two points made in that letter. First, no one in the company will have access to the responses you provide. You will be mailing the questionnaire directly back to Mr. Stackman. When the data collection is complete, all [your company's name] will receive from Mr. Stackman is aggregate results. No individual results will ever be provided to us. Second, Mr. Stackman's main goal in pursuing this stream of research is to learn more about the similarities and differences between men's and women's work networks. Such information should prove beneficial in that both sexes may have something to learn from the other in how they ultimately go about building and maintaining their work networks.

Should you have any questions, please feel free to contact me at [phone number] or Dr. Pinder at [604] 822-8374.

Thank you for your cooperation.

Sincerely yours,

LETTER 4

Second Cover Letter Included with Questionnaire  
Signed by Dr. Pinder

I am writing to request your help in a research study one of my Ph.D. students, Mr. Richard Stackman, is conducting as his dissertation. This study is being undertaken in conjunction with your organization which has given Richard and myself permission to contact you in the hope of persuading you to participate in this study.

The title of Richard's thesis is "The Similarities, Differences, and Fluidity of Men's and Women's Work Networks." This dissertation is ground-breaking in that it is one of the first studies to answer some very basic questions in regards to work networks. He is interested in studying the similarities and differences of male and female work networks as they exist within organizations -- both prior to and following vertical promotions. Moreover, having begun to isolate these differences and similarities, this dissertation could be the basis for future studies which examine how people's networks impact employees' ability to become and remain proficient in their jobs as well as secure future advancement within their organizations. One of the ultimate goals for this stream of research is to demonstrate that these differences may be beneficial, and that both sexes may actually learn something from the other in how they should go about building and maintaining their work networks.

All that is required to participate in this study is for you to complete the enclosed questionnaire. It should take you, on average, 30 minutes to complete. When you are done, please return the completed questionnaire in the self-addressed stamp envelope provided. By completing the questionnaire, it is assumed that you have given your consent to participate in the study. Please note that you retain the right to refuse to participate or withdraw from the study at any time.

Your questionnaire will remain confidential. When the completed questionnaire is returned to us, the only identification on the questionnaire will be a number to ensure anonymity. Your organization will not have access to your individual questionnaire. Only organizational or aggregate results will ever be reported. No individual data will ever be reported.

In closing, I hope you will consider participating in the study and will fill out the questionnaire according to the instructions provided. If you should have any questions, feel free to call me at [604] 822-8374.

Sincerely yours,

Craig C. Pinder  
Professor

## LETTER 5

### Follow-up Letter

Over two weeks ago you received a request from me to complete a questionnaire concerning your work relationships. This questionnaire is part of a project representing the final hurdle on the path to my Ph.D. For me to successfully complete my degree, I need an adequate response from the individuals who were sent the questionnaire.

It is possible that given your work schedule you have put the questionnaire aside to fill out later. If so, this letter will serve as a reminder.

Moreover, some individuals may be unwilling to fill out the questionnaire because they fear that the individuals they list could be contacted in the future. This is not the case. I can guarantee you that none of the co-workers or friends you list will be contacted.

Should you need a new questionnaire, please call me at 822-8504, and I would be more than happy to provide you with a new copy. Also, should you have any questions or concerns regarding this project, feel free to call my advisor, Dr. Craig Pinder, at 822-8374.

Thanks for your help.

Sincerely yours,

Richard W. Stackman  
Ph.D. Candidate

**EXHIBIT 1**  
**Non-Transition Sample Questionnaire**

## SURVEY OF INDIVIDUAL WORK NETWORKS

This questionnaire is designed to examine the work networks of managers and supervisors.

Your employer has approved this project and questionnaire. However, I am completely responsible for the contents of the instrument, as well as for the data collected. I will be the only person -- aside from my advisor or assistants -- who will have access to your personal responses. Your employer will not have access to your personal responses, although your employer will receive a copy of the results of the survey, in aggregated form. Your participation is, of course, completely voluntary.

Your questionnaire is composed of four parts. The first three parts of the questionnaire deal specifically with your work relationships. The final section asks about you and your current employment status. Please try to answer all of the questions asked, and remember my promise of complete confidentiality.

I hope that you will take the time to complete this questionnaire and return it to me, using the stamped envelope that is enclosed. The instrument takes between 30 to 45 minutes to complete. You will likely find it interesting. Thank you in advance for your help.

Richard W. Stackman  
Ph.D. Candidate  
Faculty of Commerce and Business Administration  
The University of British Columbia  
2053 Main Mall  
Vancouver, B.C. V6T 1Z2  
Telephone: [604] 822-8504  
Fax: [604] 822-8517

Advisor: Dr. Craig C. Pinder  
Telephone: [604] 822-8374

# **PART ONE: QUESTIONS ABOUT YOUR WORK RELATIONSHIPS**

1. Please list the name [or names] of your immediate manager/supervisor.

---

---

---

---

3. Please list the name[s] and position[s] of anyone in your organization who has been useful or helpful in your learning to perform the tasks and duties associated with your current position.

<u>Name</u>	<u>Position</u>

2. Please list the name[s] and position[s] of anyone in your organization who has been a mentor to you. A mentor is someone who has taken a personal interest in your career and has guided or sponsored you. This person may have served as a career role model and actively advised, guided, and/or promoted your career training.

<u>Name</u>	<u>Position</u>

4a. Please provide the number of individuals you directly manage/supervise.

---

b. Approximately what percentage of the individuals you directly supervise are... ?

\_\_\_\_\_ % Men      \_\_\_\_\_ % Women

## **PART TWO: TASK-RELATED TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 16 individuals within your company whom you consider to be useful in performing the tasks required of your current job.

Task-related relationships include those in your organization who aid you and/or are necessary for you to perform the tasks required in your job. In other words, you rely on these individuals to help you do your job. [Please note that you may interact with these individuals on a daily basis or as infrequently as once a week or month.] Moreover, these individuals provide you with job-related resources [e.g., information, expertise, professional advice, and/or material resources].

Please exclude your manager(s)/supervisor(s) as well as all of your subordinates from this list.

Please break the seal on this part of questionnaire upon completing your list and provide the requested information in relation to each individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL	Sex [M] Male [F] Female	How long [in years] have you known this individual?	Does this individual work at the [1] Same site [2] Different site, same city [3] Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional department as you? [Y] Yes [N] No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is [1] at least two levels above yours [2] one level above yours [3] at the same level as yours [4] one level below yours [5] at least two levels below yours?	Considering only the people you have listed in the first column, who else would you and this individual associate with in order for you to complete the tasks associated with your job?  For example, if you and Jane Smith also worked frequently with individuals #5, 7 and 12, then you would write in the numbers 5, 7 and 12 in the space provided.
Example: Jane Smith	F	4-1/2	1	Sr. Accountant	Y	Accounting	2	5, 7, 12
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								



### **PART THREE: FRIENDSHIP TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your organization whom you consider to be "friends" of yours.

Friends are defined as those individuals with whom you frequently or often interact for personal satisfaction and enjoyment rather than just for the fulfillment of a particular task or goal. Those listed would include: [1] people you see socially outside of work, and [2] those people you spend time with socially at work (e.g., at lunch and coffee breaks) but do not see outside of work.

Therefore, you are to include anyone whom you consider to be a friend -- even if you listed them as a task-related relationship on the previous question.

Also, if you consider any superiors and/or subordinates as friends, please be sure to list them.

Please break the seal upon completing your list of friends and provide the requested information in relation to every individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL	Sex [M] Male [F] Female	How long (in years) have you known this individual?	Is this an individual you see socially outside of work? [Y] Yes [N] No	Does this individual work at the same site as you? [1] Same site [2] Different site, same city [3] Different site, different city	What is the title of this individual's current position in the organization?	Is this person in the same functional dept. as you? [Y] Yes [N] No	If this person works in a different functional department than you, please note in which functional department this individual does work. (e.g., sales, claims, personnel)	Considering the hierarchy of the organization, does this individual have a position that is [1] at least two levels above yours [2] one level above yours [3] at the same level as yours [4] one level below yours [5] at least two levels below yours?	Is this an individual you manage/ supervise? [Y] Yes [N] No	How often are you in contact with this person -- either in person or by phone? [1] Daily [2] Three times per week [3] Once per week [4] Twice a month [5] Less than once per month	Considering only the people you have listed in the first column, with whom else would you and this individual socialize together? For example, if you and Jane Smith also socialized frequently with individuals #5, 7 and 12, then you would write in the numbers 5, 7 and 12 in the space provided.
Example: Jane Smith	F	4-1/2	Y	1	Sr. Accountant	Y	Accounting	2	N	2	5, 7, 12
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											

# **PART FOUR: QUESTIONS CONCERNING YOU AND YOUR CURRENT EMPLOYMENT STATUS**

1. How many years have you worked for your present employer? [Example: 3-1/2 years]  
\_\_\_\_\_ years

2. What is the title of your current position?  
\_\_\_\_\_

3. How many years have you been at your current position?  
[Example: 3-1/2 years]  
\_\_\_\_\_ years

4. How many total years have you worked full-time since turning 18?  
\_\_\_\_\_ years

5. Which of the following job categories best describes you?  
[Please check one only.]

- ☐ Executive
- ☐ Senior manager
- ☐ Middle manager
- ☐ First line manager/supervisor
- ☐ Other [please specify] \_\_\_\_\_

6. Please list the previous positions you have held with your current employer. Be sure to list the years in which you held these positions. [Example: Junior Accountant, 1989-1992]

<u>Position</u>	<u>Dates</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. How many times have you been previously promoted by your current employer?  
\_\_\_\_\_ times

**PLEASE TURN TO THE NEXT PAGE.**

8. Please indicate with a check mark the type of department in which you currently work. [Please check one only.]

- ☐ Accounting
- ☐ Account Management
- ☐ Business Development
- ☐ Claims
- ☐ Communication/Public Relations
- ☐ Customer Service
- ☐ Data Processing
- ☐ Engineering
- ☐ Finance
- ☐ General Administration
- ☐ Information Systems
- ☐ International Sales/Marketing
- ☐ Labor Relations
- ☐ Law/Legal
- ☐ Leasing
- ☐ Occupational Health/Safety
- ☐ Personnel/Human Resources
- ☐ Product Manager
- ☐ Production/Manufacturing
- ☐ Purchasing
- ☐ Real Estate/Physical Plant
- ☐ Sales/Marketing
- ☐ Strategic Planning/Development
- ☐ Trade Relations
- ☐ Transportation
- ☐ Other [please specify] \_\_\_\_\_

9. Which of the following job categories best describes you? [Please check one only.]

- ☐ Management
- ☐ Professional
- ☐ Technical
- ☐ Administrative
- ☐ Professional/Management
- ☐ Technical/Management
- ☐ Administrative/Management
- ☐ Other [please specify] \_\_\_\_\_

10. When is your birthday?

\_\_\_\_\_  
[Month/Date/Year]

11. What is your sex?

\_\_\_\_ Male \_\_\_\_\_ Female

12. Which ethnic group best describes yourself? [Please check one only]:

- ☐ Aboriginal
- ☐ Asian
- ☐ Black
- ☐ Caucasian
- ☐ Hispanic
- ☐ Other [please specify] \_\_\_\_\_

PLEASE TURN TO THE NEXT PAGE.

13. What is your relationship status?

- ☐ Married or living with a long-term partner  
☐ Not married or living with a long-term partner

14a. How many children do you have?

\_\_\_\_\_

b. What is the range of your children's ages?

From \_\_\_\_\_ years to \_\_\_\_\_ years; or

I have only one child, who is \_\_\_\_\_ years old.

15. Please indicate your highest level of formal education.  
 [Please check one only.]

- ☐ Some high school  
☐ High school graduation  
☐ Some college/university  
☐ College diploma  
☐ University degree  
☐ Some graduate study  
☐ Advanced degree [please specify: e.g., Ph.D.,  
 M.D., LL.B., M.B.A., M.S., etc.]

\_\_\_\_\_ Other [please specify]  
 \_\_\_\_\_

16. What is your present annual gross salary [including cash bonuses]? [Please check the appropriate range.]

- ☐ Under \$20,000  
☐ \$20,000 to 29,999  
☐ \$30,000 to 39,999  
☐ \$40,000 to 49,999  
☐ \$50,000 to 74,999  
☐ \$75,000 to 99,999  
☐ \$100,000 to 124,999  
☐ \$125,000 to 149,999  
☐ \$150,000 to 174,999  
☐ \$175,000 to 199,999  
☐ \$200,000 and over

Please provide below your employer's name, the location site, and the name of the functional department for your current position.

Also note that a participant number [and not your name] is being used on this questionnaire. This participant number will ensure the confidentiality and anonymity of your responses.

Employer's Name \_\_\_\_\_

Geographic Location  
of Current Job \_\_\_\_\_

Functional Department \_\_\_\_\_

That completes the questionnaire.

If you have anything you wish to add in connection with your relationships at your workplace, please use the blank page attached to the back of this questionnaire.

If you wish to receive a copy of the aggregate results, please check the box: ☐

Thank you for your time!

Richard W. Stackman  
Ph.D. Candidate, University of British Columbia

PARTICIPANT NUMBER \_\_\_\_\_



**EXHIBIT 2**

**First Promotion Sample Questionnaire**



## SURVEY OF INDIVIDUAL WORK NETWORKS

This questionnaire is designed to examine the work networks of managers and supervisors.

Your employer has approved this project and questionnaire. However, I am completely responsible for the contents of the instrument, as well as for the data collected. I will be the only person -- aside from my advisor or assistants -- who will have access to your personal responses. Your employer will not have access to your personal responses, although your employer will receive a copy of the results of the survey, in aggregated form. Your participation is, of course, completely voluntary.

Your questionnaire is composed of four parts. The first three parts of the questionnaire deal specifically with your work relationships. The final section asks questions about you and your current employment status. Please try to answer all of the questions asked, and remember my promise of complete confidentiality.

I hope that you will take the time to complete this questionnaire and return it to me, using the stamped envelope that is enclosed. The instrument takes between 30 to 50 minutes to complete. You will likely find it interesting. **Thank you in advance for your help.**

Richard W. Stackman  
Ph.D. Candidate  
Faculty of Commerce and Business Administration  
The University of British Columbia  
2053 Main Mall  
Vancouver, B.C. V6T 1Z2  
Telephone: [604] 822-8504  
Fax: [604] 822-8517

Advisor: Dr. Craig C. Pinder  
Telephone: [604] 822-8374

# **PART ONE: QUESTIONS ABOUT YOUR WORK AND YOUR WORK RELATIONSHIPS**

If you recently received [in the past month or so] a promotion, begin by answering Question #1. If you have not recently received a promotion, please begin with Question #6 on Page 2.

1. What is the title of your new position?

\_\_\_\_\_

2. Will you be receiving a raise?

\_\_\_\_\_ Yes \_\_\_\_\_ No

3. What individuals in your organization were helpful to you in getting the promotion to your new position? Please provide the individuals' names and positions in the organization. If you need more space, please use the back of this sheet of paper.

Name	Position
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____

4. How were these individuals [listed in question #3] helpful to you in getting this new position? In other words, what did they do to help you get this new position?

Person #1. \_\_\_\_\_

\_\_\_\_\_

Person #2. \_\_\_\_\_

\_\_\_\_\_

Person #3. \_\_\_\_\_

\_\_\_\_\_

Person #4. \_\_\_\_\_

\_\_\_\_\_

Person #5. \_\_\_\_\_

\_\_\_\_\_

Person #6. \_\_\_\_\_

\_\_\_\_\_

PLEASE TURN TO THE NEXT PAGE.

5. In your own words, please explain why you consider your new position a promotion.

---

---

---

---

---

---

6. Please list the name [or names] of your immediate supervisors.

---

---

---

7a. Please provide the number of individuals you directly supervise.

---

b. Approximately what percentage of the individuals you directly supervise are... ?

