UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

A LONGITUDINAL STUDY OF IMPRESSION MANAGEMENT STRATEGIES AND LEADERSHIP EMERGENCE: THE MODERATING ROLES OF GENDER AND VIRTUALNESS

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

Degree of

DOCTOR OF PHILOSOPHY

BY

YONG-KWAN LIM
Norman, Oklahoma
2011

A LONGITUDINAL STUDY OF IMPRESSION MANAGEMENT STRATEGIES AND LEADERSHIP EMERGENCE:
THE MODERATING ROLES OF GENDER AND VIRTUALNESS

A DISSERTATION APPROVED FOR THE
MICHAEL F. PRICE COLLEGE OF BUSINESS

BY

_____
Dr. Laku Chidambaram, Chair

_____
Dr. Robert W. Zmud

_____
Dr. Lowell Busenitz

_____
Dr. Shaila Miranda

_____
Dr. Traci Carte

ACKNOWLEDGEMENT

First, I would like to thank three very special people—Professors Laku Chidambaram, Bob Zmud and Lowell Busenitz. Thanks very much once again for all your intellectual stimulation, guidance, patience, help, encouragement, and protection … There are just too many things to list. Without you, I know that I would not have been able to last as long as I did and be where I am today. You are those rare ones who have the qualities of excellent professors—the ability to provide strong mentoring and yet solid in research. To me you all are akin to three angels sent by God to guide me through my life as a doctoral student. I thoroughly enjoyed collaborating with you all on research. You have made the process of learning and working on research such a mind stimulating, challenging, enjoyable, memorable and colorful process. I have learned so much. Working on research with you all has helped me to strengthen my foundation for critical thinking and enabled me to accumulate knowledge and deep insights that I would not have been able to find in books. In short, you have helped me to grow immeasurably as a researcher. To date, there are only three things that I feel honored about and one of them is the opportunity to work with you. I will never forget you all and the things you have done for me. I probably will never be able to return my gratitude to you. You will always have a special place in my heart and always remain my professors.

Second, I would like to thank the faculty members in the MIS division for their help and support.

Last, I would like to thank my friends, family and especially my mother who brought me up and has provided me with tremendous support, encouragement and love throughout the way.

TABLE OF CONTENTS

ACKNOWLEDGEMENT----------IV

LIST OF TABLES----------X

LIST OF FIGURES----------XII

ABSTRACT----------XIII

CHAPTER 1: INTRODUCTION---------- 1

1.1 Overview....1

1.2 Research Question....4

1.3 Organization of the Dissertation....6

CHAPTER 2: LITERATURE REVIEW AND RESEARCH MODEL----------8

2.1 Research Model....9

2.2 The Impact of Gender on Leader Emergence....10

2.3 The Impact of Impression Management Strategies on Leader Emergence....14

2.4 Role Congruity Theory: Linking Impression Management and Gender to Leader Emergence....19

2.4.1 Gender and Role Congruent Strategies....21

2.4.2 Gender and Role Incongruent Strategies....23

2.4.3 Gender and Role Neutral Strategy....25

2.5 The Impact of Virtualness....26

2.5.1 Concept of Virtualness....27

2.5.2 Virtualness and Gender....28

2.5.3 Virtualness and Impression Management Strategies....31

2.6 The Impact of Time....33

2.7 High Virtualness: The Interaction Effects of Gender and Impression Management Strategies on Leader Emergence over Time....37

2.7.1 Communal Impression Management Strategies (Ingratiation and Supplication): Role Congruent Strategies for Women and Role Incongruent Strategies for Men.....37

2.7.2 Assertive Impression Management Strategies (Self Promotion and Intimidation): Role Congruent Strategies for Men and Role Incongruent Strategies for Women 44

2.7.3 Role Neutral Impression Management Strategy for Women and Men 46

2.8 Low Virtualness: The Interaction Effects of Gender and Impression Management Strategies over Time 47

2.8.1 Communal Impression Management Strategies (Ingratiation and Supplication): Role Congruent Strategies for Women and Role Incongruent Strategies for Men.....47

2.8.2 Assertive Impression Management Strategies (Self-Promotion and Intimidation): Role Congruent Strategies for Men and Role Incongruent Strategies for Women 51

2.8.3 Role Neutral Strategy for Women and Men (Exemplification).....53

2.9 Summary.....55

CHAPTER 3: RESEARCH DESIGN AND METHODS----------56

3.1 Subjects.....56

3.2 Experimental Procedures.....57

3.2.1 Task.....57

3.2.2 Task Deliverables and Evaluation 58

3.2.2.1 Deliverable 1 58

3.2.2.2 Deliverable 2 58

3.2.2.3 Deliverable 3 59

3.2.2.4 Deliverable 4 59

3.2.3 Participation and Motivation.....60

3.2.4. Electronic Tools.....61

3.2.5. Experimental Procedures.....62

3.3 Operational Definition of Variables 63

3.3.1 Independent Variables.....63

3.3.1.1 Impression Management Strategies:.....63

3.3.1.2 Extent of Virtualness:.....64

3.3.1.3 Gender: 65
3.3.2 Dependent Variable 66
3.3.2.1 Leader emergence: 66
3.3.3 Control Variables 66
3.4 Pilot Study 67
3. 4.1 Statistics from the Pilot Study 68
3.4.2 Lessons Learned from the Pilot Study 71

CHAPTER 4: RESULTS OF STATISTICAL ANALYSIS----------74
4.1 Descriptive Statistics and Reliabilities 74
4.2 Tests of Hypotheses 85
4.3 Hypotheses Related to Members Relying on High Virtualness 90
4.3.1 Communal Impression Management Strategies 90
4.3.1.1 Ingratiation 90
4.3.1.2 Supplication 92
4.3.2 Assertive Impression Management Strategies 93
4.3.2.1 Self-Promotion 93
4.3.2.2 Intimidation 95
4.3.3 Role Neutral Impression Management Strategy 95
4.3.3.1 Exemplification 95
4.4 Hypotheses Related to Members Relying on Low Virtualness 97
4.4.1 Communal Impression Management Strategies 97
4.4.1.1 Ingratiation 97
4.4.1.2 Supplication 99
4.4.2 Assertive Impression Management Strategies 100
4.4.2.1 Self-Promotion 100
4.4.2.2 Intimidation 102
4.4.3 Role Neutral Impression Management Strategy 103
4.4.3.1 Exemplification 103
4.5 Summary 104

CHAPTER 5: DISCUSSION OF RESULTS----------107

5.1 Overview of Results 107

5.2 Implications of Findings 109

5.2.1 For Women 109

5.2.2 For Men.....113

5.3 Summary.....114

CHAPTER 6: CONTRIBUTIONS AND CONCLUSION---------- 115

6.1 Theoretical and Research Implications.....115

6.2 Contributions of the Research.....119

6.3 Practical Implications.....123

6.5 Limitations 124

6.6 Summary and Conclusion 125

APPENDIX A: PRE-STUDY SURVEY----------127

APPENDIX B: POST-DELIVERABLE SURVEY----------129

APPENDIX C: TABLES (WITH NON-SIGNIFICANT CONTROL VARIABLES) OF HLM ANALYSES----------133

REFERENCES----------136

LIST OF TABLES

TABLE----------PAGE

Table 1: Adapted from Jones and Pittman (1982)- Taxonomy of Self-Presentational) Strategies 15

Table 2: Means (and Std. Deviations) of Variables for Pilot Study.....70

Table 3: Means (and Std. Deviations) of Variables for Main Study.....75

Table 4:Means of Leader Emergence for Men and Women Relying 76

Table 5:Correlations between Impression Management Strategies and Leader Emergence For Each Time Period 76