\_\_\_\_\_ % Men \_\_\_\_\_ % Women

9. Please list the name[s] and position[s] of anyone in your organization who has been a mentor to you. A mentor is someone who has taken a personal interest in your career and has guided or sponsored you. This person may have served as a career role model and actively advised, guided, and/or promoted your career training.

<u>Name</u>	<u>Position</u>

10. Please list the name[s] and position[s] of anyone in your organization who has been useful or helpful in your learning to perform the tasks and duties associated with your current position.

<u>Name</u>	<u>Position</u>

PLEASE TURN TO THE NEXT PAGE.

## **PART TWO: TASK-RELATED TIES QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your company whom you consider to be useful in performing the tasks required of your job **PRIOR TO YOUR RECENT PROMOTION**.

Task-related relationships include those in your organization who aid you and/or are necessary for you to perform the tasks required in your job. In other words, you rely on these individuals to help you do your job. [Please note that you may interact with these individuals on a daily basis or as infrequently as once a week or month.] Moreover, these individuals provide you with job-related resources (e.g., information, expertise, professional advice, and/or material resources).

Please exclude your manager[s]/supervisor[s] as well as all of your subordinates from this list.

Please break the seal on this part of questionnaire upon completing your list and provide the requested information in relation to each individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL		Sax [M] Male [F] Female	How long [in years] have you known this individual?	Does this individual work at the [1] Same site same city [2] Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional department as you? [Y] Yes [N] No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is [1] at least two levels above yours [2] one level above yours [3] at the same level as yours [4] one level below yours [5] at least two levels below yours?	Considering only the people you have listed in the first column, who else would you and this individual associate with in order for you to complete the tasks associated with your job?  For example, if you and Jane Smith also worked frequently with individuals #6, 7 and 12, then you would write in the numbers 6, 7 and 12 in the space provided.
Example:	Jane Smith	F	4-1/2	1	Sr. Accountant	Y	Accounting	2	5, 7, 12
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

### **PART THREE: FRIENDSHIP TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your organization whom you consider to be "friends" of yours.

Friends are defined as those individuals with whom you frequently or often interact for personal satisfaction and enjoyment rather than just for the fulfillment of a particular task or goal. Those listed would include: [1] people you see socially outside of work, and [2] those people you spend time with socially at work (e.g., at lunch and coffee breaks) but do not see outside of work.

Therefore, you are to include anyone whom you consider to be a friend -- even if you listed them as a task-related relationship on the previous question.

Also, if you consider any superiors and/or subordinates as friends, please be sure to list them.

Please break the seal upon completing your list of friends and provide the requested information in relation to every individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL	Sex [M] Male [F] Female	How long [in years] have you known this individual?	Is this an individual you see socially outside of work? [Y] Yes [N] No	Does this individual work at the same site as you? [1] Same site [2] Different site, same city [3] Different site, different city	What is the title of this individual's current position in the organization?	Is this person in the same functional dept. as you? [Y] Yes [N] No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is [1] at least two levels above yours [2] one level above yours [3] at the same level as yours [4] one level below yours [5] at least two levels below yours?	Is this an individual you manage/ supervise? [Y] Yes [N] No	How often are you in contact with this person -- either in person or by phone? [1] Daily [2] Three times per week [3] Once per week [4] Twice a month [5] Less than once per month	Considering only the people you have listed in the first column, with whom else would you and this individual socialize together? For example, if you and Jane Smith also socialized frequently with individuals #5, 7 and 12, then you would write in the numbers 5, 7 and 12 in the space provided.
Example: Jane Smith	F	4-1/2	Y	1	Sr. Accountant	Y	Accounting	2	N	2	5, 7, 12
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											

**PART FOUR: QUESTIONS CONCERNING YOUR CURRENT EMPLOYMENT STATUS**

1. How many years have you worked for your present employer?  
[Example: 3-1/2 years]

\_\_\_\_\_ years

2. How many years have you worked at this geographic site?

\_\_\_\_\_ years

3. What was the title of your position prior to the promotion?

\_\_\_\_\_

4. How many years had you worked at the position you held prior to your promotion? [Example: 3-1/2 years]

\_\_\_\_\_ years

5. How many years have you worked full-time since turning 18?

\_\_\_\_\_ years

6. Please list the previous positions you have held with your current employer. Be sure to list the years in which you held these positions. [Example: Junior Accountant, 1989-1992]

Position

Dates

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

7. How many times have you been promoted by your current employer?

\_\_\_\_\_ times



8. Considering your new position, please indicate with a check mark the type of department in which you will work.  
[Please check one only.]

- ☐ Accounting
- ☐ Account Management
- ☐ Business Development
- ☐ Claims
- ☐ Communication/Public Relations
- ☐ Customer Service
- ☐ Data Processing
- ☐ Engineering
- ☐ Finance
- ☐ General Administration
- ☐ Information Systems
- ☐ International Sales/Marketing
- ☐ Labor Relations
- ☐ Law/Legal
- ☐ Leasing
- ☐ Occupational Health/Safety
- ☐ Personnel/Human Resources
- ☐ Product Manager
- ☐ Production/Manufacturing
- ☐ Purchasing
- ☐ Real Estate/Physical Plant
- ☐ Sales/Marketing
- ☐ Strategic Planning/Development
- ☐ Trade Relations
- ☐ Transportation
- ☐ Other [please specify] \_\_\_\_\_

9. Which of the following job categories best describes you?  
[Please check one only.]

- ☐ Executive
- ☐ Senior manager
- ☐ Middle manager
- ☐ First line manager/supervisor
- ☐ Other [please specify] \_\_\_\_\_

10. Which of the following job categories best describes you?  
[Please check one only.]

- ☐ Management
- ☐ Professional
- ☐ Technical
- ☐ Administrative
- ☐ Professional/Management
- ☐ Technical/Management
- ☐ Administrative/Management
- ☐ Other [please specify] \_\_\_\_\_

11. Is your current position in the same type of department as your new position [as indicated in Question #8]?

\_\_\_\_\_ Yes \_\_\_\_\_ No

If no, please provide the type of department [e.g., accounting].  
\_\_\_\_\_

PLEASE TURN TO THE NEXT PAGE.

19. What will be your annual gross salary (including cash bonuses) for your new position? [Please check the appropriate range.]

- \_\_\_ Under \$20,000
- \_\_\_ \$20,000 to 29,999
- \_\_\_ \$30,000 to 39,999
- \_\_\_ \$40,000 to 49,999
- \_\_\_ \$50,000 to 74,999
- \_\_\_ \$75,000 to 99,999
- \_\_\_ \$100,000 to 124,999
- \_\_\_ \$125,000 to 149,999
- \_\_\_ \$150,000 to 174,999
- \_\_\_ \$175,000 to 199,999
- \_\_\_ \$200,000 and over

20. On what date did your promotion take effect?

\_\_\_\_\_

21. Did your promotion require you to... [Please check one.]

\_\_\_ remain in the same building, on the same floor as your previous job

\_\_\_ move to a different floor while remaining in the same building as your previous job

If you checked that you moved to a different floor, how many floors did you move?

\_\_\_\_\_ floors

\_\_\_ move to a completely different building

If you checked that you moved to a different building site, what is the distance [in kilometres] between your new and old work locations?

\_\_\_\_\_ kilometres

12. When is your birthday?

                      
[Month/Date/Year]

13. What is your sex?

\_\_\_\_\_ Male \_\_\_\_\_ Female

14a. How many children do you have?

\_\_\_\_\_

b. What is the range of your children's ages?

From \_\_\_\_\_ years to \_\_\_\_\_ years; or

I have only one child, who is \_\_\_\_\_ years old

15. Which ethnic group best describes yourself? [Please check appropriate box]:

- \_\_\_\_\_ Aboriginal
- \_\_\_\_\_ Asian
- \_\_\_\_\_ Black
- \_\_\_\_\_ Caucasian
- \_\_\_\_\_ Hispanic
- \_\_\_\_\_ Other [please specify] \_\_\_\_\_

16. What is your relationship status?

- \_\_\_\_\_ Married or living with a long-term partner
- \_\_\_\_\_ Not married or living with a long-term partner

17. Please indicate your highest level of formal education.

- \_\_\_\_\_ Some high school
- \_\_\_\_\_ High school graduation
- \_\_\_\_\_ Some college/university
- \_\_\_\_\_ College diploma
- \_\_\_\_\_ University degree
- \_\_\_\_\_ Some graduate study
- \_\_\_\_\_ Advanced degree [please specify: e.g., Ph.D., M.D., LL.B., M.B.A., M.S., etc.] \_\_\_\_\_

\_\_\_\_\_ Other [please specify] \_\_\_\_\_

18. What is your annual gross salary [including cash bonuses] for your position previous to your new position? [Please check the appropriate range.]

- \_\_\_\_\_ Under \$20,000
- \_\_\_\_\_ \$20,000 to 29,999
- \_\_\_\_\_ \$30,000 to 39,999
- \_\_\_\_\_ \$40,000 to 49,999
- \_\_\_\_\_ \$50,000 to 74,999
- \_\_\_\_\_ \$75,000 to 99,999
- \_\_\_\_\_ \$100,000 to 124,999
- \_\_\_\_\_ \$125,000 to 149,999
- \_\_\_\_\_ \$150,000 to 174,999
- \_\_\_\_\_ \$175,000 to 199,999
- \_\_\_\_\_ \$200,000 and over

Please provide below your employer's name, the location site, and the name of the functional department for your current position.

Also note that a participant number [and not your name] is being used on this questionnaire. This participant number will ensure the confidentiality and anonymity of your responses as this page will be removed from the questionnaire immediately after the participant number is placed on the front cover.

Employer's Name \_\_\_\_\_

Geographic Location  
of Current Job \_\_\_\_\_

Functional Department \_\_\_\_\_

That completes the questionnaire.

If you have anything you wish to add in connection with your relationships at your workplace, please use the blank page attached to the back of this questionnaire.

If you wish to receive a copy of the aggregate results, please check the box: ☐

Thank you for your time.

PARTICIPANT NUMBER \_\_\_\_\_

**EXHIBIT 3**  
**Follow-up Promotion Sample Questionnaire**

## SURVEY OF INDIVIDUAL WORK NETWORKS

You may recall several months ago filling out a questionnaire examining the work networks of managers and supervisors.

First, I thank you for taking the time to fill out that questionnaire.

Second, in that first questionnaire, I mentioned that I would be sending you a follow-up questionnaire near the end of the year.

This questionnaire is a shorter version of the original, and given the low response rate to the first questionnaire, I would greatly appreciate it if you would take the time to fill out this second and final questionnaire.

The sole purpose of this questionnaire is to study the impact a job transition [e.g., a promotion] has on an individual's work networks.

Again, no individual results from this questionnaire will ever be reported to anyone. Your participation is, of course, completely voluntary. Please try to answer all of the questions asked, and remember my promise of complete confidentiality.

I hope that you will take the time to complete this questionnaire and return it to me, using the stamped envelope that is enclosed. The instrument takes between 15 to 25 minutes to complete.

Thank you in advance for your help.

Richard W. Stackman  
Ph.D. Candidate  
Faculty of Commerce and Business Administration  
The University of British Columbia  
2053 Main Mall  
Vancouver, B.C. V6T 1Z2  
Telephone: [604] 822-8369  
Fax: [604] 822-8517

Advisor: Dr. Craig C. Pinder  
Telephone: [604] 822-8374

## **PART ONE: TASK-RELATED TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your company whom you consider to be instrumental in completing the tasks associated with your current job.

Task-related relationships include those in your organization who aid you and/or are necessary for you to perform the tasks associated with your job. In other words, you rely on these individuals to help you do your job and/or these individuals rely on you to help them do their jobs. Moreover, these individuals provide you with job-related resources [e.g., information, expertise, professional advice, and/or material resources].

Please exclude your manager(s)/supervisor(s) as well as all of your subordinates from this list.

Please break the seal on this part of questionnaire upon completing your list and provide the requested information in relation to each individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL	Sex (M) Male (F) Female	How long [in years] have you known this individual?	Does this individual work at the [1] Same site, same city [2] Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional department as you? [Y] Yes [N] No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is [1] at least two levels above yours [2] one level above yours [3] at the same level as yours [4] one level below yours [5] at least two levels below yours?	Considering only the people you have listed in the first column, who else would you <u>add</u> this individual associate with in order for you to complete the tasks associated with your job?  For example, if you and Jane Smith also worked frequently with individuals #5, 7 and 12, then you would write in the numbers 5, 7 and 12 in the space provided.
Example: Jane Smith	F	4-1/2	1	Sr. Accountant	Y	Accounting	2	5, 7, 12
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								



## **PART TWO: FRIENDSHIP TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your organization whom you consider to be "friends" of yours.

Friends are defined as those individuals with whom you frequently or often interact for personal satisfaction and enjoyment rather than just for the fulfillment of a particular task or goal. Those listed would include: [1] people you see socially outside of work, and [2] those people you spend time with socially at work (e.g., at lunch and coffee breaks) but do not see outside of work.

Therefore, you are to include anyone who you consider to be a friend -- even if you listed them as an instrumental relationship on the previous question.

Also, if you consider any superiors and/or subordinates as friends, please be sure to list them on this questionnaire.

Please break the seal upon completing your list of friends and provide the requested information in relation to every individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL		Sex (M) Male (F) Female	How long (in years) have you known this individual?	Is this an individual you see socially outside of work? (Y) Yes (N) No	Does this individual work at the same city site, (1) Same site (2) Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional dept. as you? (Y) Yes (N) No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is (1) at least two levels above yours (2) one level above yours (3) at the same level as yours (4) one level below yours (5) at least two levels below yours?	Is this an individual you manage/ supervise? (Y) Yes (N) No	How often are you in contact with this person - either in person or by phone? (1) Daily (2) Three times per week (3) Once per week (4) Twice a month (5) Less than once per month	Considering only the people you have listed in the first column, with whom else would you and this individual socialize together? For example, if you and Jane Smith also socialized frequently with individuals #6, 7 and 12, then you would write in the numbers 6, 7 and 12 in the space provided.
Example:	Jane Smith	F	4-1/2	Y	1	Sr. Accountant	Y	Accounting	2	N	2	5, 7, 12
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												

### **PART THREE: QUESTIONS CONCERNING YOUR CURRENT EMPLOYMENT STATUS**

1. Please list the name [or names] of your immediate supervisors.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2a. Please provide the number of individuals you directly supervise.

\_\_\_\_\_

b. Approximately what percentage of the individuals you directly supervise are... ?

\_\_\_\_\_ % Men \_\_\_\_\_ % Women

3. How many years have you worked for your present employer?  
 [Example: 3-1/2 years]

\_\_\_\_\_ years

4. What is your sex?

\_\_\_\_\_ Male \_\_\_\_\_ Female

5a. How many children do you have?

\_\_\_\_\_

b. What is the range of your children's ages?

From \_\_\_\_\_ years to \_\_\_\_\_ years; or

I have only one child, who is \_\_\_\_\_ years old

6. Please indicate your highest level of formal education.

- \_\_\_\_\_ Some high school  
 \_\_\_\_\_ High school graduation  
 \_\_\_\_\_ Some college/university  
 \_\_\_\_\_ College diploma  
 \_\_\_\_\_ University degree  
 \_\_\_\_\_ Some graduate study  
 \_\_\_\_\_ Advanced degree [please specify: e.g., Ph.D.,  
 M.D., LL.B., M.B.A., M.S., etc.]

\_\_\_\_\_ Other [please specify]  
 \_\_\_\_\_

**PLEASE TURN TO THE NEXT PAGE.**

7. What is your current, annual gross salary (including cash bonuses)? [Please check the appropriate range.]

- ☐ Under \$20,000  
☐ \$20,000 to 29,999  
☐ \$30,000 to 39,999  
☐ \$40,000 to 49,999  
☐ \$50,000 to 74,999  
☐ \$75,000 to 99,999  
☐ \$100,000 to 124,999  
☐ \$125,000 to 149,999  
☐ \$150,000 to 174,999  
☐ \$175,000 to 199,999  
☐ \$200,000 and over

8. On what day did your promotion take effect?

\_\_\_\_\_

9. Did your promotion require you to... [Please check one.]

☐ remain in the same building, on the same floor as your previous job

☐ move to a different floor while remaining in the same building as your previous job

☐ If you checked that you moved to a different floor, how many floors did you move?

\_\_\_\_\_ floors

☐ move to a completely different building

☐ If you checked that you moved to a different building site, what is the distance [in kilometres] between your new and old work locations?

\_\_\_\_\_ kilometres

PLEASE TURN TO THE NEXT PAGE.

PARTICIPANT NUMBER \_\_\_\_\_

Please provide below your employer's name, the location site, and the name of the functional department for your current position.

Also note that a participant number [and not your name] is being used on this questionnaire. This participant number will ensure the confidentiality and anonymity of your responses as this page will be removed from the questionnaire immediately after the participant number is placed on the front cover.

Employer's Name \_\_\_\_\_

Geographic Location  
of Current Job \_\_\_\_\_

Functional Department \_\_\_\_\_

That completes the questionnaire.

If you have anything you wish to add in connection with your relationships at your workplace, please use the blank page attached to the back of this questionnaire.

Thank you for your time.

**EXHIBIT 4**  
**Reliability Check Questionnaire**

## SURVEY OF INDIVIDUAL WORK NETWORKS

You may recall over a month ago filling out a questionnaire examining the work networks of managers and supervisors. I thank you for taking the time to fill out that questionnaire.

In research of this sort, it is essential to know whether or not the questionnaire yields consistent results. Consequently, I am asking for your help one final time. I would greatly appreciate it if you would please take the time to fill out this questionnaire -- which is a shorter version of the original.

The sole purpose of this questionnaire is to check whether the "original" survey provides consistent data. No individual or aggregate results from this questionnaire will ever be reported to anyone.

Again, your participation is, of course, completely voluntary. Please try to answer all of the questions asked, and remember my promise of complete confidentiality.

I hope that you will take the time to complete this questionnaire and return it to me, using the stamped envelope that is enclosed. The instrument takes between 15 to 25 minutes to complete.

**Thank you in advance for your help.**

Richard W. Stackman  
Ph.D. Candidate  
Faculty of Commerce and Business Administration  
The University of British Columbia  
2053 Main Mall  
Vancouver, B.C. V6T 1Z2  
Telephone: [604] 822-8504  
Fax: [604] 822-8517

Advisor: Dr. Craig C. Pinder  
Telephone: [604] 822-8374

**PART ONE: TASK-RELATED TIES**  
**QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your company whom you consider to be useful in performing the tasks required of your current job.

Task-related relationships include those in your organization who aid you and/or are necessary for you to perform the tasks required in your job. In other words, you rely on these individuals to help you do your job. (Please note that you may interact with these individuals on a daily basis or as infrequently as once a week or month.) Moreover, these individuals provide you with job-related resources [e.g., information, expertise, professional advice, and/or material resources].

Please exclude your manager(s)/supervisor(s) as well as all of your subordinates from this list.

Please break the seal on this part of questionnaire upon completing your list and provide the requested information in relation to each individual you have listed.



PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL	Sex (M) Male (F) Female	How long (In years) have you known this individual?	Does this individual work at the (1) Same site (2) Different site, same city (3) Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional department as you? (Y) Yes (N) No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is (1) at least two levels above yours (2) one level above yours (3) at the same level as yours (4) one level below yours (5) at least two levels below yours?	Considering only the people you have listed in the first column, who else would you and this individual associate with in order for you to complete the tasks associated with your job?  For example, if you and Jane Smith also worked frequently with individuals #6, 7 and 12, then you would write in the numbers 6, 7 and 12 in the space provided.
Example: Jane Smith	F	4-1/2	1	Sr. Accountant	Y	Accounting	2	6, 7, 12
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								
11.								
12.								
13.								
14.								
15.								

## **PART TWO: FRIENDSHIP TIES** **QUESTIONNAIRE**

Before breaking the seal on this part of the questionnaire, please list up to 15 individuals within your organization whom you consider to be "friends" of yours.

Friends are defined as those individuals with whom you frequently or often interact for personal satisfaction and enjoyment rather than just for the fulfillment of a particular task or goal. Those listed would include: [1] people you see socially outside of work, and [2] those people you spend time with socially at work [e.g., at lunch and coffee breaks] but do not see outside of work.

Therefore, you are to include anyone whom you consider to be a friend -- even if you listed them as a task-related relationship on the previous question.

Also, if you consider any superiors and/or subordinates as friends, please be sure to list them.

Please break the seal upon completing your list of friends and provide the requested information in relation to every individual you have listed.

PLEASE READ THE INSTRUCTIONS BEFORE BREAKING THE SEAL		Sex (M) Male (F) Female	How long (in years) have you known this individual?	Is this an individual you see socially outside of work? (Y) Yes (N) No	Does this individual work at the same site, same city (1) Same site, same city (2) Different site, different city as you?	What is the title of this individual's current position in the organization?	Is this person in the same functional dept. as you? (Y) Yes (N) No	If this person works in a different functional department than you, please note in which functional department this individual does work. [e.g., sales, claims, personnel]	Considering the hierarchy of the organization, does this individual have a position that is (1) at least two levels above yours (2) one level above yours (3) at the same level as yours (4) one level below yours (5) at least two levels below yours?	Is this an individual you manage/ supervise? (Y) Yes (N) No	How often are you in contact with this person – either in person or by phone? (1) Daily (2) Three times per week (3) Once per week (4) Twice a month (5) Less than once per month	Considering only the people you have listed in the first column, with whom else would you and this individual socialize together? For example, if you and Jane Smith also socialized frequently with individuals #6, 7 and 12, then you would write in the numbers 6, 7 and 12 in the space provided.
Example:	Jane Smith	F	4-1/2	Y	1	Sr. Accountant	Y	Accounting	2	N	2	5, 7, 12
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												
11.												
12.												
13.												
14.												
15.												

### **PART THREE: QUESTIONS ABOUT YOU AND YOUR WORK RELATIONSHIPS**

1. Please list the name[s] and position[s] of anyone in your organization who has been a mentor to you. A mentor is someone who has taken a personal interest in your career and has guided or sponsored you. This person may have served as a career role model and actively advised, guided, and/or promoted your career training.

<u>Name</u>	<u>Position</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Please list the name[s] and position[s] of anyone in your organization who has been useful or helpful in your learning to perform the tasks and duties associated with your current position.

<u>Name</u>	<u>Position</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

3. Please list the name [or names] of your immediate manager/supervisor.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. What is your sex?

\_\_\_\_\_ Male \_\_\_\_\_ Female

5. How many years have you worked for your present employer? [Example: 3-1/2 years]

\_\_\_\_\_ years

- 6a. How many children do you have?

\_\_\_\_\_

- b. What is the range of your children's ages?

From \_\_\_\_\_ years to \_\_\_\_\_ years; or

I have only one child, who is \_\_\_\_\_ years old.

PLEASE TURN TO THE NEXT PAGE.

7. Please indicate your highest level of formal education.  
[Please check one only.]

- ☐ Some high school
- ☐ High school graduation
- ☐ Some college/university
- ☐ College diploma
- ☐ University degree
- ☐ Some graduate study
- ☐ Advanced degree [Please specify: e.g., Ph.D., M.Sc., M.B.A.]

☐ Other [Please specify]

Please provide below your employer's name, the location site, and the name of the functional department for your current position.

Also note that a participant number [and not your name] is being used on this questionnaire. This participant number will ensure the confidentiality and anonymity of your responses.

Employer's Name \_\_\_\_\_

Geographic Location  
of Current Job \_\_\_\_\_

Functional Department \_\_\_\_\_

That completes the questionnaire.

Thank you for your time!

**PARTICIPANT NUMBER** \_\_\_\_\_

**Appendix B:**

**NON-TRANSITION DATA:**

**Variable Means, Standard Deviations, and Correlations**

**PROMOTION DATA:**

**Variable Means and Standard Deviations**

**TABLE B.1**

**Non-Transition Respondent Sample Variable Means and Standard Deviations:  
Instrumental Networks (n = 242)**

Variables	Means	Standard Deviations
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed	10.63	4.14
Number of Males	6.61	3.44
Number of Females	4.02	2.47
<b>Range:</b>		
Number of Individuals Listed per Location		
Same Site	5.90	4.82
Same City/Different Site	2.56	3.52
Different City/Different Site	2.18	3.41
Number of Individuals in Same Function	4.27	3.66
Number of Different Functions	3.81	2.78
Hierarchical Rank	-0.07	0.60
Hierarchical Range	0.87	0.41
Density	0.26	0.24

**TABLE B.2**

Non-Transition Respondent Sample Variable Means and Standard Deviations:  
Expressive Networks (n = 242)

Variables	Means	Standard Deviations
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed	8.55	4.40
Number of Males	5.01	3.55
Number of Females	3.54	2.93
Number of Overlapping Ties	2.50	2.06
Number of Overlapping Female Ties	0.89	1.17
# of Individuals Seen Outside of Work	4.40	3.74
# of Females Seen Outside of Work	1.84	2.49
<b>Range:</b>		
Number of Individuals Listed per Location		
Same Site	5.36	4.04
Same City/Different Site	1.98	2.90
Different City/Different Site	1.35	2.20
Number of Individuals in Same Function	5.03	3.97
Number of Different Functions	2.39	2.11
Hierarchical Rank	-0.35	0.64
Hierarchical Range	0.96	0.41
Number of Supervisors	0.32	0.48
Number of Subordinates	1.34	1.70
Density	0.21	0.21
Frequency of Contact	3.38	0.94



**TABLE B.3a**

**Bank Respondent Sample Variable Means and Standard Deviations:  
Instrumental Networks (n = 83)**

Variables	Bank Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non- Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	9.57 (4.54)	10.87 (4.05)	8.41 (4.67)	.016
Number of Males	5.39 (3.53)	6.56 (3.08)	4.34 (3.60)	.003
Number of Females	4.18 (2.47)	4.31 (2.33)	4.07 (2.61)	.737
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	3.43 (4.20)	3.87 (4.77)	3.02 (3.62)	.614
Same City/Different Site	2.83 (3.54)	2.74 (3.89)	2.91 (3.24)	.318
Different City/Different Site	3.43 (3.97)	4.26 (4.06)	2.67 (3.78)	.024
Number of Individuals in Same Function	3.39 (3.83)	3.36 (3.41)	3.42 (4.22)	.665
Number of Different Functions	3.93 (2.96)	4.51 (2.93)	3.40 (2.92)	.064
Hierarchical Rank	0.03 (0.66)	-0.01 (0.70)	0.06 (0.62)	.922
Hierarchical Range	0.94 (0.39)	1.01 (0.36)	0.87 (0.41)	.169
Density	0.24 (0.23)	0.26 (0.23)	0.22 (0.23)	.386

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.3b**

Forestry Respondent Sample Variable Means and Standard Deviations:  
Instrumental Networks (n = 60)

Variables	Forestry Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non- Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	11.32 (4.05)	10.81 (4.19)	12.50 (3.52)	.174
Number of Males	8.18 (3.37)	8.07 (3.60)	8.44 (2.81)	.691
Number of Females	3.13 (2.15)	2.74 (2.11)	4.06 (2.01)	.010
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	7.20 (3.86)	6.93 (3.97)	7.83 (3.62)	.365
Same City/Different Site	0.93 (1.70)	0.64 (1.08)	1.61 (2.55)	.447
Different City/Different Site	3.18 (3.27)	3.24 (3.43)	3.06 (2.94)	.870
Number of Individuals in Same Function	3.60 (2.84)	3.69 (3.02)	3.39 (2.45)	.929
Number of Different Functions	3.88 (2.51)	3.50 (2.43)	4.78 (2.53)	.061
Hierarchical Rank	0.06 (0.59)	0.02 (0.60)	0.14 (0.59)	.493
Hierarchical Range	0.95 (0.48)	0.88 (0.50)	1.11 (0.39)	.110
Density	0.29 (0.25)	0.35 (0.28)	0.17 (0.11)	.016

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.3c**

Insurance Respondent Sample Variable Means and Standard Deviations:  
Instrumental Networks (n = 99)

Variables	Insurance Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non-Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	11.10 (3.67)	10.94 (3.66)	11.44 (3.74)	.578
Number of Males	6.69 (3.02)	7.12 (3.01)	5.78 (2.87)	.048
Number of Females	4.41 (2.54)	3.82 (2.22)	5.66 (2.75)	.001
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	7.18 (5.05)	7.09 (4.84)	7.39 (5.55)	.912
Same City/Different Site	3.34 (4.00)	3.52 (4.21)	2.94 (3.54)	.493
Different City/Different Site	0.53 (2.06)	0.31 (1.10)	1.00 (3.28)	.421
Number of Individuals in Same Function	5.40 (3.68)	5.70 (3.87)	4.78 (3.21)	.208
Number of Different Functions	3.68 (2.80)	3.40 (2.87)	4.25 (2.59)	.061
Hierarchical Rank	-0.22 (0.54)	-0.18 (0.51)	-0.30 (0.59)	.441
Hierarchical Range	0.77 (0.36)	0.75 (0.35)	0.80 (0.40)	.579
Density	0.26 (0.23)	0.27 (0.25)	0.23 (0.19)	.639

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.4a**

Bank Respondent Sample Variable Means and Standard Deviations:  
Expressive Networks (n = 83)

Variables	Bank Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non-Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	8.08 (4.29)	7.67 (4.47)	8.45 (4.13)	.530
Number of Males	3.95 (2.86)	4.92 (3.01)	3.11 (2.46)	.005
Number of Females	4.23 (3.14)	2.95 (2.29)	5.34 (3.36)	.001
Number of Overlapping Ties	2.12 (2.01)	2.18 (2.27)	2.07 (1.77)	.773
Number of Overlapping Female Ties	0.96 (1.35)	0.82 (1.34)	1.09 (1.36)	.359
# of Individuals Seen Outside of Work	4.42 (3.85)	4.44 (3.54)	4.41 (4.13)	.708
# of Females Seen Outside of Work	2.38 (2.97)	1.36 (1.88)	3.20 (3.42)	.006
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	3.66 (3.40)	4.00 (3.73)	3.39 (3.13)	.549
Same City/Different Site	2.51 (3.08)	1.67 (2.53)	3.20 (3.33)	.020
Different City/Different Site	2.23 (2.77)	2.64 (2.71)	1.89 (2.81)	.120
Number of Individuals in Same Function	4.03 (3.45)	3.39 (2.92)	4.55 (3.79)	.172
Number of Different Functions	2.61 (2.03)	2.89 (2.14)	2.39 (1.93)	.303
Hierarchical Rank	-0.35 (0.68)	-0.23 (0.73)	-0.46 (0.62)	.073
Hierarchical Range	1.07 (0.37)	1.06 (0.42)	1.07 (0.32)	.786
Number of Supervisors	0.31 (0.47)	0.42 (0.50)	0.23 (0.42)	.071
Number of Subordinates	1.59 (1.77)	1.67 (1.72)	1.52 (1.82)	.574
Density	0.18 (0.19)	0.20 (0.21)	0.16 (0.18)	.456
Frequency of Contact	3.18 (0.95)	3.43 (0.92)	2.97 (0.94)	.048

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.4b**

Forestry Respondent Sample Variable Means and Standard Deviations:  
Expressive Networks (n = 60)