Table 6: Intercorrelations Between Variables For Time Period 1 78

Table 7: Intercorrelations Between Variables For Time Period 2 79

Table 8: Intercorrelations Between Variables For Time Period 3 80

Table 9: Intercorrelations Between Variables For Time Period 4 81

Table 10: Convergent Validities of Impression Management Strategies.....84

Table 11: Discriminant Analysis of Impression Management Strategies.....85

Table 12: Results of Hierarchical Linear Modeling for Individuals Relying on High Virtualness (Hypotheses H1, H2 and H3).....88

Table 13: Results of Hierarchical Linear Modeling for Individuals Relying on Low Virtualness (Hypotheses H4, H5 and H6).....89

Table 14: Slope Analysis for Significant Three-Way Interactions 90

Table 15: Summary of Findings.....105

Table 16: Results of Hierarchical Linear Modeling for Individuals Relying on High Virtualness (Hypotheses H1, H2 and H3) Including Non-Significant Control Variables 134

Table 17: Results of Hierarchical Linear Modeling for Individuals Relying on Low Virtualness (Hypotheses H4, H5 and H6) Including Non-Significant Control Variables 135

LIST OF FIGURES

FIGURE----------PAGE

Figure 1: Research Model 9

Figure 2: Ingratiation and High Virtualness 92

Figure 3: Self-Promotion and High Virtualness 94

Figure 4: Exemplification and High Virtualness 97

Figure 5: Ingratiation and Low Virtualness 99

Figure 6: Self-Promotion and Low Virtualness 102

ABSTRACT

This study used a longitudinal study spanning a twelve-week time period and involving 165 undergraduate students to examine the combined impact of gender and impression management strategies on leader emergence by members relying on low versus high virtualness. The subjects were formed into 44 self-managed work groups and charged with completing four deliverables that built on top of each other and were part of their course requirement. The results shows that for individuals relying on low virtualness, there were significant three-way interaction effects between gender, for individuals relying impression management strategies (ingratiation and self-promotion) and time as well as significant two- way interaction effects, regardless of gender, between intimidation and time. For individuals relying on high virtualness, there were significant three-way interaction effects between gender, impression management strategies (ingratiation, self-promotion and exemplification) and time on leader emergence.

Slope analysis revealed that women relying on low virtualness faced a backlash in terms of their leader emergence when engaging in high ingratiation, a role-congruent impression management strategy that has been shown to enhance performance evaluations in organizational settings. For these women, high self-promotion, a role-incongruent strategy, also decreased leader emergence over time. In contrast, the leadership emergence for men relying on low virtualness was not impacted by any impression management strategies. Also, the results showed that

regardless of gender, for members relying on low virtualness, high intimidation reduced leader emergence over time while low intimidation had the opposite effect. However, intimidation enhanced leader emergence initially.

Women relying on high virtualness, on the other hand, did not face a backlash in their leader emergence when they engaged in high ingratiation (a role-congruent strategy) and high self-promotion (a role-incongruent strategy). Instead, for women relying on high virtualness, low ingratiation, self-promotion and exemplification increased their leader emergence over time. Further, regardless of gender, individuals relying on high virtualness did not face any dysfunctional effects on leader emergence over time when they engaged in high supplication or intimidation. In addition, for men relying on high virtualness, ingratiation, exemplification and self-promotion positively influenced leader emergence, regardless of time.

In essence, our results demonstrated that the relationship between impression management strategies and leader emergence is influenced by virtualness, time and gender. Women and men need to be wary when engaging in impression management strategies when relying on low virtualness. Further, a text-based setting enables both women and men to engage in impression management strategies without facing backlash effects. For women relying on high virtualness, it would appear that in the long run, they should let their work speak for itself, while

for men with a similar disposition, they can still engage in ingratiation, self-promotion and exemplification—in their emerging as leaders.

CHAPTER 1: INTRODUCTION

1.1 Overview

Virtual teams are composed of geographically dispersed members who collaborate on various projects using electronic collaboration tools. While previous research has underscored the importance of understanding leaders, given their extensive influence on group dynamics as well as group outcomes (Yoo and Alavi 2004), an understanding of leadership in such virtual teams is limited (Zigurs and Schoonover 2008). The leadership literature distinguishes between formal leaders and individuals who are perceived as leaders. The focus of this study is on the latter form of leadership—emergent leadership—which views a leader as not being a "leader" unless perceived by others as such. Interestingly, gender has played a significant role in affecting the emergence of leaders. Ideally, a level-playing field should exist such that individuals are assessed based on their abilities or other leadership-related characteristics to emerge as leaders. However, much of the research in collocated settings has demonstrated that gender plays a key role in leader emergence. For instance, women, despite possessing and displaying relevant expertise, are consistently not viewed as leaders (Watson and Hoffman 2004). Various studies have examined the relationship between gender and leader emergence and indicated that men are more likely to emerge as leaders than women (Eagly and Karau 1991, Ridgeway 2001, Ritter and Yoder 2004).

Previous research has highlighted the vital role played by impression management strategies in influencing leader emergence. Impression management strategies represent "a conscious or unconscious attempt to control images projected in real or imagined social interactions" (Schlenker 1980, p. 44). The aim of impression management strategies is to project a desirable image to the audience so as to exert influence on group activities, to shape "the definition of the situation" (Goffman 1959), norms (Bozeman and Kacmar 1997) and behaviors (Bozeman and Kacmar 1997), these in turn enable the "actors" to better achieve their ultimate goals in influencing the team (Jones and Pittman 1982, Bozeman and Kacmar 1997).

The purpose of this study is to examine how the impression management strategies of women and men relying on different degrees of "virtualness" impact leader emergence in self-managed workgroups. "Virtualness" is defined as the extent to which one depends on electronic tools to collaborate, communicate and coordinate with others who are not located in the same setting as oneself on a particular task. Self-managing work groups are formed on an ad-hoc basis and are often disbanded after the completion of the assigned task (Jarvenpaa and Leidner 1999; Suchan and Hayzak, 2001). Carte and Chidambaram (2004) argued that capabilities such as the reduction of visual cues offered by electronic collaborative technologies (i.e., CMC) are particularly useful in reducing the salience of demographic characteristics early in the life of the group and hence, ameliorate the

dysfunctional effects associated with diversity (e.g., gender). Indeed, there is much empirical support for their assertion (e.g., Staples and Zhao 2006). Other capabilities, such as an electronic audit trail, enable one's efforts to be easily recognizable (Nemiro 2002).

In this study, I argue that such technologies offer a more level-playing field for women and men in their engaging of gender role-incongruent behaviors, i.e. non-gender stereotypical roles, in their leader emergence. As purported by Social Role Theory, women and men are expected to display, fulfill and abide by societal gender norms (Barry 1991, Gardner et al. 1994, Eagly and Karau, 2002, Watson and Hoffman, 2004, Rudman and Fairchild 2004, Eskes 2007). Failure to do so elicits negative social ramifications such as reduced likeability, lowered social ratings or discrimination (Gardner et al. 1994, Eagly and Karau, 2002, Watson and Hoffman, 2004, Rudman and Fairchild 2004). Likeability plays a vital role in enabling an employee to attain higher salaries, career advancement and career opportunities (Heilman et al. 2004). Individuals employing role incongruent impression management strategies run the risk of being perceived or evaluated in a negative manner (Gardner et al. 1994, Rudman 1998, Bolino and Turnley 2003). This dissertation discusses the idea that, women and men relying on virtualness are not as obligated to engage in impression management strategies that are in line with their gender-stereotypical roles and are free to break away from these gender stereotypes in their emerging as leaders.

1.2 Research Question

In a recent study, Chidambaram et al. (2008) found that self-promotion positively impacts leader emergence while supplication negatively impacts it. A post-hoc analysis revealed that gender played an important role in affecting leader emergence, and self-promotion, in particular, played an important role for women, especially in a collocated context. However, this study was conducted using a dichotomous design—members were in a "purely" virtual setting or in a "purely" collocated setting. However, in practice, there are few teams that exist solely at these two ends (Staples and Webster 2008). Recent research has indicated the significance of viewing "virtualness" as a continuum (Griffith et al. 2003, Kirkman and Mathieu 2005, Chudoba et al. 2005). As pointed out by researchers, even collocated teams employ some degree of technologies in their collaboration (Martins et al. 2004, Kirkman and Mathieu 2005, Gibson and Gibbs 2006). The extent to which team members rely on electronic tools for their task execution, thus, determines the degree of virtualness of a team. Chidambaram et al. (2008) only examined two impression management strategies—self-promotion and supplication; in this dissertation, I examine the entire taxonomy of impression management strategies (Jones and Pittman 1982) in light of differing virtualness among group members.

In addition, I examine how time affects the aforementioned relationships. While the study of impression management strategies has been ongoing for several

decades, there is a paucity of studies that employ longitudinal approaches (Harris et al. 2007, Bolino et al. 2008). A recent review of impression management literature also highlighted that other than ingratiation and self-promotion, the examination of other forms of other impression management strategies has been neglected, and that a cross-sectional approach tends to dominate previous investigations (Bolino et al. 2008).

Moreover, despite the importance of impression management strategies in facilitating group work, promotions and likeability (Gardner and Avolio 1998, Nguyen et al. 2008), I know very little about the effects of these strategies on leader emergence in self-managing work teams (Bolino et al. 2008). The examination of impression management strategies has been largely conducted within the realm of supervisor-subordinate relationship and, thus, there is a lack of empirical work regarding those strategies employed in self-managed workgroups by emergent leaders (Nguyen et al. 2008). The differences in impression management behaviors that exist between subordinates-and-superiors versus members-and-peers are likely to be vast. Peers have no hierarchical differences, enjoy the same resources and face the same constraints as others in the group, while superiors command greater resources, hold formal authority and may be far removed from their subordinates (Cohen and Bailey 1997, Pescosolido 2001, Douglas and Gardner 2004, Yoo and Alavi 2004). These differences may result in impression management behaviors to

have very different impacts in self-managed workgroups compared to superior-subordinate relationships.

Further, to date, a majority of online leadership patterns research is based largely on the cross-sectional approach (e.g., Balthazard et al. 2004, Wakefield et al. 2008). Recent empirical studies that examined the role of leaders on a group's functioning focused primarily on formal leaders, were conducted in a virtual team setting (e.g., Wakefield et al. 2008, Joshi et al. 2009) and did not incorporate the notion of virtualness. Especially in cases where leaders emerge and are not appointed, as in the case of self-managed work teams in which the team members are interdependent and responsible for managing the task processes (Wageman, 2001), the study of the relationship between impression management strategies and leader emergence moderated by gender and time has not been examined. This dissertation addresses the above gaps in the impression management, virtual team and leadership literature by examining the following research question:

How do impression management strategies affect leader emergence for men and women relying on varying degrees of virtualness over time?

1.3 Organization of the Dissertation

In this chapter, I provide an overview of the research question examined in this study. The rest of the dissertation is organized as follows: In Chapter 2, the

relevant theories and empirical research related to impression management strategies, gender, virtualness and time are presented. The hypotheses are also discussed in this chapter. In Chapter 3, the research methodology which includes the data collection method, the subjects used, the operationalization of the variables (e.g., impression management strategies) used in the main study are described. In addition, details related to the implementation of the pilot study and relevant information, including the lessons learned from the pilot study as well as the modifications made to the research design of the main study and the instruments are discussed. In Chapter 4, results of the statistical analyses (Hierarchical Linear Modeling) used to test the hypotheses are described. In Chapter 5, a discussion of the results and their relationship to prior theoretical perspectives and research is presented In Chapter 6, I discuss the contributions and strengths of the research, the implications for theory and practice, limitations and directions for future research.

CHAPTER 2: LITERATURE REVIEW AND RESEARCH MODEL

This chapter draws upon the pertinent theories and builds on the literature from the fields of MIS, psychology, sociology and leadership to develop the research model and test the ensuing hypotheses in this dissertation. This chapter is organized as follows: First, I present the literature related to gender and leader emergence, then describe gender-related theories, including Social Role Theory, Expectation States Theory and Role Congruity Theory (Berger et al. 1977, Eagly 1987, Eagly et al. 2000, Eagly and Karau 2002), all of which provide useful insights to the differences between men and women emerging as leaders. Second, I describe the impression management strategies framework and how it relates to leader emergence. Then, drawing from the gender-related theories, I discuss how gender moderates the relationship between impression management and leader emergence. Third, I extend this phenomenon to the virtualness setting, and discuss how virtualness moderates the relationship between impression management strategies and leader emergence using the cues-filtered out perspective (Sproull and Kiesler 1986, Dubrovsky et al. 1991). Fourth, I add in the dimension of time and discuss why it is important to account for the temporal dimension in interpreting the interrelationships between gender, impression management strategies, virtualness and leader emergence. I rely on Expectation States Theory (Ridgeway

2001), Channel Expansion Theory (Carlson and Zmud 1999) and the Accelerated Collaborative Technology Deployment perspective (Carte and Chidambaram 2004) in this section.

2.1 Research Model

Figure 1 depicts my research model wherein the extent of virtualness moderates the combined impact of gender and impression management strategies on leader emergence over time. Below, I describe the model and its relationships in greater detail, review the relevant literature and present my hypotheses.