Variables	Forestry Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non- Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	7.95 (4.59)	7.55 (4.83)	8.89 (3.95)	.274
Number of Males	5.35 (3.47)	5.55 (3.64)	4.89 (3.08)	.560
Number of Females	2.60 (2.09)	2.00 (1.98)	4.00 (1.68)	.001
Number of Overlapping Ties	3.08 (2.39)	3.00 (2.46)	3.28 (2.27)	.541
Number of Overlapping Female Ties	0.85 (1.05)	0.62 (1.01)	1.39 (0.98)	.002
# of Individuals Seen Outside of Work	4.22 (3.80)	4.24 (3.89)	4.17 (3.67)	.948
# of Female Seen Outside of Work	1.33 (1.67)	1.07 (1.58)	1.94 (1.76)	.018
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	6.17 (3.97)	6.10 (4.30)	6.33 (3.18)	.645
Same City/Different Site	0.53 (0.98)	0.43 (0.89)	0.78 (1.17)	.145
Different City/Different Site	1.30 (1.80)	1.07 (1.64)	1.83 (2.07)	.141
Number of Individuals in Same Function	4.02 (3.24)	4.36 (3.66)	3.22 (1.77)	.506
Number of Different Functions	2.85 (2.37)	2.32 (2.11)	4.06 (2.53)	.017
Hierarchical Rank	-0.17 (0.68)	-0.16 (0.72)	-0.17 (0.59)	.973
Hierarchical Range	1.03 (0.46)	0.98 (0.51)	1.15 (0.33)	.384
Number of Supervisors	0.33 (0.54)	0.33 (0.57)	0.33 (0.49)	.809
Number of Subordinates	0.75 (1.34)	0.71 (1.35)	0.83 (1.34)	.424
Density	0.24 (0.24)	0.28 (0.24)	0.17 (0.23)	.020
Frequency of Contact	3.76 (0.85)	3.92 (0.71)	3.43 (1.04)	.084

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.4c**

Insurance Respondent Sample Variable Means and Standard Deviations:  
Expressive Networks (n = 99)

Variables	Insurance Means/(SD)	Male Means/(SD)	Female Means/(SD)	Gender Difference Non-Parametric <sup>1</sup> p-values
<b>Network Size &amp; Gender Mix:</b>				
Number of Individuals Listed	9.29 (4.32)	9.31 (4.46)	9.25 (4.08)	.976
Number of Males	5.69 (3.93)	6.85 (3.94)	3.25 (2.57)	< .001
Number of Females	3.61 (3.05)	2.46 (1.97)	6.00 (3.52)	< .001
Number of Overlapping Ties	2.47 (1.83)	2.61 (1.90)	2.19 (1.65)	.366
Number of Overlapping Female Ties	0.85 (1.09)	0.66 (0.93)	1.25 (1.30)	.020
# of Individuals Seen Outside of Work	4.50 (3.64)	4.06 (3.69)	5.41 (3.42)	.037
# of Female Seen Outside of Work	1.71 (2.42)	0.76 (1.27)	3.69 (3.00)	< .001
<b>Range:</b>				
Number of Individuals Listed per Location				
Same Site	6.26 (4.16)	6.58 (4.21)	5.59 (4.03)	.289
Same City/Different Site	2.43 (3.25)	2.32 (3.12)	2.66 (3.54)	.704
Different City/Different Site	0.67 (1.56)	0.52 (1.03)	1.00 (2.30)	.470
Number of Individuals in Same Function	6.47 (4.33)	6.91 (4.38)	5.56 (4.16)	.117
Number of Different Functions	1.95 (1.93)	1.71 (1.80)	2.44 (2.11)	.057
Hierarchical Rank	-0.45 (0.57)	-0.44 (0.58)	-0.49 (0.58)	.499
Hierarchical Range	0.82 (0.36)	0.79 (0.34)	0.87 (0.38)	.205
Number of Supervisors	0.32 (0.47)	0.38 (0.49)	0.19 (0.40)	.058
Number of Subordinates	1.50 (1.76)	1.62 (1.95)	1.25 (1.27)	.682
Density	0.22 (0.20)	0.24 (0.21)	0.17 (0.18)	.071
Frequency of Contact	3.33 (0.92)	3.63 (0.83)	2.72 (0.79)	< .001

<sup>1</sup>Mann-Whitney U non-parametric test.

**TABLE B.5**

Description of Variable Labels for Tables B.6 through B.11

**Instrumental Dependent Variables**

INUM	Number of Individuals Listed
IMAL	Number of Males Listed
IFEM	Number of Females Listed
ISITE1	Number of Individuals Listed at Same Site
ISITE2	Number of Individuals Listed at Different Site/Same City
ISITE3	Number of Individuals Listed at Different Site/Different City
ISAMFUN	Number of Individuals Working in Same Function as Respondent
IDFUNCT	Number of Different Functions Listed for Individuals Listed
IHRANK	Hierarchical Rank of Individuals Listed
IHRANGE	Hierarchical Range of Individuals Listed
IDENSA	Density of Ties

**Expressive Dependent Variables**

FNUM	Number of Individuals Listed
FMAL	Number of Males Listed
FFEM	Number of Females Listed
FSEEOU	Number of Individuals Listed Seen Outside of Work
FSEEFEM	Number of Females Listed Seen Outside of Work
FOVERLP	Number of Overlapping Instrumental and Expressive Ties
FOVEFEM	Number of Overlapping Females
FSITE1	Number of Individuals Listed at Same Site
FSITE2	Number of Individuals Listed at Different Site/Same City
FSITE3	Number of Individuals Listed at Different Site/Different City
FSAMFUN	Number of Individuals Working in Same Function as Respondent
FDFUNCT	Number of Different Functions Listed for Individuals Listed
FHRANK	Hierarchical Rank of Individuals Listed
FHRANGE	Hierarchical Range of Individuals Listed
FSUPV	Number of Supervisors Listed as Expressive
FSUBOR	Number of Subordinates Listed as Expressive
FDENSA	Density of Ties
FCONTA	Frequency of Contact

**TABLE B.5** (continued)

Description of Variable Labels for Tables B.6 through B.11

**Predictor Variables**

INUM	Covariate: Number of Instrumental Individuals Listed
FNUM	Covariate: Number of Expressive Individuals Listed
DGENDER	Gender Dummy Variable
DJCADMIN	Job Category/Administrative Dummy Variable
DJCMGR	Job Category/Manager Dummy Variable
DCHILDR	Child-Rearing Responsibility Dummy Variable
DCOBANK	Company/Bank Dummy Variable
DCOFORE	Company/Forest Dummy Variable
DJBL12	Job Level/Executive-Sr. Manager Dummy Variable
DJBL3	Job Level/Middle Manager Dummy Variable
DJBL4	Job Level/First-Line Supervisor Dummy Variable
DRACE	Race Dummy Variable
XGENBAN	Gender x Company/Bank Interaction Term
XGENFOR	Gender x Company/Forest Interaction Term
XJCABAN	Job Category/Administrative x Company/Bank Interaction Term
XJCAFOR	Job Category/Administrative x Company/Forest Interaction Term
XJCMBAN	Job Category/Manager x Company/Bank Interaction Term
XJCMFOR	Job Category/Manager x Company/Forest Interaction Term
XCHIBAN	Child-Rearing x Company/Bank Interaction Term
XCHIFOR	Child-Rearing x Company/Forest Interaction Term
ICOVBAN	Instrumental Covariate x Company/Bank Interaction Term
ICOVFOR	Instrumental Covariate x Company/Forest Interaction Term
FCOVBAN	Expressive Covariate x Company/Bank Interaction Term
FCOVFOR	Expressive Covariate x Company/Forest Interaction Term



TABLE B.6

Two-tailed Spearman Rank Correlations: Instrumental Network Dependent Variables

	<u>inum</u>	<u>imal</u>	<u>ifem</u>	<u>isite1</u>	<u>isite2</u>	<u>isite3</u>	<u>isamfun</u>	<u>idfunct</u>	<u>ihrank</u>	<u>ihrange</u>
<u>imal</u>	.794***									
<u>ifem</u>	.553***	.001								
<u>isite1</u>	.541***	.446***	.286***							
<u>isite2</u>	.099	.097	.108^	-.359***						
<u>isite3</u>	.223***	.231***	.032	-.273***	-.183**					
<u>isamfun</u>	.323***	.247***	.224***	.203**	.205**	-.152*				
<u>idfunct</u>	.563***	.434***	.384***	.278***	-.000	.258***	-.329***			
<u>ihrank</u>	-.162*	.030	-.338***	-.173**	.023	.146*	-.165*	-.066		
<u>ihrange</u>	.198**	.101	.212**	-.006	.104	.193**	-.125^	.287***	-.075	
<u>idensa</u>	-.063	-.037	-.033	.017	-.110^	-.056	.207**	-.150*	-.065	-.171*

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.7**  
Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables

	<u>fnum</u>	<u>fmal</u>	<u>ffem</u>	<u>fseout</u>	<u>fseefem</u>	<u>foverlp</u>	<u>fovefem</u>	<u>fsite1</u>	<u>fsite2</u>	<u>fsite3</u>
fmal	.748***									
ffem	.601***	-.0025								
fseout	.631***	.447***	.359***							
fseefem	.392***	-.042	.665***	.679***						
foverlp	.531***	.511***	.228***	.249***	.021					
fovefem	.345***	.048	.513***	.163*	.262***	.626***				
fsite1	.621***	.540***	.318***	.319***	.152*	.427***	.219**			
fsite2	.323***	.193**	.224**	.271***	.205**	.076	.079	-.248***		
fsite3	.302***	.233***	.179**	.272***	.167*	.104	.086	-.141*	.029	
fsamfun	.664***	.549***	.296***	.504***	.263***	.361***	.184**	.408***	.278***	.135**
fdfunct	.392***	.226***	.392***	.163*	.172**	.272***	.218**	.345***	.033	.128*
fhrank	-.178**	.012	-.242***	-.186**	-.239***	.089	.024	-.089	-.135*	-.055
fhrange	.079	-.078	.215**	.088	.151*	-.103	-.036	.020	.026	.230***
fsupv	.203**	.305***	-.003	.112^	-.003	.076	-.011	.266***	-.118	.104
fsubor	.464***	.290***	.310***	.369***	.246***	.092	.063	.241***	.262***	.209**
fdensa	.035	.107	-.081	.102	.029	.055	-.093	.121^	.015	-.099
fconta	-.128^	.054	-.215**	-.065	-.147*	.088	.024	.361***	-.371***	-.329***

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.7 (continued)**  
**Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables**

	<u>fsamfun</u>	<u>fdfunc</u>	<u>fhrank</u>	<u>fhrange</u>	<u>fsupv</u>	<u>subor</u>	<u>fdensa</u>
fdfunc	-.258***						
fhrank	-.177**	-.018					
fhrange	-.040	.160*	-.345***				
fsupv	.247***	.016	.240***	-.037			
fsubor	.451***	.038	-.364***	.308***	.031		
fdensa	.229**	-.135*	.035	-.116^	.154*	.053	
fconta	.091	-.222**	.043	-.061	.203**	.034	.333**

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

TABLE B.8

Two-tailed Spearman Rank Correlations: Expressive Network and Instrumental Network Dependent Variables

	<u>inum</u>	<u>imal</u>	<u>ifem</u>	<u>isite1</u>	<u>isite2</u>	<u>isite3</u>	<u>isamfun</u>	<u>idfunct</u>	<u>ihrank</u>	<u>ihrange</u>	<u>idensa</u>
fnum	.303***	.219**	.187**	.126^	.177**	-.023	.176**	.200**	-.033	.014	.025
fmal	.217**	.347***	-.118^	.134*	.126^	-.021	.147*	.113^	.007	-.003	.050
ffem	.185**	-.080	.402***	.087	.085	-.004	.060	.206**	-.003	.021	.010
fseeout	.203**	.102	.189**	.043	.146*	.047	.166*	.160*	.008	.024	.023
fseefem	.079	-.103	.272***	.035	.070	.038	.034	.139*	.061	-.008	-.013
foverlp	.329***	.334***	.110^	.301***	.059	-.050	.194**	.208**	-.061	.047	.191**
fovefem	.243***	.060	.359***	.218**	.070	-.067	.172**	.106	-.050	.063	.090
fsite1	.335***	.292***	.122^	.536***	-.197***	-.135*	.077	.244***	.007	-.054	-.031
fsite2	-.076	-.074	.038	-.366***	.705***	-.191**	.126^	-.056	-.013	.017	-.015
fsite3	.019	.028	-.025	-.310***	-.038	.557***	-.062	.073	.050	.199**	.061
fsamfun	.120^	.115^	.030	-.064	.263***	-.089	.440***	-.127^	-.023	-.129*	.038
fdfunct	.252***	.147*	.216**	.298***	-.156**	.105	-.336***	.488***	.026	.130*	-.017
fhrank	-.078	.038	-.170**	.025	-.117^	.074	-.019	-.050	.356***	-.022	.027
fhrange	.110^	.050	.148*	-.074	-.003	.287***	-.127^	.217**	-.057	.349***	-.146*
fsupv	.041	.085	-.065	.000	.009	.100	.007	.088	.159*	-.032	-.062
fsubor	.040	.012	.104	-.175**	.188**	.057	-.044	.150*	-.058	.071	-.141*
fdensa	.051	.117^	-.088	-.076	.047	.039	.044	.007	.058	-.042	.140
fconta	.043	.106	-.091	.237***	-.155*	-.054	.041	.029	.113^	-.009	.031

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

**TABLE B.9**  
Two-tailed Spearman Rank Correlations: Predictor Variables

	<u>inum</u>	<u>fnum</u>	<u>dgender</u>	<u>dicadmin</u>	<u>djcgr</u>	<u>dchildr</u>	<u>dcobank</u>	<u>dcofore</u>	<u>dibl12</u>	<u>dibl3</u>
<u>fnum</u>	.303***									
<u>dgender</u>	-.066	.046								
<u>djcadmin</u>	.026	.085	.167**							
<u>djcgr</u>	-.022	.010	-.119^	-.665***						
<u>dchildr</u>	-.116^	-.042	-.209**	-.042	-.049					
<u>dcobank</u>	-.166*	-.073	.210**	-.026	.127*	.060				
<u>dcofore</u>	.105	-.082	-.104	.001	-.232***	-.009	-.415***			
<u>dibl12</u>	.172**	.026	-.074	-.019	.045	.043	.127*	.091		
<u>dibl3</u>	-.013	.001	.071	-.097	.077	-.038	.129*	-.085	-.353***	
<u>dibl4</u>	-.115^	.038	.040	.095	.072	.012	-.153	-.193**	-.359***	-.603***
<u>drace</u>	-.068	-.088	.096	.091	-.109^	.120^	-.014	.039	.053	-.099
<u>xgenban</u>	-.184**	.012	.194**	-.014	.010	-.110^	.053	-.012	-.054	.048
<u>xgenfor</u>	.098	.076	-.142*	-.079	.161*	.057	.019	-.319***	-.046	.009
<u>xjcaban</u>	.072	.049	-.169**	-.248***	.077	-.025	-.476***	.207**	-.072	.080
<u>xjcafor</u>	-.020	.006	-.064	-.348***	.410***	-.015	.208**	-.447***	-.017	.001

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.9 (continued)**  
Two-tailed Spearman Rank Correlations: Predictor Variables

	<u>inum</u>	<u>fnum</u>	<u>dgender</u>	<u>dicadmin</u>	<u>dcmgr</u>	<u>dehldr</u>	<u>dcobank</u>	<u>dcofore</u>	<u>dibl12</u>	<u>dibl3</u>
xjcmбан	-.076	-.032	.092	.189**	-.418***	.046	.133*	.121^	-.031	-.047
xjcmfor	.087	-.006	.072	.157*	.051	-.032	-.067	.113^	.133*	.072
xchiban	-.051	-.031	-.090	-.013	.028	.121^	.114^	-.056	.070	-.013
xchifor	-.016	.013	-.053	-.035	-.040	-.120^	-.050	.026	-.039	.092
icovбан	-.021	-.019	-.188**	-.014	-.058	.004	-.055	-.005	.066	-.073
icovfor	-.296***	-.019	.140*	.033	.049	-.021	.037	.169**	-.024	-.111^
fcovбан	-.008	-.157*	-.020	.031	-.030	-.024	-.084	.128^	.033	.039
fcovfor	.000	-.262***	.038	-.032	.031	.029	.128*	-.089	.081	.033