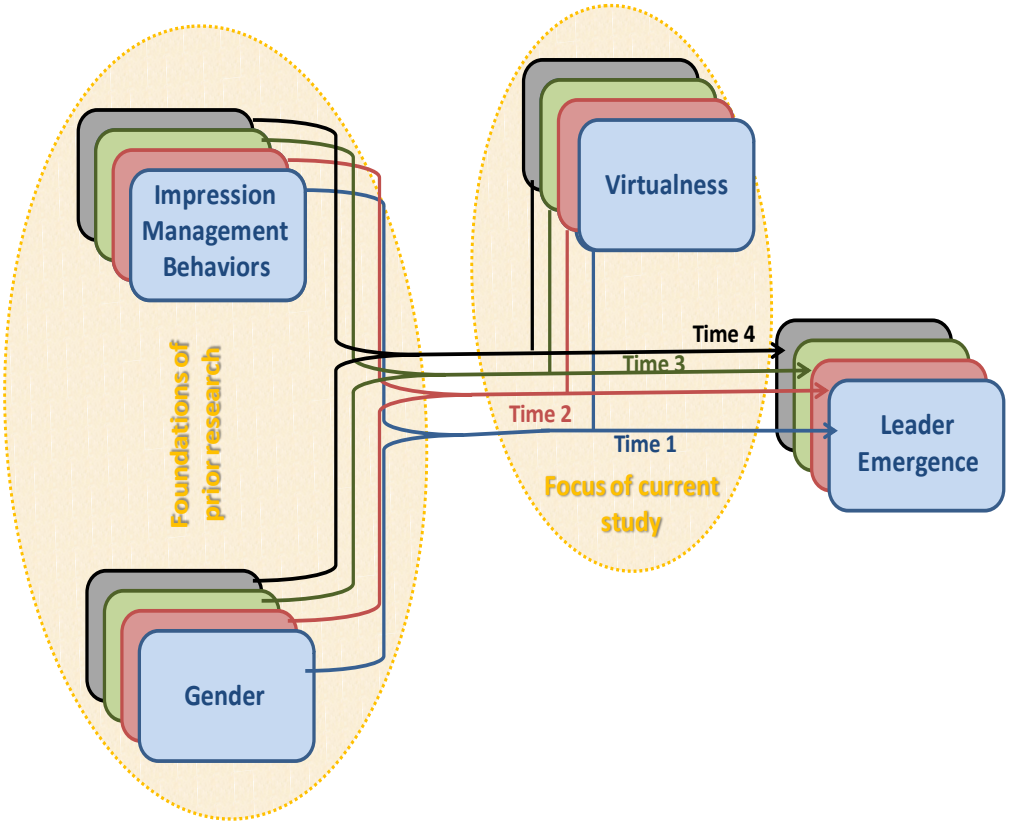

Figure 1: Research Model

Emergent (i.e. informal) leaders are those who exert influence on others, but are not necessarily appointed formally or selected explicitly as leaders (Neubert and Taggar 2004, Yoo and Alavi 2004). Further, emergent leaders earn their status through the support and acknowledgements of the group (Yoo and Alavi 2004). The individual(s) who emerge(s) as the leader is presumably the person(s) most qualified to lead (Erez et al. 2002). One or more leaders may emerge as the project moves forward (Erez et al. 2002). According to Stroh et al. (2002), there are three important criteria that predicts leader emergence. *First,* informal leaders are likely to be those who drive the group towards goal accomplishment. These individuals are perceived by their members as having task expertise or as having influence on those who have such expertise. *Second,* informal leaders are deemed to be more visible in group discussions. *Third,* informal leaders are perceived to contribute more of their time and effort towards the group's task. In contrast, formal leaders are those with a formal appointment and have the power and authority to exert influence and control resources (Yoo and Alavi 2004).

2.2 The Impact of Gender on Leader Emergence

Understanding the dynamics of emergent leadership is an important managerial issue given the increasing proliferation of self-managed work teams and the growing decentralization of organizations (Pescosolido 2001, Sarker et al. 2002, Simoff and Sudweeks 2010). Although there is an abundance of research on leadership, much less is known about how individuals emerge as leaders in teams

in which they have worked over a period of time (Neubert and Taggar 2004). Further, with the influx of women into the work force, the gender composition of work groups has changed considerably (Neubert and Taggar 2004, Carli 2010). A recent comprehensive review of gender and leadership shows that gender plays a role in influencing leader emergence although other situational factors such as culture and power differentials also matter (Ayman and Korabik 2010). Gender may, therefore, represent a crucial factor that influences the dynamics of leader emergence (Neubert and Taggar 2004). The extant literature defines emergent leadership as the *extent* to which one is perceived as a leader by members of the team.

Three theories that have been advocated to explain gender differences in leader emergence: Social Role Theory, Expectation States Theory and Role Congruity Theory (Berger et al. 1977, Eagly, 1987, Eagly and Karau, 1991, Ridgeway 2001, Eagly and Karau 2002). Social Role Theory purports that individuals adopt stereotypical gender roles or have preexisting beliefs imposed by society. Driven by societal and performance expectations, females and males may, therefore, carry their own set of expectations regarding what are appropriate behaviors that are incorporated into small task groups (Karakowsky and Siegel, 1999). The Social Role Theory suggests that women and men will regulate their behaviors defined by societal expectations (Watson and Hoffman 2004). Men are required to identify with characteristics associated with masculinity (Bem 1974),

while women are expected to display femininity and communal behaviors that emphasize "expressive orientation, an affective concern for the welfare of others" (p. 156). Examples of communal behaviors include showing care and concern for others, gentleness, affect, expressive orientation, relational and communal in nature (Lord et al. 1986, Schein et al. 1991, Eagly and Johannesen-Schmidt 2001, Eagly and Karau 2002, Roya and Frame 2004). Examples of masculinity and assertive behaviors include aggression, self-confidence, dominance, job completion, and other task-oriented attributes (Lord et al. 1986, Schein et al. 1991, Roya and Frame 2004). Indeed, a predominant theme that emerges from gender research is that women tend to display communal behaviors and those associated with femininity while men are inclined to display behaviors associated with masculinity, such as aggressiveness (Ritter and Yoder 2004, Roya and Frame 2004, Watson and Hoffman 2004). However, behaviors of leaders tend to include those of masculinity oriented such as goal setting (Eagly and Karau 2002, Yoo and Alavi 2004).

Expectation States Theory asserts that gender, when made salient, is akin to a status characteristic in which males are deemed to possess a high status relative to females and are, hence, viewed as more competent with higher performance expectations (Eagly, 1987, Eagly and Karau, 1991, Wagner and Berger 1997, Shelly and Munroe 1999). These beliefs govern the communication patterns such that men's ideas are considered more seriously (Berger et al. 1977, Watson and Hoffman 2004). In short, Social Role Theory and Expectation States Theory

indicate that women face powerful barriers that restrict women from assuming leadership positions (Watson and Hoffman 2004).

Role Congruity Theory developed by Eagly and Karau (2002) indicates that the need to fulfill gender stereotypical roles as well as leadership roles creates two levels of prejudice for emergent leaders who happen to be women. *First*, leaders in task-oriented groups are expected to behave in a manner consistent with those characteristics associated with masculinity—behaviors that are in line with male stereotypic norms—and tend to assume a higher status (Lord et al. 1986, Schein et al. 1991, Roya and Frame 2004). Thus, women tend to be perceived as having less potential in assuming the role of a leader and are evaluated more harshly when they take up the role of a leader. A meta-analysis of 58 studies revealed that men are more likely to emerge as leaders compared to women (Eagly and Karau 1991). The meta-analysis further demonstrated that men were more likely to emerge as leaders when the groups were short-term and when the task was not a socially intensive one.

Second, women who fail to adopt valued gender stereotypic roles run the risk of incurring social disapproval by members (Rudman 1998, Watson and Hoffman 2004). Violations of gender stereotypic norms have been shown to result in backlash from others (Rudman 1998, Watson and Hoffman, 2004). Backlash refers to "social and economic sanctions for counter-stereotypical behaviors"

(Rudman and Fairchild, p. 157, Rudman 1998). Watson (1988) found that subordinates, regardless of men or women, reacted negatively and were less accepting of dominant female bosses, undermining the influence of these bosses. They received lower social and leadership ratings as compared to their male counterparts.

2.3 The Impact of Impression Management Strategies on Leader Emergence

Impression management has received scholarly attention over the past five decades. In the classic work of Goffman (1959) who first conceptualized impression management, he proposed a dramaturgical model in which "actors" engage in various "performances" depending on the "settings" and the "audiences". Through the use of impression management tactics, individuals attempt to shape others' images of oneself (Goffman 1959, Jones and Pittman 1982) so as to better influence the outcomes (Goffman 1959) and group dynamics (Bozeman and Kacmar 1997).

Self-promotion, exemplification, ingratiation, supplication and intimidation are strategies that are described in the impression-management taxonomy developed by Jones and Pittman (1982). This taxonomy is adopted in the present study as it is one of the most commonly used in impression management research (e.g., Turnley and Bolino 2001). Depending on the context (Gardner and Avolio 1998), individuals may engage in any of the impression management strategies—

ingratiation, self-promotion, exemplification, supplication and intimidation—to bolster their attractiveness, competency, moral worth, neediness and dominance (Jones and Pittman 1982). Table 1 provides the definitions and examples of the aforementioned strategies.

Table 1: Adapted from Jones and Pittman (1982)- Taxonomy of Self-Presentational) Strategies

Category	**Strategy**	**Definition/Description**
Communal Strategies	Ingratiation	Behaviors that actors use to make themselves appear more attractive, warm and likable to others.
	Supplication	Behaviors that actors use to advertise their shortcomings so as to be seen as needy
Assertive Strategies	Self-Promotion	Behaviors that actors use to present themselves as highly competent
	Intimidation	Behaviors that actors use to appear aggressive and forceful
Role Neutral Strategy	Exemplification	Behaviors that actors use to present themselves as morally worthy and designed to elicit emulation.

As indicated above, ingratiation refers to those behaviors that individuals employ to increase their likeability, while supplication refers to those behaviors that convey a sense of vulnerability and need. Self-promotion, in contrast, refers to behaviors that disseminate one's own qualities and accomplishments, while intimidation refers to behaviors that are authoritarian and may rely on threats. . Exemplification refers to those behaviors that project an air of dedication to the

task and the group. Depending on the context, individuals may engage to varying degrees in these impression management strategies (Jones and Pittman 1982, Gardner and Avolio 1998, Turnley and Bolino 2001). These strategies are classified into three categories—communal, assertive and role neutral—which are elaborated later. Below I discussed each of the impression management strategies in detail.

Since leadership is a "dynamic and interactive process", individuals can engage in impression management strategies to emerge as leaders (Gardner and Avolio 1998). In a peer-to-peer context, impression management manifests itself as an individual's attempt to ensure that other members are aware of his/her efforts as well as to enhance interpersonal relationships, compliance, attraction, likeability and harmony, and to gain acceptance (Blickle 2003, Nguyen et al. 2008).

Through the use of ingratiation, one may increase their likeability by others in general (Jones and Pittman 1982), and within workgroups in particular (Cooper 2005). Further, members typically use humor to engage in ingratiation tactics (Cooper 2005, Nguyen et al. 2008). The use of ingratiation by leaders is viewed favorably by followers and hence elicits followers' liking (Rozell and Gunderson 2003). Ingratiation, a strategy which one uses in order to bolster one's likeability, was found to be positively associated with transformational leadership (Gardner and Cleavenger 1998) as well as gaining others' compliance (Blicke 2003).

The use of supplication strategies represents a dependency perspective. Recent research conducted in a virtual team setting showed that supplication had a negative impact on leader emergence (Chidambaram et al. 2008). Given that supplication is viewed as being weak, it can convey an image of helplessness and vulnerability that may conflict with perceptions of leadership, which tend to be defined in terms of power and influence (Jones and Pittman 1982). However, when used appropriately, such as in situations requiring compliance (Misiolek and Heckman 2005), it can be an effective strategy to convey a willingness to get the job done. Thus, it can affect leadership positively when used in the right context, as with most other impression management strategies.

Through self-promotion, which emphasizes one's achievements, abilities and performance (Turnley and Bolino 2001), individuals could portray an image that is more consistent with the qualities of a leader, i.e., attributes that are more in line with masculinity, competency and proactivity. Virtual team research has demonstrated the important role played by self-promotion in influencing leader emergence (Chidambaram et al. 2008). Other virtual team research has highlighted the importance of being perceived as competent and intelligent to emerge as a leader (Wickham and Walther 2007). While some previous research has shown the negative effects of self-promotion on outcomes such as performance appraisals (e.g., Barsness et al. 2005), other research has shown that it can be an important

mechanism in improving outcomes, including, for instance, increasing the likelihood of success in job interviews (e.g., Higgins et al. 2003, Tsai et al. 2005).

In their argument regarding the relationship between intimidation and transformational leadership, Gardner and Cleavenger (1998) suggested that leaders who use intimidation are unlikely to draw affect from followers. Rather than motivating followers to achieve higher goals, leaders who employ intimidation strategies use coercive means to force their followers to comply with their goals (Gardner and Cleavenger 1998). Intimidation may be employed when members want others to behave in an appropriate manner (e.g. to get others to do their work) or to let others know that they are not to be pushed around (Jones and Pittman 1982). In a self-managing work group context, the lack of formal authority and the use of intimidation may be useful in getting other members to work on their assigned tasks, and thereby emerge as a leader.

Exemplification is personified by someone contributing to the common good of the group and represents a vital strategy employed to evoke a charismatic image to followers (Gardner and Avolio 1998). Further, a recent study conducted in a CmC setting indicated that individuals who were perceived as being dedicated, an aspect of exemplification, emerged as leaders (Wickham and Walther 2007).

However, it is important to note that the role played by impression management strategies is contextually determined. Hence, it is important to uncover the situational factors that determine the impacts of impression management (Wayne et al. 1994, Higgins et al. 2003, Barsness et al. 2005). This dissertation focuses on examining how the joint impact of a set of situational factors—gender, virtualness and time—in a self-managed work group moderate the impact of impression management on leader emergence. In the subsequent sections, I provide greater details in each of these constructs and illuminate how they influence one another.

2.4 Role Congruity Theory: Linking Impression Management and Gender to Leader Emergence

The use of impression management strategies, however, is not as straightforward as it seems. Each impression management strategy—like a coin—has two sides: a desirable and an undesirable image (Jones and Pittman 1982). This complexity is further compounded by the gender factor, where relevant (Rudman 1998, Turnley and Bolino 2001). Scholars and studies in the impression management and human resource management areas have examined the impact of gender on the effectiveness of impression management strategies, but mostly in the context of interviews and job appraisals. However, empirically, scant attention has been given to how impression management strategies (Nguyen et al. 2008) and gender interact in influencing group dynamics in work teams.

When misalignment of impression management strategies occurs (i.e., perceived masculine strategies used by women, for instance), it could have negative social ramifications (Rudman 1998) such as reduced likeability or non-hireability. According to Social Role Theory, women are expected to display, fulfill and abide by the societal gender norms (Berger et al. 1977, Ridgeway 2001). Failure to do so may result in negative social ramifications such as reduced likeability or lowered social ratings (Eagly and Karau 2002, Watson and Hoffman 2004). Thus, individuals are presumed to carry mental models and preexisting beliefs concerning what the appropriate and generally accepted behaviors for each gender are (Ridgeway 2001). These beliefs are imposed and shaped by society. Thus, individuals who display deviant gender stereotypic behaviors may face resistance or be evaluated negatively by their peers or supervisors (Rudman 1998, Bolino and Turnley 2003). According to the gender prescriptive, women are expected to adopt socio-emotional roles whereas men are expected to adopt task-instrumental roles (Berger et al. 1977, Ridgeway 2001).

A qualitative review (Guadagno and Cialdini 2007) and an empirical study (Bolino and Turnley 2003) of gender differences with regards to impression management strategies revealed that women are more likely to be more passive and gentler in the impression management strategies (e.g., ingratiation) they use, while men tend to be more aggressive and proactive in their strategies (e.g., self-promotion). Further, as discussed earlier, Social Role Theory suggests that women

are expected to adopt societal gender norms (i.e. socio-emotional roles) whereas men are expected to adopt task-instrumental roles (Berger et al. 1977, Ridgeway 2001, Rudman and Fairchild 2004). Failure to do so may result in backlash including lower likelihood of being hired, victimization, perceived competence and likeability (Eagly and Karau 2002, Watson and Hoffman 2004, Rudman and Fairchild 2004). Based on the tenets of Role Congruity Theory, these impression management strategies can be classified into role congruent, role incongruent and role neutral strategies. Below I discuss how these strategies influence leader emergence for women and men.

2.4.1 Gender and Role Congruent Strategies

As discussed earlier, women tend to emerge as leaders less often than men based on the conflicting demands made by leader roles and gender stereotypical behaviors along with the fact that women possess a lower status relative to men in mixed-gender groups. However, women could employ communal impression management strategies—ingratiation and supplication—in order overcome this bias that others have towards perceiving them as leaders. With respect to ingratiation, researchers have argued that leaders engage in ingratiation in order to enhance followers' satisfaction, which enables them to portray a charismatic leadership image (Gardner and Avolio 1998). Indeed, recent study shows that the use of ingratiation by leaders promoted group cohesion and liking (Rozell and Gunderson 2003). Moreover, there is a large body of research in organizational behavior that

indicates the use of ingratiation is related to promotions, positive performance appraisals and success in interviews (Judge and Bretz 1994, Higgins et al. 2003, Westphal and Stern 2006).