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.9 (continued)**  
Two-tailed Spearman Rank Correlations: Predictor Variables

	<u>dibl4</u>	<u>drace</u>	<u>xgenban</u>	<u>xgenfor</u>	<u>xicaban</u>	<u>xicafor</u>	<u>xicmban</u>	<u>xicmfor</u>	<u>xchiban</u>	<u>xchifor</u>	<u>icovban</u>	<u>icovfor</u>
<u>drace</u>	.064											
<u>xgenban</u>	.015	.037										
<u>xgenfor</u>	.092	-.041	-.417***									
<u>xicaban</u>	-.037	.144*	.100	.006								
<u>xicafor</u>	.070	-.061	.002	.253***	-.285***							
<u>xicmban</u>	-.020	-.133*	.115^	-.101	-.648***	.029						
<u>xicmfor</u>	-.055	.004	-.001	-.106	.170**	-.543***	-.415***					
<u>xchiban</u>	-.031	-.063	-.291***	-.135*	-.090	.068	-.027	.023				
<u>xchifor</u>	-.040	.027	.128*	-.187**	.075	-.068	.039	-.078	-.423***			
<u>icovban</u>	-.029	.135*	-.151*	.047	.031	-.022	-.011	-.030	-.116^	.088		
<u>icovfor</u>	-.047	-.095	.090	.005	-.056	-.033	.011	.087	.089	-.154*	-.417***	
<u>fcovban</u>	-.018	.043	.049	-.097	.120^	-.116^	.003	.023	-.068	.035	.293***	-.165*
<u>fcovfor</u>	-.084	-.053	-.042	.080	-.104	.104	.003	-.005	.041	-.028	-.213**	.314***

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.9 (continued)**  
**Two-tailed Spearman Rank Correlations: Predictor Variables**

fcovban

fcovfor     -.363\*\*\*

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001



TABLE B.10

Two-tailed Spearman Rank Correlations: Instrumental Network Dependent Variables and Predictor Variables

	<u>imal</u>	<u>ifem</u>	<u>isite1</u>	<u>isite2</u>	<u>isite3</u>	<u>isamfun</u>	<u>idfunct</u>	<u>ihrank</u>	<u>ihrange</u>	<u>idensa</u>
dggender	-.218**	.192**	-.087	.061	-.001	-.097	.046	.006	.038	-.138*
inum	.794***	.553***	.541***	.099	.223***	.323***	.563***	-.162*	.198**	-.063
djcadmin	-.132*	.207**	-.027	.100	.003	-.006	.008	.003	.024	-.100
djcmgr	.026	-.040	-.037	.064	-.084	.008	.012	-.057	.004	.027
dchildr	-.064	-.067	-.078	.011	.030	-.024	-.035	.016	-.030	.082
dcobank	-.249***	.057	-.394***	.087	.316***	-.226***	.013	.103	.127*	-.076
dcofore	.264***	-.214**	.193**	-.266***	.263***	-.074	.051	.124^	.137*	.076
djbl12	.241***	-.036	.167*	-.019	.104	-.139*	.204**	-.214**	.155*	-.043
djbl3	-.016	-.038	-.196**	-.003	.118^	-.030	-.004	.075	.099	-.049
djbl4	-.218**	.155*	.019	.123^	-.275***	.108^	-.076	.001	-.178**	.086
drace	-.062	-.053	.006	.015	-.096	.014	-.139*	.020	-.152*	-.048
xgenban	-.134*	-.133*	-.070	.066	-.137*	-.010	-.183**	.006	-.119^	-.006
xgenfor	.083	.104	.029	.112^	-.089	.082	.067	-.006	.043	-.087
xjcaban	.148*	-.059	.240**	-.082	-.198**	.149*	-.093	-.080	-.080	.028

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

**TABLE B.1Q (continued)**  
**Two-tailed Spearman Rank Correlations: Instrumental Network Dependent Variables and Predictor Variables**

	<u>imal</u>	<u>ifem</u>	<u>isite1</u>	<u>isite2</u>	<u>isite3</u>	<u>isamfun</u>	<u>idfunct</u>	<u>ihrank</u>	<u>ihrange</u>	<u>idensa</u>
xjcafor	-.064	.018	-.065	.103	-.096	.043	-.051	.047	-.115 <sup>^</sup>	-.031
xjcmбан	-.096	-.048	-.117 <sup>^</sup>	-.063	.128*	-.092	.039	.127 <sup>^</sup>	.038	.111
xjcmfor	.061	.076	.074	-.015	.058	-.091	.116 <sup>^</sup>	-.046	.090	-.087
xchiban	-.027	-.030	-.034	.018	.041	-.116 <sup>^</sup>	.114 <sup>^</sup>	.031	.073	.005
xchifor	-.016	-.068	-.004	.044	-.099	.077	-.087	.044	-.005	.027
icovбан	.023	-.010	-.044	.095	-.066	.080	-.083	-.027	-.103	.182**
icovfor	-.181**	-.254**	-.163*	-.023	.118 <sup>^</sup>	-.262***	-.118 <sup>^</sup>	.255***	.066	-.119 <sup>^</sup>

---

<sup>^</sup> p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

TABLE B.11

Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables and Predictor Variables

	<u>final</u>	<u>ffem</u>	<u>fseeout</u>	<u>fseefem</u>	<u>woverdp</u>	<u>wovefem</u>	<u>fsite1</u>	<u>fsite2</u>	<u>fsite3</u>	<u>fsamfun</u>	<u>fdfunct</u>	<u>fhrank</u>
dgender	-.331***	.461***	.069	.447***	-.043	.220**	-.121^	.175**	.057	-.070	.131*	-.096
fnum	.748***	.601***	.631***	.392***	.531***	.345***	.621***	.323***	.302***	.664***	.392***	-.178**
djcadmin	-.120^	.241***	-.022	.114^	-.004	.087	.021	.058	-.016	.040	.114^	.004
djcmgr	.122^	-.114^	.082	-.005	.014	-.048	-.108^	.098	.108^	.074	-.111^	-.141*
dchildr	.027	-.066	-.055	-.154*	-.020	-.036	.008	-.090	.075	-.016	.002	.004
dcobank	-.201**	.148*	-.005	.135*	-.153*	.011	-.326***	.176**	.252***	-.182**	.094	-.030
dcofore	.065	-.164*	-.035	-.086	.138*	.007	.131*	-.297***	.048	-.131*	.104	.174**
djbl12	.138*	-.085	-.059	-.100	.214**	-.012	.074	-.044	.004	-.137*	.248***	-.174**
djbl3	-.061	.068	.019	.071	-.127*	-.062	-.129*	.066	.196**	.040	-.063	-.003
djbl4	-.037	.070	.053	.060	.000	.115^	.034	.086	-.146*	.126^	-.129*	.033
dtrace	-.103	.007	-.081	-.046	-.123^	-.117^	-.041	-.007	-.088	-.022	-.014	-.050
xgenban	-.037	.031	-.072	-.011	.011	-.050	-.052	.112^	-.121^	.107	-.134	-.080
xgenfor	.167**	-.033	-.028	-.113^	.020	.048	.073	.068	.042	.048	.047	.006
xjcaban	.111^	-.076	-.024	-.146*	-.119^	.048	.183**	-.093	-.088	.070	-.036	-.070

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

**TABLE B.11 (continued)**  
Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables and Predictor Variables

	<u>fma1</u>	<u>ffem</u>	<u>fseeout</u>	<u>fseefem</u>	<u>woverlp</u>	<u>wovefem</u>	<u>fsite1</u>	<u>fsite2</u>	<u>fsite3</u>	<u>fsamfun</u>	<u>fdfunct</u>	<u>fhrank</u>
xjcafor	.105	-.096	.005	-.023	-.117 <sup>^</sup>	-.114 <sup>^</sup>	-.027	.081	-.038	.043	-.096	-.016
xjcmban	-.071	.042	.021	.113 <sup>^</sup>	-.031	.005	-.035	-.035	.016	-.035	.025	.129 <sup>^</sup>
xjcmfor	-.106	.118 <sup>^</sup>	.024	.050	.078	.096	-.001	-.055	.053	-.008	.080	-.075
xchiban	.067	-.097	.022	-.011	-.071	-.056	-.027	-.026	.120 <sup>^</sup>	-.087	.052	.006
xchifor	-.040	.016	.095	.066	.059	-.021	.003	.078	-.065	.057	-.032	-.006
fcovban	-.165*	-.025	-.059	-.007	-.143	-.056	-.177**	-.126 <sup>^</sup>	.013	-.157*	-.076	-.063
fcovfor	-.156*	-.133*	-.114 <sup>^</sup>	-.028	-.096	-.035	-.056	-.083	-.037	-.227***	.084	.071

---

<sup>^</sup> p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.11** (continued)  
Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables and Predictor Variables

	<u>fhrange</u>	<u>fsupv</u>	<u>fsubor</u>	<u>fdensa</u>	<u>fconta</u>
dgender	.144*	-.137*	.013	-.212**	-.363***
fnum	.079	.203**	.464***	.035	-.128^
djcadmin	-.047	-.073	.058	-.049	-.029
djcmgr	.054	.066	.150*	.001	-.105
dchildr	.006	.013	.023	-.010	.043
dcobank	.214**	-.002	.114^	-.145*	-.165*
dcofore	.119^	-.004	-.235***	.075	.234***
djbl12	.087	-.075	.062	-.035	-.036
djbl3	.145*	-.037	.119^	-.101	-.125^
djbl4	-.155*	.070	-.037	.056	.024
drace	.034	-.037	-.022	-.016	-.060
xgenban	-.014	-.063	-.030	.032	.017
xgenfor	-.054	.111^	-.121^	-.043	.020
xjcaban	-.020	-.039	.011	.086	.092

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.11** (continued)  
Two-tailed Spearman Rank Correlations: Expressive Network Dependent Variables and Predictor Variables

	<u>fhrange</u>	<u>fsupv</u>	<u>fsubor</u>	<u>fdensa</u>	<u>fconta</u>
xjcafor	-.190**	.205**	-.054	.038	-.049
xjcmban	-.069	.046	-.106	-.048	.036
xjcmfor	.159*	-.185**	.157*	.002	-.005
xchiban	.043	.141*	-.008	.027	-.051
xchifor	-.045	-.092	.040	-.002	.032
fcovban	-.023	-.109^	.044	-.002	-.059
fcovfor	.054	.042	-.212**	.015	.066

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

**TABLE B.12**

Promotion Study Variable Means and Standard Deviations:  
Instrumental Networks (n = 33)

Variables	Time 1 Means/(SD)	Time 2 Means/(SD)
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed	7.45 (4.70)	8.33 (4.63)
Number of Males	3.36 (3.15)	4.39 (3.54)
Number of Females	4.09 (3.07)	3.94 (2.42)
<b>Range:</b>		
Number of Individuals Listed per Location		
Same Site	2.61 (3.59)	2.33 (3.20)
Same City/Different Site	3.32 (3.40)	3.76 (4.39)
Different City/Different Site	2.00 (2.63)	2.24 (3.53)
Number of Individuals in Same Function	3.42 (3.35)	3.21 (3.18)
Number of Different Functions	2.87 (2.30)	2.91 (2.32)
Hierarchical Rank	0.07 (0.88)	-0.03 (0.82)
Hierarchical Range	1.03 (0.45)	1.00 (0.45)
Density	0.35 (0.25)	0.33 (0.32)

Time 1: First promotion questionnaire

Time 2: Follow-up promotion questionnaire

**TABLE B.13**

Promotion Study Variable Means and Standard Deviations:  
Expressive Networks (n = 33)

Variables	Time 1 Means/(SD)	Time 2 Means/(SD)
<b>Network Size and Gender Mix:</b>		
Number of Individuals Listed	8.82 (4.34)	8.52 (4.53)
Number of Males	3.03 (2.44)	2.91 (2.60)
Number of Females	5.79 (3.45)	5.61 (3.54)
Number of Overlapping Ties	2.03 (1.83)	2.64 (1.87)
Number of Overlapping Female Ties	1.30 (1.45)	1.73 (1.35)
# of Individuals Seen Outside of Work	5.84 (4.10)	4.70 (3.56)
# of Females Seen Outside of Work	4.28 (3.27)	3.15 (2.92)
<b>Range:</b>		
Number of Individuals Listed per Location		
Same Site	2.39 (2.73)	2.76 (2.68)
Same City/Different Site	4.27 (4.25)	3.52 (3.65)
Different City/Different Site	2.15 (2.73)	2.24 (3.46)
Number of Individuals in Same Function	4.73 (3.65)	4.55 (3.76)
Number of Different Functions	2.45 (2.35)	2.12 (1.65)
Hierarchical Rank	-0.37 (0.71)	-0.45 (0.60)
Hierarchical Range	1.10 (0.37)	0.98 (0.37)
Number of Supervisors	0.27 (0.52)	0.30 (0.47)
Number of Subordinates	1.37 (1.72)	1.55 (1.79)
Density	0.22 (0.20)	0.27 (0.28)
Frequency of Contact	2.76 (0.85)	3.21 (0.98)

Time 1: First promotion questionnaire

Time 2: Follow-up promotion questionnaire



**TABLE B.14**Kilmogorov-Smirnov (Lilliefors) Test for Normality<sup>1</sup>:

Instrumental Network and Expressive Network Dependent Variables (n = 242)

Variables	Instrumental Network p-values	Expressive Network p-values
Number of Individuals Listed	< .001	< .01
Number of Males Listed	< .001	< .001
Number of Females Listed	< .001	< .001
Number of Individuals Seen Outside of Work		< .001
Number of Females Seen Outside of Work		< .001
Number of Overlapping Ties		< .001
Number of Overlapping Female Ties		< .001
Number of Individuals Listed at Same Site/Same City	< .001	< .001
Number of Individuals Listed at Different Site/Same City	< .001	< .001
Number of Individuals Listed at Different Site/Different City	< .001	< .001
Number of Individuals in Same Function	< .001	< .001
Number of Different Functions	< .001	< .001
Hierarchical Rank	.075	.057
Hierarchical Range	> .20	.193
Number of Supervisors		< .001
Number of Subordinates		< .001
Density	< .001	< .001
Frequency of Contact		> .20

<sup>1</sup>H<sub>0</sub>: Data normally distributed.

Appendix C:  
RESPONDENT SAMPLE DEMOGRAPHICS

Data were collected on 17 demographic variables. The first set, the "numerical" data, included: the age of the individual, the number of children each respondent has, the ages of the youngest and oldest child, time working since 18, time with employer, time in position, the number of promotions, number of previous positions, the total number of subordinates and the total number of female subordinates. The other set, the "categorical" data, was collected on the study participants' education level, ethnicity, job category, job level, relationships status, and salary level.

THE NON-TRANSITION STUDY CATEGORICAL DEMOGRAPHIC DATA

The cross-tabulation percentages<sup>1</sup> for the entire respondent sample, for all males, for all females, and for each company are provided in Table C.1. Significant categorical differences between men and women and also among companies are listed in Table C.2. The Pearson Chi-Square test was used to test for the categorical differences.

Significant males-female differences. There were significant job category differences between men and women. The cross tabulation conveyed an interesting, though not surprising, phenomenon where 20.4% of the women were in administrative or administrative/management roles, compared to only 8.8% for the men. Moreover, women were less likely to categorize their jobs as technical/management or professional/management in comparison to men, 20.4% to 38.5%, respectively. This trend was especially pronounced at the insurance company where women comprised 29.0% [versus 7.5% for the men] of the administrative or administrative/management roles. Alternatively, 86% of the men were in professional or technical management positions at the insurance company compared to 61.3% of the women.