By engaging in role congruent impression management strategies, women may be able to increase one's likeability (Kipnis and Schmidt 1988) as well as create a transformational leadership image, an image that is readily associated with feminine stereotypes (Eagly and Johannesen-Schdmit 2002, Eagly and Karau 2002). The use of ingratiation could thus be used to offset to some degree prejudice towards members of minorities (Westphal and Stern 2006). By engaging in behaviors related to flattery or acts of favor-rendering, the actor may elicit feelings of affect as well as psychological obligation from the target (Westphal and Stern 2006). Research has shown that for women, ingratiation has been positively linked to performance evaluations (Kipnis and Schmidt 1988) and performance appraisals (Barsness et al. 2005).

Supplication behavior, which includes seeking help, depending on others, "playing dumb", and deliberately losing out in discussions, is more in line with feminine gender roles (Jones and Pittman 1982, Bolino and Turnley 2003) and has been used in previous studies to establish images of humility and modesty (Sosik and Jung 2003, Guadagno and Cialdini 2007) or helplessness (Turnley and Bolino, 2001).The use of supplication by subordinates may elicit a sense of superiority in

supervisors (Jones and Pittman 1982). Gardner and colleagues (Gardner et al. 1994) cited several studies in which women who complied with gender stereotyped roles received higher social ratings than those who did not.

While men are also bound by gendered societal expectations, this area has received relatively less attention (Rudman and Fairchild 2004). Such scant attention is not surprising given that gender norms put women at a disadvantage with respect to leadership positions and undermines them in their career progression (Rudman and Fairchild 2004, Rudman and Phelan 2008). Past research has shown that assertive strategies such as self-promotion and intimidation, if engaged by men, can positively impact their performance evaluations and hireability (Rudman 1998, Bolino and Turnley 2003).

2.4.2 Gender and Role Incongruent Strategies

In line with Role Congruity Theory, research indicates that individuals who deviate from gender norms also suffer dysfunctional consequences (Rudman and Glick 2001, see Rudman and Fairchild 2004 for examples). Past research, for instance, has shown that compared to women, men who self-disclosed their problems to strangers were perceived as weaker (Derlega and Chaiken 1976). Others have shown that "atypical" men who were passive-dependent received lower likeability ratings , were less popular and were viewed as requiring more therapy that their counterparts whose behaviors were consistent to gender

stereotypes (Costrich et al. 1975). In a related vein, men who succeeded in the nursing field were deemed to be at risk of suffering negative consequences such as rejection by others and “”having his masculinity questioned” and (Cherry and Deaux 1978).

Based on the above, it is reasonable to suggest that for men, the use of such impression management strategies may have a negative impact on leader emergence since these strategies construe a weak image, given that men are expected to behave in an aggressive manner (DuBrin 1991, Tepper et al. 1993, Rudman and Glick 2001). Prior research indicates that men who engaged in rational and persuasive tactics were evaluated more favorably in their performance than those who did not (Kipnis and Schmidt 1988).

Evidence concerning Social Role Theory was further supported by Rudman (1998). Specifically, the study indicated that individuals whose behaviors were incompatible with gender-prescribed roles were evaluated negatively and received a backlash effect. In another study, Watson and Hoffman (2004) found that women, despite demonstrating the required task expertise as their male counterparts, carry a risk of being labeled as “black sheep”. The women in that study also received lower likeability ratings compared to men. The experiments conducted by Heilman and colleagues (2004) provided further evidence of this notion. Their research showed that women who violated stereotypes by being competent and successful in the

assigned tasks were viewed unfavorably and elicited negative social reactions. As compared to their female counterparts who exhibited unclear performance and male counterparts who proved successful in the tasks, they were perceived to be less likeable and were more personally derogated.

Further, Bolino and Turnley (2003) found that women who employed aggressive strategies (intimidation) received lower ratings of likeability from their supervisors, while for men, there was no such relationship. That study also revealed that for women, there was no impact of the use of aggressive strategies on performance ratings. In contrast, the use of such strategies by men had a positive influence on performance evaluations. Prior research has provided evidence to support the view that likeability plays an important role in overall performance evaluations and offers other organizational rewards such as salary increases, special job opportunities and professional advancement (Cardy and Dobbins 1986, Wayne and Ferris 1990, Bolino and Turnley 2003, Heilman et al. 2004). In short, given that self-promotion and intimidation are assertive strategies congruent with a masculine orientation, their use by women may incur penalties.

2.4.3 Gender and Role Neutral Strategy

The study of exemplification, in contrast, has received considerably less attention compared to the study of ingratiation, supplication and self-promotion (Turnley and Bolino 2001, Bolino et al.2008). Exemplification, which involves

leading by example and engaging in self-sacrificing behaviors (e.g. presenting oneself as hardworking), is deemed a role neutral strategy and has been frequently cited as a characteristic of transformational leadership (Gardner and Cleavender 1998). A recent study by Rozell and Gunderson (2003) also found that the use of exemplification by a leader positively influences group dynamics, including satisfaction and related perceptions, regardless of gender. Thus, men and women who engage in exemplification can emerge as leaders (Gardner and Avolio 1998).

In short, the above discussion suggests, based on Role Congruity Theory, that role congruent and role neutral impression management strategies are likely to have a positive impact on leader emergence, while role incongruent strategies are likely to have a negative impact. The next section highlights how this relationship is expected to change in the face of group members relying on different degrees of virtualness.

2.5 The Impact of Virtualness

Collaborative technologies refer to a variety of electronic tools that are used by individuals to collaborate, communicate and coordinate their task activities. Examples of such tools include email, bulletin boards and group support systems. The advent of communication technologies has enabled members who are dispersed to engage in discussion at their convenience, providing flexibility in collaboration activities. Indeed, the use of collaborative technologies by members

of task groups has become an ubiquitous aspect of most organizations (Martins et al. 2004, Kirkman et al. 2004).

2.5.1 Concept of Virtualness

A considerable amount of literature has emerged during the past decade that examines differences between face-to-face and virtual teams. However, a majority of studies about virtual teams use a dichotomous perspective that teams are either virtual or face-to-face. In reality, however, virtualness rests on a continuum with face-to-face or completely virtual modes serving as two ends of a continuum (Griffith et al. 2003). Virtualness is defined as the proportion of time during which a member uses electronic text-based communication mode relative to their total communication on task collaboration activities such as clarification of ideas and responses with other members (Grifith et al. 2003, Gibson and Gibbs 2006), taking into account the extent of communication within the group.

In this dissertation, I am primarily interested in examining how impression management strategies play out differently for men and women relying on high versus low virtualness in influencing leader emergence over time. In a self-managing workgroup, members may rely on collaborative technologies to different extents and as such, a continuous measurement of virtualness is appropriate. Given that Social Role Theory as well as past research suggests the importance for either gender to engage in role congruent strategies in order to elicit positive reactions

from others and not to incur penalties in a face-to-face setting (Rudman 1998, Bolino and Turnley 2003, Rudman and Fairchild 2004), I am interested in investigating how such strategies influence leader emergence when virtualness is factored into the model. Thus my primary focus is to contrast the relationship between impression management strategies employed by either gender relying on high or low virtualness.