---

<sup>1</sup>The categories used for the Chi-Square tests were collapsed (from those provided in the questionnaire) for the following variables: education, ethnicity, job category, job level, and salary.

**TABLE C.1**

Non-Transition Study Cross-Tabulation Percentages:  
Categorical Demographic Data (n = 242)

	Entire	Male	Female	Bank	Forest	Insur.
<b>EDUCATION</b>						
Some High School or High School Grad	19.0	16.9	22.3	22.9	10.0	21.2
Some College/University, College Diploma, or University Degree	63.6	67.6	57.4	65.1	63.3	62.6
Some Graduate School, Advance Degree, or Other	17.4	15.5	20.2	12.0	26.7	16.2
<b>ETHNICITY</b>						
Caucasian	93.3	95.2	90.3	93.8	91.7	93.9
Other	6.7	4.8	9.7	6.2	8.3	6.1
<b>JOB CATEGORY</b>						
Management	42.7	39.9	47.3	62.7	18.3	40.8
Administrative or Administrative Management	13.3	8.8	20.4	12.0	13.3	14.3
Professional/Management or Technical/Management	31.5	38.5	20.4	19.3	38.3	37.8
Professional, Technical, or Other	12.4	12.7	11.7	6.0	30.0	7.1
<b>JOB LEVEL</b>						
Executive or Sr. Management	17.4	19.6	13.8	24.1	23.3	8.1
Middle Manager	37.2	34.5	41.5	45.8	30.0	34.3
First-line Manager	38.0	36.5	40.4	27.7	21.7	56.6
Other	7.4	9.5	4.3	2.4	25.0	1.0
<b>RELATIONSHIP STATUS</b>						
Married or Living with a Long-term Partner	86.8	90.5	80.9	89.2	80.0	88.9
Not Married or Living with a Long-term Partner	13.2	9.5	19.1	10.8	20.0	11.1
<b>SALARY</b>						
Under \$49,999	10.7	6.1	18.1	24.1	10.0	0.0
\$50,000 to 74,999	67.4	68.9	64.9	44.6	63.3	88.9
\$75,000 to 99,999	14.5	16.2	11.7	15.7	18.3	11.1
\$100,000 and over	7.4	8.8	5.3	15.7	8.3	0.0

**TABLE C.2**

**Between Gender and Among Company Non-Transition Study  
Significant ( $p < .10$ ) Differences: Categorical Demographic Data**

	Gender	Company
Education		.094
Ethnicity		
Job Category	.006	.000
Job Level		.000
Relationship	.030	
Salary	.022	.000

Men and women differed significantly as to their relationship status, where 90.5% of the men were married or living with a long-term partner compared to 80.9% of the women. This trend was particularly evident at the bank, where 97.4% of the men were married or living with a long-term partner versus 81.8% of the women. Finally, there were significant salary differences between men, where a higher percentage of men earned \$50,000 or more in comparison to the women.

Significant between-company differences. Significant differences among the three companies were also found. The bank had more employees classify themselves as management (62.7%), whereas 30% of the forestry employees saw themselves as professional, technical or administrative, with no management designation. Furthermore, when looking at the job level of the respondents, the bank respondents were more likely to be middle managers (45.8%), whereas 56.5% of the insurance respondents were first-line supervisors. Finally, the majority of respondents earned between \$50,000 and \$74,999 at both the forestry (63.3%) and insurance (88.9%) respondent pools. For the bank, this figure was 44.6%. Over 24% of the bank employees earned under \$49,999, compared to 10% of the insurance respondents and 0% of the respondents from the forestry sample.

#### THE NON-TRANSITION STUDY NUMERICAL DEMOGRAPHIC DATA

Tables C.3 and C.4 provide the means and standard deviations on the numerical demographic variables. Male and female means can be found in Table C.3 with the significant p-values for male-female differences. Table C.4 lists the entire response set means and standard deviations and the response set means and standard deviations for each company. Table C.4 also notes on which variables the three companies differed significantly.

Age was the only numerical demographic variable normally distributed, and male-female age differences were tested using the two independent sample t-tests method. Otherwise, the Mann-Whitney U test for two independent samples was used for the other numerical demographic variables as the alternate to the t-test and its assumptions and

**TABLE C.3**

**Non-Transition Study Male-Female Means and Standard Deviations:  
Numerical Demographic Data (n = 242)**

Variables	Male Means/(SD)	Female Means/(SD)	Gender Difference Non- Parametric p-values <sup>1</sup>
Age	46.32/(8.21)	43.34/(6.77)	.039
Time Working since 18	24.18/(9.32)	20.24/(6.66)	.010
Time with Employer	14.96/(8.04)	13.14/(6.75)	.095
Time in Position	4.95/(3.80)	3.71/(2.81)	.001
# of Promotions	3.41/(3.23)	3.53/(3.09)	
# of Previous Positions	3.67/(2.89)	3.87/(2.70)	
# of Subordinates	7.14/(10.33)	8.94/(10.38)	.039
# of Subordinates/ Female	3.86/7.23)	6.91/(8.77)	< .001
# of Children	1.98/(1.10)	1.12/(1.14)	< .001
Age of Oldest Child	16.70/(9.74)	16.60/(9.83)	
Age of Youngest Child	13.52/(8.77)	13.78/(8.95)	

<sup>1</sup>Mann-Whitney U non-parametric test; p < .10 listed.

**TABLE C.4**

**Non-Transition Study Company Means and Standard Deviations:  
Numerical Demographic Data (n = 242)**

Variables	Overall Means/(SD)	Banking Means/(SD)	Forestry Means/(SD)	Insurance Means/(SD)	Company Difference Non- Parametric p-values <sup>1</sup>
Age	45.17/ (7.80)	43.32/ (6.90)	44.58/ (8.33)	47.05/ (7.83)	.006
Time Working since 18	22.66/ (8.60)	20.82/ (7.66)	22.38/ (9.56)	24.38/ (8.47)	.037
Time with Employer	14.25/ (7.60)	16.87/ (8.09)	13.13/ (8.78)	12.74/ (5.65)	.009
Time in Position	4.46/ (3.50)	3.55/ (2.32)	5.54/ (4.79)	4.57/ (3.22)	.010
# of Promotions	3.46/ (3.17)	6.13/ (3.57)	1.58/ (1.63)	2.42/ (1.84)	< .001
# of Previous Positions	3.75/ (2.81)	5.95/ (2.87)	2.18/ (2.04)	2.89/ (1.94)	< .001
# of Subordinates	7.83/ (10.37)	7.86/ (9.59)	3.35/ (5.79)	10.55/ (12.16)	< .001
# of Subordinates/ Female	5.04/ (7.98)	5.89/ (8.26)	1.59/ (3.51)	6.43/ (9.08)	< .001
# of Children	1.64/ (1.19)	1.73/ (1.22)	1.58/ (1.17)	1.61/ (1.19)	
Age of Oldest Child	16.67/ (9.74)	16.37/ (9.27)	15.11/ (10.11)	17.88/ (9.92)	
Age of Youngest Child	13.59/ (8.79)	13.83/ (8.49)	12.39/ (9.04)	14.13/ (8.98)	

<sup>1</sup>Kruskal-Wallis one-way analysis of variance test; p < .10 listed.

requirements. The Kruskal-Wallis one-way analysis of variance was used for tests comparing company means.

Male-female differences. The males and females differed significantly (at the .05 level) on the following demographic variables: age, time employed since 18, time in position, number of subordinates, number of subordinates that are female, and the number of children. Except for the insurance company, the men were, on average, 3 years older than the females. In all three companies, men had held their positions longer than the females. Women had more subordinates, on average, especially at the bank, and not surprisingly, women's subordinates were more likely to be females. Finally, women across all three companies consistently had fewer children than did the male respondents.

Between company differences. Except for number of children and ages of the youngest and oldest child, the three companies had significant differences across the remaining demographic variables.

Non-transition study summary. The previous discussion highlighted the male-female and between-company differences. The male-female demographic differences are the most salient to this thesis, and there were number of gender differences. However, the differences were not great, and the majority have no relevance to the research questions or hypotheses in Chapter Two. The lone exception is job category, which is being controlled for in the research models, as outlined in Chapter Three.

## THE PROMOTION STUDY DEMOGRAPHIC DATA

The promotion study demographic data were collected in the first questionnaire. Forty-three individuals returned the first questionnaire, and of those, only 33 returned the follow-up questionnaire. The demographics of the 43-person and 33-person respondent samples were compared, and there were no significant numerical differences.<sup>2</sup> Moreover,

---

<sup>2</sup>The Wilcoxon matched-pairs signed-ranks test was used to test for numerical demographic data differences. Chi-Square tests were not conducted on the categorical data because of small cell sizes.



**TABLE C.5**

Promotion Study Cross-Tabulation Percentages:  
Categorical Demographic Data (n = 33)

	Entire	Male	Female
<b>EDUCATION</b>			
Some High School or High School Grad	36.3	15.4	50.0
Some College/University, College Diploma, or University Degree	51.6	84.6	30.0
Some Graduate School, Advance Degree, or Other	12.1	0.0	20.0
<b>ETHNICITY</b>			
Caucasian	93.8	100.0	89.5
Other	6.2	0.0	10.5
<b>JOB CATEGORY</b>			
Management	57.6	69.2	50.0
Administrative or Administrative Management	30.2	7.7	45.0
Professional/Management or Technical/Management	6.1	15.4	0.0
Professional, Technical, or Other	6.1	7.7	5.0
<b>JOB LEVEL</b>			
Executive or Sr. Management	18.2	23.1	15.0
Middle Manager	42.4	46.2	40.0
First-line Manager	30.3	30.8	30.0
Other	9.1	0.0	15.0
<b>RELATIONSHIP STATUS</b>			
Married or Living with a Long-term Partner	69.7	76.9	65.0
Not Married or Living with a Long-term Partner	30.3	23.1	35.0
<b>SALARY</b>			
Under \$49,999	45.5	30.8	55.0
\$50,000 to 74,999	48.5	69.2	35.0
\$75,000 to 99,999	0.0	0.0	0.0
\$100,000 and over	6.0	0.0	10.0

**TABLE C.6**

Promotion Study Male-Female Means and Standard Deviations:  
Numerical Demographic Data (n = 33)

	Entire	Male	Female
Age	39.92/(6.87)	38.92/(7.44)	39.40/(6.67)
Time Working since 18	17.70/(8.57)	17.46/(8.77)	17.85/(8.66)
Time with Employer	13.98/(7.56)	14.23/(6.47)	13.81/(8.36)
Time in Position	3.22/(2.89)	3.57/(3.40)	2.99/(2.56)
# of Promotions	5.48/(3.26)	6.54/(3.55)	4.80/(2.95)
# of Previous Positions	5.72/(3.46)	6.15/(3.26)	5.45/(3.63)
# of Subordinates	7.33/(11.83)	4.62/(4.65)	9.10/(14.62)
# of Subordinates/Female	5.95/(9.97)	3.85/(4.36)	7.32/(12.26)
# of Children	1.45/(1.23)	1.38/(1.26)	1.50/(1.24)
Age of Oldest Child	12.92/(8.67)	12.17/(10.65)	13.41/(7.54)
Age of Youngest Child	10.65/(6.95)	13.17/(8.13)	9.27/(6.20)

there were no significant numerical differences between the 13 males and 20 females comprising the 33-person respondent sample. The categorial data percentages and numerical variable means and standard deviations for the 33 respondents are provided in Tables C.5 and C.6, respectively.

Finally, the 33 respondents were compared to the non-transition banking respondent sample. The two samples differed significantly on relationship status, salary, age, time working since 18, and time with employer. The promotion respondents were younger and only 69.7% of them were married or living with a long-term partner. This was in comparison to the non-transition banking respondent sample, where 89.2% were married or living with a long-term partner. Also, the salary for the promotion sample was lower, as 21.3% of the respondents made \$20,000 to \$39,999 compared to 1.2% of the non-transition banking employees. The differences between the non-transition and promotion respondent samples seem logical in that those receiving promotions would more than likely have lower hierarchical positions. The promotion respondent sample would more likely than not include younger individuals trying to increase both their hierarchical positions and salaries.

Appendix D:  
DEPENDENT VARIABLE BETA COEFFICIENTS

**TABLE D.1**

Description of Predictor Variable Labels for Tables D.2 through D.30

<u>Label</u>	<u>Variable Type</u>	<u>Description</u>
C:Number	Covariate	Number of Individuals Listed
I:Gender	Independent	Gender of Respondent
D:Bank	Moderator	Company/Bank
D:Forest	Moderator	Company/Forest
D:Admin	Dummy	Job Category/Administrative
D:Manager	Dummy	Job Category/Manager
D:Children	Dummy	Child-Rearing Responsibility
X:GenBan	Interaction	Gender x Company/Bank
X:GenFor	Interaction	Gender x Company/Forest
X:AdmBan	Interaction	Job Category/Administrative x Company/Bank
X:AdmFor	Interaction	Job Category/Administrative x Company/Forest
X:MgrBan	Interaction	Job Category/Manager x Company/Bank
X:MgrFor	Interaction	Job Category/Manager x Company/Forest
X:ChiBan	Interaction	Child-Rearing Responsibility x Company/Bank
X:ChiFor	Interaction	Child-Rearing Responsibility x Company/Forest
X:CovBan	Interaction	# of Individuals Listed x Company/Bank
X:CovFor	Interaction	# of Individuals Listed x Company/Forest

**TABLE D.2****Instrumental Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
I:Gender	-0.715 (0.556)	-0.374 (0.564)	-0.255 (0.559)
D:Admin	0.341 (1.061)	0.571 (1.071)	-0.383 (1.158)
D:Manager	-0.136 (0.818)	0.292 (0.852)	-0.599 (0.960)
D:Bank		-1.455* (0.623)	-1.001 (0.636)
D:Forest		0.276 (0.700)	0.607 (0.705)
X:GenBan			-3.173* (1.277)
X:GenFor			1.069 (1.458)
X:AdmBan			-1.460 (2.900)
X:AdmFor			1.963 (2.540)
X:MgrBan			-2.878 (2.459)
X:MgrFor			1.696 (1.983)
(Constant)	10.962*** (0.784)	10.911*** (0.905)	11.737*** (1.001)
R-Squared	0.008	0.038	0.095

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.3****Instrumental Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Males Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.660*** (0.030)	0.646*** (0.029)	0.648*** (0.031)
I:Gender	-1.043*** (0.258)	-0.898*** (0.254)	-0.977*** (0.261)
D:Admin	-2.044*** (0.491)	-1.615** (0.482)	-1.737** (0.531)
D:Manager	-0.858* (0.378)	-0.313 (0.384)	-0.480 (0.443)
D:Bank		-0.149 (0.284)	-0.098 (0.293)
D:Forest		1.252*** (0.315)	1.230*** (0.331)
X:GenBan			0.877 (0.598)
X:GenFor			0.643 (0.675)
X:AdmBan			-2.376^ (1.328)
X:AdmFor			-1.122 (1.167)
X:MgrBan			-1.665 (1.134)
X:MgrFor			-0.683 (0.913)
X:CovBan			0.021 (0.070)
X:CovFor			0.129 (0.080)
(Constant)	0.910^ (0.490)	0.281 (0.518)	0.378 (0.582)
R-Squared	0.695	0.720	0.730

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.4**

**Instrumental Network Regression Model Analysis**  
**Beta Coefficients and R-Squared Comparisons on Dependent Variable:**  
**Number of Females Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.340*** (0.030)	0.354*** (0.029)	0.352*** (0.031)
I:Gender	1.043*** (0.258)	0.898** (0.254)	0.978*** (0.261)
D:Admin	2.042*** (0.491)	1.613** (0.482)	1.739** (0.531)
D:Manager	0.858* (0.378)	0.313 (0.384)	0.483 (0.443)
D:Bank		0.149 (0.284)	0.097 (0.293)
D:Forest		-1.252*** (0.315)	-1.230*** (0.331)
X:GenBan			-0.876 (0.598)
X:GenFor			-0.643 (0.675)
X:AdmBan			2.386^ (1.328)
X:AdmFor			1.117 (1.167)
X:MgrBan			1.679 (1.134)
X:MgrFor			0.680 (0.913)
X:CovBan			-0.021 (0.070)
X:CovFor			-0.129 (0.080)
(Constant)	-0.910^ (0.490)	-0.281 (0.518)	-0.382 (0.582)
R-Squared	0.409	0.456	0.476

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.



**TABLE D.5****Instrumental Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed at Same Site**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.650*** (0.063)	0.596*** (0.061)	0.618*** (0.063)
I:Gender	-0.271 (0.542)	0.305 (0.526)	0.140 (1.103)
D:Admin	-1.201 (1.031)	-0.952 (0.999)	-1.235^ (1.103)
D:Manager	-0.773 (0.794)	-0.215 (0.795)	-0.613 (0.919)
D:Bank		-2.914*** (0.588)	-3.021*** (0.608)
D:Forest		-0.156 (0.653)	-0.062 (0.687)
X:GenBan			0.147 (1.240)
X:GenFor			-0.209 (1.401)
X:AdmBan			2.972 (2.756)
X:AdmFor			2.858 (2.421)
X:MgrBan			1.137 (2.353)
X:MgrFor			1.745 (1.896)
X:CovBan			-0.329* (0.144)
X:CovFor			-0.199 (0.166)
(Constant)	-0.168 (1.028)	0.778 (1.073)	0.911 (1.208)
R-Squared	0.319	0.391	0.414

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.6****Instrumental Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed at Different Site/Same City**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.154 <sup>^</sup> (0.054)	0.169** (0.053)	0.171** (0.055)
I:Gender	0.218 (0.464)	0.068 (0.461)	0.212 (0.473)
D:Admin	2.079* (0.883)	1.375 (0.876)	2.016* (0.963)
D:Manager	1.836** (0.680)	0.985 (0.696)	1.605* (0.803)
D:Bank		-0.262 (0.515)	-0.234 (0.531)
D:Forest		-2.214*** (0.572)	-2.138*** (0.600)
D:GenBan			1.863 <sup>^</sup> (1.084)
D:GenFor			1.642 (1.224)
X:AdmBan			-1.834 (2.407)
X:AdmFor			-2.625 (2.115)
X:MgrBan			0.011 (2.055)
X:MgrFor			-1.838 (1.656)
X:CovBan			0.218 <sup>^</sup> (0.126)
X:CovFor			-0.014 (0.145)
(Constant)	-0.801 (0.881)	0.468 (0.941)	-0.244 (1.055)
R-Squared	0.064	0.125	0.159

---

<sup>^</sup> p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.7****Instrumental Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Individuals Listed at Different Site/Different City**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.184 ** (0.052)	0.226 *** (0.048)	0.207 *** (0.050)
I:Gender	0.119 (0.451)	-0.327 (0.416)	-0.350 (0.427)
D:Admin	-0.790 (0.858)	-0.319 (0.789)	-0.644 (0.871)
D:Manager	-0.911 (0.661)	-0.611 (0.627)	-0.820 (0.726)
D:Bank		3.317 *** (0.464)	3.417 *** (0.480)
D:Forest		2.461 *** (0.515)	2.268 *** (0.543)
X:GenBan			-1.772 ^ (0.980)
X:GenFor			-1.367 (1.107)
X:AdmBan			-2.087 (2.177)
X:AdmFor			-0.895 (1.913)
X:MgrBan			-1.921 (1.858)
X:MgrFor			-0.533 (1.497)
X:CovBan			0.073 (0.114)
X:CovFor			0.232 ^ (0.131)
(Constant)	0.961 (0.856)	-1.344 (0.848)	-0.859 (1.954)
R-Squared	0.058	0.242	0.266

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

Standard errors are in parentheses.

**TABLE D.8****Instrumental Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed at Same Function**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.316*** (0.054)	0.304*** (0.053)	0.334*** (0.055)
I:Gender	-0.398 (0.462)	-0.270 (0.461)	-0.116 (0.466)
D:Admin	0.095 (0.880)	-0.384 (0.875)	0.687 (0.951)
D:Manager	0.332 (0.678)	-0.134 (0.696)	0.857 (0.792)
D:Bank		-1.495** (0.515)	-1.461** (0.524)
D:Forest		-1.916** (0.572)	-1.824** (0.592)
D:GenBan			1.926^ (1.069)
D:GenFor			0.404 (1.208)
X:AdmBan			0.109 (2.375)
X:AdmFor			-2.264 (2.087)
X:MgrBan			-0.982 (2.028)
X:MgrFor			-3.422* (1.634)
X:CovBan			-0.021 (0.124)
X:CovFor			-0.296* (0.143)
(Constant)	0.804 (0.878)	2.277* (0.940)	0.830 (1.041)
R-Squared	0.135	0.185	0.239

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.9**

**Instrumental Network Regression Model Analysis**  
**Beta Coefficients and R-Squared Comparisons on Dependent Variable:**  
**Number of Different Functions Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.378*** (0.036)	0.391*** (0.037)	0.389*** (0.038)
I:Gender	0.513 (0.312)	0.376 (0.317)	0.272 (0.326)
D:Admin	0.068 (0.594)	0.052 (0.603)	-0.117 (0.664)
D:Manager	0.352 (0.458)	0.267 (0.479)	1.132 (0.553)
D:Bank		0.764* (0.355)	0.751* (0.366)
D:Forest		0.191 (0.394)	0.262 (0.414)
X:GenBan			-0.582 (0.747)
X:GenFor			0.240 (0.844)
X:AdmBan			-1.044 (1.660)
X:AdmFor			-0.989 (1.459)
X:MgrBan			1.042 (1.417)
X:MgrFor			1.127 (1.142)
X:CovBan			-0.082 (0.087)
X:CovFor			-0.034 (0.100)
(Constant)	-0.671 (0.592)	-0.999 (0.647)	-0.808 (0.728)
R-Squared	0.317	0.331	0.355

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.10****Instrumental Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Hierarchical Rank of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	-0.021 * (0.009)	-0.020 * (0.009)	-0.019 * (0.010)
I:Gender	0.015 (0.081)	-0.005 (0.082)	-0.031 (0.083)
D:Admin	-0.154 (0.154)	-0.092 (0.155)	-0.169 (0.168)
D:Manager	-0.166 (0.119)	-0.108 (0.123)	-0.206 (0.140)
D:Bank		0.215 * (0.091)	0.171 ^ (0.093)
D:Forest		0.254 * (0.101)	0.196 ^ (0.105)
X:GenBan			0.103 (0.189)
X:GenFor			0.160 (0.214)
X:AdmBan			0.453 (0.420)
X:AdmFor			0.723 ^ (0.369)
X:MgrBan			0.437 (0.359)
X:MgrFor			0.263 (0.289)
X:CovBan			0.003 (0.022)
X:CovFor			0.068 ** (0.025)
(Constant)	0.300 ^ (0.154)	0.099 (0.167)	0.208 (0.184)
R-Squared	0.030	0.064	0.128

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.11**

**Instrumental Network Regression Model Analysis**  
**Beta Coefficients and R-Squared Comparisons on Dependent Variable:**  
**Hierarchical Range of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.019** (0.006)	0.021** (0.006)	0.020** (0.007)
I:Gender	0.048 (0.055)	0.025 (0.055)	0.009 (0.056)
D:Admin	0.054 (0.104)	0.099 (0.104)	0.110 (0.114)
D:Manager	0.039 (0.080)	0.077 (0.082)	0.084 (0.095)
D:Bank		0.201** (0.061)	0.211*** (0.063)
D:Forest		0.199** (0.068)	0.197** (0.071)
X:GenBan			-0.139 (0.129)
X:GenFor			0.149 (0.145)
X:AdmBan			-0.162 (0.286)
X:AdmFor			-0.344 (0.251)
X:MgrBan			-0.029 (0.244)
X:MgrFor			-0.087 (0.196)
X:CovBan			-0.013 (0.015)
X:CovFor			0.014 (0.017)
(Constant)	0.612*** (0.104)	0.446*** (0.111)	0.453*** (0.125)
R-Squared	0.041	0.096	0.129

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.12****Instrumental Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Density**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	-0.011** (0.004)	-0.012** (0.004)	-0.012** (0.004)
I:Gender	-0.077* (0.032)	-0.070* (0.033)	-0.053 (0.033)
D:Admin	-0.119^ (0.061)	-0.110^ (0.062)	-0.051 (0.067)
D:Manager	-0.074 (0.047)	-0.061 (0.050)	0.009 (0.056)
D:Bank		-0.024 (0.037)	-0.034 (0.037)
D:Forest		0.019 (0.041)	0.020 (0.042)
X:GenBan			0.022 (0.076)
X:GenFor			-0.078 (0.086)
X:AdmBan			0.117 (0.168)
X:AdmFor			-0.105 (0.148)
X:MgrBan			0.252^ (0.144)
X:MgrFor			-0.016 (0.116)
X:CovBan			0.015^ (0.009)
X:CovFor			-0.017^ (0.010)
(Constant)	0.481*** (0.061)	0.478*** (0.067)	0.407*** (0.074)
R-Squared	0.080	0.084	0.154

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.



**TABLE D.13****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
I:Gender	0.264 (0.604)	0.450 (0.620)	0.469 (0.635)
D:Admin	1.823 (1.132)	1.591 (1.150)	2.119 <sup>^</sup> (1.282)
D:Manager	1.105 (0.875)	0.842 (0.919)	1.234 (1.065)
D:Children	-0.285 (0.585)	-0.197 (0.587)	-0.165 (0.597)
D:Bank		-1.281 <sup>^</sup> (0.671)	-1.405* (0.711)
D:Forest		-1.129 (0.749)	-1.135 (0.780)
X:GenBan			0.825 (1.464)
X:GenFor			1.509 (1.630)
X:AdmBan			3.322 (3.203)
X:AdmFor			0.229 (2.819)
X:MgrBan			2.375 (2.728)
X:MgrFor			-0.218 (2.201)
X:ChiBan			0.018 (1.395)
X:ChiFor			0.431 (1.498)
(Constant)	7.600*** (0.942)	8.357*** (1.065)	7.951*** (1.195)
R-Squared	0.015	0.033	0.044

---

<sup>^</sup> p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.14****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Males Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.627*** (0.028)	0.624*** (0.028)	0.617*** (0.027)
I:Gender	-2.610*** (0.263)	-2.425*** (0.268)	-2.341*** (0.256)
D:Admin	-1.499** (0.496)	-1.273* (0.498)	-0.997^ (0.521)
D:Manager	-0.185 (0.382)	0.144 (0.397)	0.261 (0.431)
D:Children	-0.261 (0.255)	-0.169 (0.253)	-0.121 (0.241)
D:Bank		-0.549^ (0.292)	-0.583* (0.290)
D:Forest		0.468 (0.325)	0.652* (0.316)
X:ChiBan			1.626** (0.562)
X:ChiFor			0.758 (0.603)
X:GenBan			1.690** (0.590)
X:GenFor			1.740** (0.660)
X:AdmBan			-1.774 (1.306)
X:AdmFor			0.177 (1.136)
X:MgrBan			-1.316 (1.107)
X:MgrFor			-1.413 (0.886)
X:CovBan			-0.158* (0.063)
X:CovFor			0.045 (0.066)
(Constant)	1.123* (0.463)	0.826 (0.516)	0.553 (0.528)
R-Squared	0.715	0.726	0.766

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.15****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Females Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.373*** (0.028)	0.376*** (0.028)	0.383*** (0.027)
I:Gender	2.610*** (0.263)	2.425*** (0.268)	2.341*** (0.256)
D:Admin	1.497** (0.496)	1.272* (0.498)	0.994^ (0.521)
D:Manager	0.182 (0.382)	-0.147 (0.397)	-0.265 (0.431)
D:Children	0.261 (0.255)	0.168 (0.253)	0.121 (0.241)
D:Bank		0.549^ (0.292)	0.583* (0.290)
D:Forest		-0.468 (0.325)	-0.652* (0.316)
X:ChiBan			-1.626** (0.561)
X:ChiFor			-0.758 (0.603)
X:GenBan			-1.689** (0.590)
X:GenFor			-1.738** (0.660)
X:AdmBan			1.773 (1.305)
X:AdmFor			-0.178 (1.136)
X:MgrBan			1.319 (1.106)
X:MgrFor			1.418 (0.886)
X:CovBan			0.158* (0.063)
X:CovFor			-0.045 (0.066)
(Constant)	-1.121* (0.463)	-0.824 (0.516)	-0.549 (0.528)
R-Squared	0.580	0.596	0.655

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.16****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Overlapping Expressive and Instrumental Ties**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.255 *** (0.026)	0.260 *** (0.025)	0.257 *** (0.025)
I:Gender	-0.379 (0.239)	-0.271 (0.241)	-0.374 (0.242)
D:Admin	-0.367 (0.451)	-0.035 (0.448)	-0.194 (0.493)
D:Manager	-0.118 (0.348)	0.303 (0.357)	0.133 (0.408)
D:Children	-0.148 (0.232)	-0.088 (0.228)	-0.123 (0.228)
D:Bank		0.011 (0.263)	-0.015 (0.274)
D:Forest		1.020 ** (0.292)	1.121 *** (0.299)
X:ChiBan			-0.414 (0.531)
X:ChiFor			0.405 (0.570)
X:GenBan			-0.009 (0.558)
X:GenFor			0.334 (0.624)
X:AdmBan			0.554 (1.235)
X:AdmFor			-0.087 (1.075)
X:MgrBan			0.696 (1.046)
X:MgrFor			1.265 (0.838)
X:CovBan			0.057 (0.060)
X:CovFor			0.173 ** (0.063)
(Constant)	0.687 (0.421)	-0.045 (0.465)	0.264 (0.499)
R-Squared	0.299	0.339	0.378

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.17****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Overlapping Female Ties**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.090*** (0.016)	0.092*** (0.016)	0.092*** (0.016)
I: Gender	0.437** (0.148)	0.417** (0.153)	0.373* (0.154)
D: Admin	0.230 (0.279)	0.259 (0.285)	0.205 (0.314)
D: Manager	0.023 (0.215)	0.048 (0.228)	0.016 (0.260)
D: Children	-0.060 (0.144)	-0.068 (0.145)	-0.102 (0.145)
D: Bank		0.150 (0.167)	0.167 (0.174)
D: Forest		0.150 (0.186)	0.150 (0.190)
X: ChiBan			-0.488 (0.338)
X: ChiFor			-0.145 (0.363)
X: GenBan			-0.510 (0.355)
X: GenFor			0.111 (0.397)
X: AdmBan			0.667 (0.787)
X: AdmFor			-0.370 (0.685)
X: MgrBan			0.596 (0.667)
X: MgrFor			0.529 (0.534)
X: CovBan			0.070^ (0.038)
X: CovFor			0.057 (0.040)
(Constant)	-0.068 (0.261)	-0.186 (0.296)	-0.056 (0.318)
R-Squared	0.168	0.172	0.219

---

^  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$   
Standard errors are in parentheses.

**TABLE D.18****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Seen Outside of Work**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.554*** (0.042)	0.562*** (0.043)	0.565*** (0.043)
I: Gender	0.251 (0.393)	0.159 (0.405)	0.128 (0.407)
D: Admin	-0.875 (0.739)	-0.795 (0.754)	-0.811 (0.827)
D: Manager	-0.023 (0.570)	0.033 (0.601)	0.148 (0.685)
D: Children	-0.492 (0.380)	-0.532 (0.383)	-0.560 (0.382)
D: Bank		0.590 (0.442)	0.481 (0.460)
D: Forest		0.484 (0.491)	0.426 (0.502)
X: ChiBan			1.126 (0.891)
X: ChiFor			1.754^ (0.957)
X: GenBan			-1.566^ (0.936)
X: GenFor			-1.976^ (1.047)
X: AdmBan			0.439 (2.072)
X: AdmFor			-0.020 (1.804)
X: MgrBan			1.811 (1.756)
X: MgrFor			1.186 (1.406)
X: CovBan			0.015 (0.100)
X: CovFor			0.114 (0.105)
(Constant)	-0.034 (0.691)	-0.423 (0.781)	-0.412 (0.838)
R-Squared	0.435	0.440	0.474

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

Standard errors are in parentheses.