2.5.2 Virtualness and Gender

There are two perspectives that have been employed by researchers examining the intersection of electronic communication and gender on group dynamics: the cues-filtered-out approach (Sproull and Kiesler 1986, Dubrovsky et al. 1991) and the Accelerated Collaborative Technology Deployment (ACTD) perspective (Carte and Chidambaram 2004). The cues-filtered-out lens suggests that the reduced social cues—a characteristic of text-based media settings—will result in a greater emphasis on task messages as compared to demographic attributes such as gender (Sproull and Kiesler 1986, Dubrovsky et al. 1991). Along a related vein, and as will be elaborated further later, the ACTD perspective argues that the reductive capabilities of the technology (e.g., anonymity) when employed early in the life of a diverse team will reduce the immediate salience of demographic characteristics such as gender, resulting in a more task-focused exchange in which members' contributions are judged based more on their merit rather than on the surface-level characteristics of their authors (Carte and

Chidambaram 2004). While the researchers (Carte and Chidambaram 2004) argue that it is through reductive capabilities such as anonymity that reduce gender differences, other research indicates that a text-based medium by itself will help to overcome gender differences. For example, Lind (1999) found that women who collaborated in a virtual team context experienced higher levels of inclusiveness and satisfaction as compared to their male counterparts and to other women who collaborated in a face-to-face setting. She suggested that the "facelessness" of email equalizes the playing field providing a more egalitarian setting.

Further, previous research has demonstrated that the use of electronic media enables leaders to better distinguish high quality contributions from low quality ones, as compared to face-to-face communication (Hedlund et al. 1998). By filtering out social contextual cues, the electronic medium diverts the attention of leaders to actual task-related messages (Hedlund et al. 1998). Sussman and Sproull (1999), for instance, found that bad news was delivered more efficiently with the use of text-based CmC media and that bad news tended to be distorted in a face-to-face context. Additionally, text-based CMC (e.g., asynchronicity) reduces the "normal turn taking" of a conversation carried in a face-to-face setting. For instance, any individual can post their messages on the bulletin board at any time or send their messages to others without interruptions. Women are thus offered greater opportunities to voice their opinions in such a setting (Lind 1999). As such, the use of text-based CMC reduces monopolization of conversations by dominant members

and permits greater participation equality, reducing communication barriers (Yoo and Alavi 2004). In short, greater virtual interaction may work to the advantage of women and men.

Here, I suggest that virtualness offers a means by which members can engage in atypical, i.e. role incongruent, impression management strategies in leader emergence. The lean text-based communication channel enables individuals to focus primarily on the exchange of text messages instead of being sidetracked by the gender of the communicating partner, thus facilitating the use of gender-atypical impression management strategies without facing a backlash (Sproull and Kiesler 1986, Yoo and Alavi 2004, Carte and Chidambaram 2004). Thus, in a setting characterized by high degrees of virtualness, there is less need for women and men to engage in impression management strategies that conform to societal gender expectations. Given the task-focused nature of the setting, even if women were to engage in self-promotion or intimidation, they are likely to face a lower likelihood of experiencing social disapproval and being perceived negatively by their peers, a situation they face in a traditional non-computer-mediated environment. A similar line of reasoning can be applied to men in their engaging of role incongruent strategies (ingratiation and exemplification).

2.5.3 Virtualness and Impression Management Strategies

Impression management strategies are important for leader emergence for both women and men relying on high virtualness. The use of ingratiation (Sosik et al. 2002) may play an important role on leadership emergence for individuals relying on higher virtualness. Indeed, for individuals relying on higher virtualness, there are fewer opportunities to engage in behaviors that build cooperation and shared history (Kanawattanachai and Yoo 2007). Teams that engage in social-emotional interactions perform better (Chidamabaram 1996, Jarvenpaa and Leidner 1999, Kanawattanachai and Yoo 2007). As such, members relying on high virtualness and seeking to emerge as leaders would be well served by engaging in ingratiation, possibly as a way to offset the lack of physical proximity and develop the necessary relationships. Ingratiation, which involves such behaviors as flattery or favor-doing (Turnley and Bolino 2001), may thus be particularly useful in drawing positive reactions from others (Sosik et al. 2002) when individuals rely on high virtualness for collaboration. An exploratory study has shown that members of distributed teams tend to engage in "softer" strategies as compared to those in collocated teams so as to influence others in more subtle ways to do work (Elron et al. 2006).

The use of supplication and intimidation may be perceived as task participation and hence positively impact leader emergence for individuals relying on high virtualness. Due to the reduced normative influences offered by the CmC setting, the use of "weaker" (or "stronger") behaviors may not be perceived as such

by the receivers of the message (Montoya-Weiss et al. 2001). Rather, other members of a team may interpret and perceive these behaviors as increased task involvement by the sender (Montoya-Weiss et al. 2001). Indeed, research has shown that competitive conflict management behavior, which tends to elicit negative reactions from other members, was found to have a positive impact on performance in a CmC setting (Montoya-Weiss et al. 2001). In contrast, past research conducted in a face-to-face setting has shown that competitive behaviors lead to reduced team cohesion and team performance (Montoya-Weiss et al. 2001). Thus, the use of supplication strategies may not be perceived as helplessness in a more virtual collaboration setting. Asking group members for help may thus be simply viewed as increased task participation by others.

The use of self-promotion strategies may have a strong positive impact in high virtualness contexts for both men and women given that previous virtual team research has shown the importance of being perceived as intelligent, competent and dedicated to emerge as leaders (Wickham and Walther 2007). Exemplification which encompasses behaviors related to going beyond the call of duty, leading by example and engaging in sacrificing behaviors so as to benefit others (Jones and Pittman 1992), may play an especially potent and positive role in influencing leadership emergence in more virtual contexts. As mentioned earlier, empirical evidence exists that members of distributed teams tend to engage in "softer" strategies as compared to those in collocated teams so as to influence others in

more subtle ways to do work (Elron et al. 2006). Further, the reduced physical proximity may diminish recipients' attention paid to messages sent (Hind and Weisband 2003). Consequently, strategies that benefit the collective group and exemplify sacrifice are needed.

2.6 The Impact of Time

Thus far, my discussions have not accounted for the important role of time that may modify the interrelationships of gender, virtualness and impression management strategies on leader emergence. Researchers in the CmC area have advocated that time is an important dimension that needs to be accounted for when examining technology-mediated phenomena (Walther 1996, Carlson and Zmud 1999, Wilson et al. 2006) and in understanding group dynamics (McGrath 1984). Much current research related to virtual teams tends to be cross-sectional in nature (Wilson et al. 2006).

In this section, I discuss two theories that account for the effects of time in CmC settings and that will be used in my formulation of hypotheses in the subsequent section: the Accelerated Collaborative Technology Deployment (Carte and Chidambaram 2004) (ACTD) perspective and the Channel Expansion Theory (Carlson and Zmud 1999).

Carte and Chidambaram (2004) in articulating the Accelerated Collaborative Technology Deployment (ACTD) perspective argued that the reductive capabilities of technology when employed early in the life of a diverse team reduce the immediate salience of demographic characteristics such as gender and race. Given the limited understanding they have of each other, especially at the start of a group, members tend to rely on readily-detected demographic characteristics such as gender to make sense of the expertise and weaknesses of one another (Kanawanattanachai and Yoo 2007) and implicitly categorize each other based on stereotypical beliefs (Carli 2001, Harrison et al. 2002). Thus when gender differences exist, members are inclined to rely on stereotypical representations (e.g., gender) and form biased expectations of how the other party should behave. In a related vein, a text-based setting may be especially beneficial early in the life of a team since it reduces the immediate salience of gender and creates a more task-focused setting. For example, in the study by Yoo and Alavi (2004), there were no significant differences between men and women in leader emergence for virtual teams. In an electronic environment, the recipient of a message may not pay as much attention to the sender (i.e. the gender of the sender) as to the content of the message (Yoo and Alavi, 2004). Such a reorientation of team interactions enhances members' satisfaction and sense of belonging (Lind, 1999). Research by Staples and Zhao (2006) provide some evidence of the claims associated with ACTD. Specifically their study reveals that compared to homogeneous face-to-face teams, diverse face-to-face teams reported more conflict and greater negative attitudes in

terms of lower satisfaction and less cohesiveness. However, there were no significant differences between face-to-face homogeneous teams and CmC diverse teams. Furthermore, the CmC diverse teams outperformed the face-to-face diverse teams.