**TABLE D.19****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Females Seen Outside of Work**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.219*** (0.030)	0.225*** (0.031)	0.232*** (0.030)
I: Gender	1.958*** (0.283)	1.817*** (0.291)	1.765*** (0.289)
D: Admin	0.656 (0.533)	0.580 (0.541)	0.556 (0.588)
D: Manager	0.281 (0.411)	0.141 (0.432)	0.287 (0.487)
D: Children	-0.168 (0.274)	-0.235 (0.275)	-0.252 (0.272)
D: Bank		0.578^ (0.317)	0.487 (0.327)
D: Forest		0.003 (0.353)	-0.224 (0.357)
X: ChiBan			-0.155 (0.634)
X: ChiFor			0.056 (0.681)
X: GenBan			-1.188^ (0.666)
X: GenFor			-2.092** (0.744)
X: AdmBan			0.254 (1.474)
X: AdmFor			-0.622 (1.283)
X: MgrBan			1.579 (1.249)
X: MgrFor			0.529 (1.000)
X: CovBan			0.123^ (0.071)
X: CovFor			0.005 (0.075)
(Constant)	-0.999* (0.498)	-1.042^ (0.561)	-1.076 (0.595)
R-Squared	0.338	0.349	0.400

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.20****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Individuals Listed at Same Site**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.619*** (0.044)	0.604*** (0.043)	0.596*** (0.042)
I:Gender	-1.364** (0.407)	-0.924* (0.405)	-0.915* (0.404)
D:Admin	-2.048** (0.766)	-1.724* (0.753)	-2.054* (0.822)
D:Manager	-2.147*** (0.590)	-1.607** (0.601)	-1.972** (0.680)
D:Children	-0.073 (0.394)	0.140 (0.383)	0.126 (0.379)
D:Bank		-1.655*** (0.441)	-1.750*** (0.457)
D:Forest		0.324 (0.491)	0.482 (0.499)
X:ChiBan			-0.440 (0.885)
X:ChiFor			-0.552 (0.951)
X:GenBan			-0.334 (0.930)
X:GenFor			-0.092 (1.040)
X:AdmBan			1.831 (2.059)
X:AdmFor			3.093^ (1.792)
X:MgrBan			0.712 (1.745)
X:MgrFor			1.596 (1.397)
X:CovBan			-0.199* (0.100)
X:CovFor			0.189^ (0.105)
(Constant)	2.510** (0.715)	2.394** (0.780)	2.847*** (0.832)
R-Squared	0.482	0.522	0.555

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

Standard errors are in parentheses.



**TABLE D.21****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Individuals Listed at Different Site/Same City**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.221*** (0.040)	0.216*** (0.039)	0.218*** (0.039)
I:Gender	0.810* (0.368)	0.599 (0.371)	0.615 (0.372)
D:Admin	1.230^ (0.693)	0.736 (0.690)	1.271^ (0.757)
D:Manager	1.422** (0.534)	0.776 (0.550)	1.267* (0.627)
D:Children	-0.255 (0.356)	-0.367 (0.351)	-0.336 (0.350)
D:Bank		0.233 (0.404)	0.288 (0.421)
D:Forest		-1.418** (0.499)	1.492** (0.459)
X:ChiBan			0.042 (0.816)
X:ChiFor			0.682 (0.876)
X:GenBan			1.005 (0.857)
X:GenFor			0.048 (0.958)
X:AdmBan			-1.880 (1.897)
X:AdmFor			-2.459 (1.652)
X:MgrBan			-0.946 (1.608)
X:MgrFor			-2.065 (1.288)
X:CovBan			-0.085 (0.092)
X:CovFor			-0.253** (0.096)
(Constant)	-1.309* (0.647)	-0.308 (0.715)	-0.958 (0.767)
R-Squared	0.117	0.223	0.273

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

Standard errors are in parentheses.

**TABLE D.22****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Individuals Listed at Different Site/Different City**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.142*** (0.031)	0.164*** (0.029)	0.166*** (0.029)
I: Gender	0.426 (0.288)	0.131 (0.280)	0.124 (0.282)
D: Admin	0.735 (0.542)	0.862^ (0.521)	0.756 (0.573)
D: Manager	0.922* (0.418)	0.953* (0.415)	0.921^ (0.474)
D: Children	0.500^ (0.279)	0.367 (0.265)	0.318 (0.265)
D: Bank		1.678*** (0.305)	1.726*** (0.318)
D: Forest		1.067** (0.339)	1.014** (0.348)
X: ChiBan			-0.041 (0.618)
X: ChiFor			-0.336 (0.663)
X: GenBan			-1.325* (0.649)
X: GenFor			-0.050 (0.725)
X: AdmBan			0.658 (1.436)
X: AdmFor			-0.425 (1.250)
X: MgrBan			0.497 (1.217)
X: MgrFor			0.316 (0.974)
X: CovBan			0.167* (0.070)
X: CovFor			0.103 (0.073)
(Constant)	-1.074 (0.506)	-1.957 (0.539)	-1.800** (0.580)
R-Squared	0.119	0.226	0.265

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

Standard errors are in parentheses.

**TABLE D.23****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Individuals Listed at Same Function**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.608*** (0.043)	0.585*** (0.042)	0.581*** (0.041)
I: Gender	-0.944* (0.401)	-0.725^ (0.401)	-0.791* (0.396)
D: Admin	0.789 (0.754)	0.491 (0.745)	0.780 (0.806)
D: Manager	0.911 (0.581)	0.655 (0.594)	0.863 (0.667)
D: Children	-0.180 (0.388)	-0.087 (0.379)	-0.027 (0.372)
D: Bank		-1.588*** (0.436)	-1.780*** (0.448)
D: Forest		-1.556** (0.486)	-1.548** (1.489)
D: ChiBan			-0.715 (0.868)
D: ChiFor			0.173 (0.932)
X: GenBan			1.978* (0.912)
X: GenFor			-0.377 (1.020)
X: AdmBan			0.756 (2.018)
X: AdmFor			-0.299 (1.757)
X: MgrBan			1.871 (1.710)
X: MgrFor			0.711 (1.370)
X: CovBan			-0.296** (0.098)
X: CovFor			-0.247* (0.102)
(Constant)	-0.488 (0.704)	0.740 (0.772)	0.442 (0.816)
R-Squared	0.477	0.514	0.563

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.24****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Different Functions Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.198*** (0.029)	0.212*** (0.028)	0.209*** (0.027)
I: Gender	0.432 (0.265)	0.347 (0.266)	0.356 (0.261)
D: Admin	-0.047 (0.499)	0.214 (0.495)	0.018 (0.531)
D: Manager	-0.515 (0.385)	-0.249 (0.394)	-0.432 (0.439)
D: Children	0.075 (0.257)	0.043 (0.251)	-0.030 (0.245)
D: Bank		0.856** (0.290)	0.978** (0.295)
D: Forest		1.147** (0.322)	1.277*** (0.322)
X: ChiBan			0.066 (0.572)
X: ChiFor			-0.038 (0.614)
X: GenBan			-1.408* (0.601)
X: GenFor			0.577 (0.672)
X: AdmBan			0.077 (1.329)
X: AdmFor			0.172 (1.157)
X: MgrBan			-0.808 (1.127)
X: MgrFor			0.199 (0.902)
X: CovBan			0.056 (0.064)
X: CovFor			0.221** (0.067)
(Constant)	0.886^ (0.466)	0.003 (0.512)	0.303 (0.537)
R-Squared	0.196	0.248	0.324

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001

Standard errors are in parentheses.

**TABLE D.25****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Hierarchical Rank of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	-0.027** (0.009)	-0.025* (0.009)	-0.024* (0.010)
I:Gender	-0.116 (0.087)	-0.122 (0.090)	-0.128 (0.091)
D:Admin	-0.289^ (0.164)	-0.242 (0.167)	-0.293 (0.185)
D:Manager	-0.358** (0.127)	-0.308* (0.133)	-0.357* (0.153)
D:Children	-0.086 (0.085)	-0.088 (0.085)	-0.106 (0.085)
D:Bank		0.109 (0.098)	0.157 (0.103)
D:Forest		0.185^ (0.109)	0.226* (0.112)
X:ChiBan			-0.227 (0.199)
X:ChiFor			0.013 (0.214)
X:GenBan			-0.181 (0.209)
X:GenFor			0.091 (0.234)
X:AdmBan			-0.732 (0.463)
X:AdmFor			0.020 (0.403)
X:MgrBan			-0.496 (0.392)
X:MgrFor			-0.114 (0.314)
X:CovBan			-0.033 (0.022)
X:CovFor			0.014 (0.023)
(Constant)	0.272^ (0.153)	0.131 (0.173)	0.175 (0.187)
R-Squared	0.078	0.091	0.131

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.26****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Hierarchical Range of Individuals Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.005 (0.006)	0.009 (0.006)	0.009 (0.006)
I: Gender	0.120* (0.056)	0.089 (0.056)	0.077 (0.056)
D: Admin	-0.031 (0.106)	0.019 (0.104)	-0.004 (0.113)
D: Manager	0.046 (0.082)	0.090 (0.083)	0.070 (0.094)
D: Children	0.028 (0.055)	0.014 (0.053)	-0.001 (0.052)
D: Bank		0.241*** (0.061)	0.285*** (0.063)
D: Forest		0.249*** (0.068)	0.284^ (0.069)
X: ChiBan			-0.061 (0.122)
X: ChiFor			-0.080 (0.131)
X: GenBan			-0.092 (0.128)
X: GenFor			0.075 (0.144)
X: AdmBan			-0.389 (0.284)
X: AdmFor			-0.622* (0.247)
X: MgrBan			-0.484* (0.241)
X: MgrFor			-0.088 (0.193)
X: CovBan			-0.004 (0.014)
X: CovFor			0.008 (0.014)
(Constant)	0.819*** (0.099)	0.623*** (0.180)	0.641*** (0.115)
R-Squared	0.026	0.110	0.174

^ p &lt; .10; \* p &lt; .05; \*\* p &lt; .01; \*\*\* p &lt; .001

Standard errors are in parentheses.

**TABLE D.27****Expressive Network Regression Model Analysis****Beta Coefficients and R-Squared Comparisons on Dependent Variable:****Number of Supervisors Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C:Number	0.025 ** (0.007)	0.026 *** (0.007)	0.025 *** (0.007)
I:Gender	-0.143 * (0.065)	-0.151 * (0.068)	-0.127 ^ (0.067)
D:Admin	-0.065 (0.123)	-0.056 (0.126)	-0.030 (0.136)
D:Manager	0.009 (0.095)	0.017 (0.100)	0.036 (0.112)
D:Children	0.004 (0.063)	0.000 (0.064)	0.010 (0.063)
D:Bank		0.057 (0.074)	0.024 (0.075)
D:Forest		0.051 (0.082)	0.041 (0.082)
X:ChiBan			0.233 (0.146)
X:ChiFor			-0.018 (0.157)
X:GenBan			0.034 (0.154)
X:GenFor			0.048 (0.172)
X:AdmBan			0.111 (0.340)
X:AdmFor			0.548 ^ (0.296)
X:MgrBan			0.107 (0.288)
X:MgrFor			-0.164 (0.231)
X:CovBan			-0.006 (0.016)
X:CovFor			0.032 ^ (0.017)
(Constant)	0.161 (0.115)	0.120 (0.130)	0.102 (0.137)
R-Squared	0.073	0.076	0.160

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.28****Expressive Network Regression Model Analysis**

**Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Number of Subordinates Listed**

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	0.165*** (0.022)	0.166*** (0.022)	0.167*** (0.022)
I: Gender	-0.161 (0.208)	-0.288 (0.213)	-0.317 (0.211)
D: Admin	0.916* (0.392)	0.743^ (0.395)	0.714^ (0.430)
D: Manager	0.889** (0.302)	0.643* (0.315)	0.579 (0.356)
D: Children	-0.035 (0.202)	-0.099 (0.201)	-0.098 (0.198)
D: Bank		0.348 (0.232)	0.373 (0.239)
D: Forest		-0.388 (0.258)	-0.316 (0.261)
X: ChiBan			0.296 (0.463)
X: ChiFor			0.688 (0.497)
X: GenBan			0.186 (0.486)
X: GenFor			0.644 (0.544)
X: AdmBan			1.084 (1.076)
X: AdmFor			-0.692 (0.937)
X: MgrBan			0.935 (0.912)
X: MgrFor			1.148 (0.731)
X: CovBan			0.030 (0.052)
X: CovFor			-0.107^ (0.056)
(Constant)	-0.768* (0.366)	-0.514 (0.410)	-0.461 (0.435)
R-Squared	0.228	0.251	0.313

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.



**TABLE D.29****Expressive Network Regression Model Analysis**

Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Density

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)
I: Gender	-0.081 ** (0.029)	-0.072 * (0.030)	-0.075 * (0.031)
D: Admin	-0.044 (0.055)	-0.037 (0.057)	-0.098 (0.063)
D: Manager	-0.024 (0.043)	-0.012 (0.045)	-0.072 (0.052)
D: Children	-0.037 (0.028)	-0.033 (0.029)	-0.031 (0.029)
D: Bank		-0.034 (0.033)	-0.027 (0.035)
D: Forest		0.010 (0.037)	0.021 (0.038)
X: ChiBan			-0.010 (0.068)
X: ChiFor			0.017 (0.073)
X: GenBan			0.022 (0.071)
X: GenFor			-0.028 (0.080)
X: AdmBan			-0.112 (0.158)
X: AdmFor			0.180 (0.138)
X: MgrBan			-0.119 (0.134)
X: MgrFor			0.153 (0.107)
X: CovBan			0.000 (0.008)
X: CovFor			-0.002 (0.008)
(Constant)	0.327 *** (0.052)	0.322 *** (0.058)	0.372 *** (0.064)
R-Squared	0.054	0.060	0.090

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.

**TABLE D.30****Expressive Network Regression Model Analysis**

Beta Coefficients and R-Squared Comparisons on Dependent Variable:  
Frequency of Contact

	<u>Base</u>	<u>Shift</u>	<u>Moderator</u>
C: Number	-0.018 (0.013)	-0.016 (0.013)	-0.018 (0.013)
I: Gender	-0.727*** (0.121)	-0.687*** (0.124)	-0.724*** (0.126)
D: Admin	-0.234 (0.227)	-0.126 (0.230)	-0.226 (0.255)
D: Manager	-0.444* (0.175)	-0.305^ (0.183)	-0.441* (0.211)
D: Children	-0.111 (0.117)	-0.090 (0.117)	-0.085 (0.118)
D: Bank		-0.017 (0.135)	-0.033 (0.142)
D: Forest		0.325* (0.150)	0.379* (0.155)
X: ChiBan			-0.210 (0.275)
X: ChiFor			0.176 (0.295)
X: GenBan			0.467 (0.289)
X: GenFor			0.582^ (0.323)
X: AdmBan			0.089 (0.639)
X: AdmFor			0.554 (0.557)
X: MgrBan			0.302 (0.542)
X: MgrFor			0.601 (0.434)
X: CovBan			0.025 (0.031)
X: CovFor			0.032 (0.032)
(Constant)	4.237*** (0.212)	4.005*** (0.238)	4.159*** (0.258)
R-Squared	0.166	0.186	0.220

---

^ p < .10; \* p < .05; \*\* p < .01; \*\*\* p < .001  
Standard errors are in parentheses.