The other theoretical lens that is relevant to my hypotheses is Channel Expansion Theory (Carlson and Zmud 1999), which argues that the channel capacity of the text-based medium expands over a period of time as members gain more experience using the medium and with each other. As noted succinctly by Carlson and Zmud (1999, p. 157): "As individuals develop experience communicating with others using a specific channel, such as email, they develop a knowledge base for more adroitly applying this communication channel… For example, email users may become aware of how to craft messages to convey different levels of formality or of how to use channel-specific meta-language to communicate subtleties. Similarly these individuals are also likely to interpret messages received on this channel more richly because they can interpret an increasing variety of cues."

Channel Expansion Theory identifies factors that form the knowledge experiences that influence the ability of members to encode and decode messages and shaping others' attitudes concerning the richness of the channel. These factors are messaging topic experience, organizational context experience and experience with communicating partners. As the knowledge experiences of an individual

increase, the greater one's ability to communicate effectively via the channel and the richer one perceives the channel to be.

Indeed various studies have supported their assertions (e.g., Markus, 1994a and 1994b, Carlson and Zmud 1999, Wilson et al. 2006, Timmerman and Madhavapeddi 2008). Markus (1994a) for instance showed that previous experience with technology facilitated perceived richness of the technology. Similarly, the study of Timmerman and Madhavapeddi (2008) supported the assertions of Channel Expansion Theory. Specifically their study showed that perceptions of a channel's richness were positively associated with knowledge experiences with respect to a medium, communication partner and topic of discussion. Various studies conducted over a longer time period have also shown that CmC groups experienced greater affective processes (e.g., satisfaction) and had more positive group experiences (Dennis et al. 1990, Parks and Roberts 1998, Wilson et al. 2006). Others showed that virtual teams with a history did not differ with respect to communication effectiveness as compared to face-to-face teams on openness, trust and information sharing (Alge et al. 2003).

In the next section, I discuss how time modifies the influence of virtualness on impression management strategies employed by women and men emerging as leaders.

2.7 High Virtualness: The Interaction Effects of Gender and Impression Management Strategies on Leader Emergence over Time

Time represents an important element can alter the effectiveness of impression management strategies (Higgins et al. 2003, Tsai et al. 2005). In this section, I discuss how time can modify the influence of impression management strategies employed by both women and men relying on high virtualness in their emerging as leaders. As stated earlier, the role congruent strategies for women (which are role incongruent for men) are communal—ingratiation and supplication—while the role congruent strategies for men (and role incongruent ones for women) are assertive—self-promotion and intimidation. The role neutral strategy is exemplification. In other words, strategies that are role congruent for women indicate role incongruence for men and vice versa. I divide my discussion as follows: (a) Communal strategies (role congruent for women and incongruent for men), (b) Assertive strategies (role incongruent for women and congruent for men), and (c) Role neutral strategy.

2.7.1 Communal Impression Management Strategies (Ingratiation and Supplication): Role Congruent Strategies for Women and Role Incongruent Strategies for Men

I have discussed the notion of how communal impression management strategies play an important role in facilitating leader emergence for individuals relying on high virtualness. However, because of the differential performance

expectations for men and women to emerge as leaders (an assertion that I discuss below), the importance of these communal impression management strategies will play out differently for men and women as well. In other words, while both women and men relying on high virtualness may engage in communal behaviors —women, because they are expected to and men because they can—the effects on leader emergence will vary over time for either gender. We expect that for women, it will dissipate over time since their work will overshadow their impressions, and for men it will remain constant, since members will consistently expect more than just work from those considered by society to be dominant. So, displaying their "softer side" will pay off dividends continuously for men. I discuss this notion further below.

Channel Expansion Theory suggests that over time, members gain experience with the electronic communication technologies and accumulate knowledge about one another, the ability for members to evaluate the contributions of each other is based more on contributions than impressions (Carlson and Zmud 1999). The electronic exchanges among individuals accumulate and create an archival system that permits one to review the messages. In comparison to a face-to-face setting, the accessibility of archival and storage capabilities enables members to capture, keep track, examine and evaluate the comments made by others (Nemiro 2002). As the name of the contributor is typically tagged to the electronic trail or record (e.g., emails, threads of discussions in bulletin boards etc.), the extent of contributions made by each member is more apparent compared

to less virtual settings. As such, members relying on high virtualness are better able to monitor and assess the contributions of each other over time in highly virtual settings compared to members relying on low virtualness. The evaluation of contributions in a virtual setting can, therefore, be less biased and more straightforward and objective (Yoo and Alavi 2004). A recent study of virtual teams showed that over time, through observations and feedback, a transactive memory develops whereby members gain awareness of each others' competencies and weaknesses (Kanawattanachai and Yoo 2007). However, the impact of communal strategies over time may be moderated by gender, as I discuss below.

Here, I suggest that there are differential impacts of ingratiation and supplication on leader emergence for women and men over time. Expectation States Theory purports that gender, when made salient (as in mixed-gender teams), is akin to a status characteristic in which males are deemed to possess a high status relative to females and are viewed as more competent with higher performance expectations (Berger et al. 1977, Eagly and Karau 1991, Carli 1991, Johnson et al. 1996). Even for tasks that are gender-neutral, men still more frequently emerge as leaders than women (Carli 2010, Whitley and Kite 2010). According to Ridgeway (2001), the implicit performance expectations influence the extent of "attention, participation, evaluation and influence" (p. 643) paid by each member to the comments of others in a goal-oriented setting, clouding one's judgments about another party. Consequently, members are more likely to value and positively

evaluate the opinions of men than those of women (Berger et al. 1977). Research has shown that in face-to-face settings, men were rated as more competent and instrumental than women by participants even though their objective performance did not differ (Carli 1991).

While men are perceived to be more competent than women, in general, such implicit performance expectations may translate into higher standards for men to emerge as leaders, when compared to women, especially in a higher virtualness setting where there is a greater tendency for conflict as well as miscommunication. Researchers have pointed out that an individual collaborating in more virtual contexts will face more difficulty in coalescing around a set of work practices that is understood and shared by all (Mannix et al. 2002, Chudoba et al. 2005, Chudoba and Watson-Manheim 2008). Further, an individual relying on higher virtualness will be less able to integrate knowledge from others due to the lack of shared experiences as well as common shared work practices (Chudoba et al. 2005, Staples and Webster 2008, Chudoba and Watson-Manheim 2008).

Equity theory provides a theoretical basis for understanding the differential performance standards for men and women (Taynor and Deaux 1973; 1975). According to Equity Theory (Adams 1965), "the amount of rewards or outcomes received in exchange relationship are dictated by the amount of inputs to the exchange" (Taynor and Deaux 1975, p. 381). Therefore performance competency will result in "high rewards" (Taynor and Deaux 1975). Subsequent research

however shows that constraints modify the exchange relationship and hence the rewards received (Jacobson and Effertz 1974, Taynor and Deaux 1975). Constraints (e.g., being a woman) to the exchange relationship influence the performance expectancies of an allocator, and thus affect how a recipient is judged in terms of evaluations (Leventhal 1976). Being a woman is deemed a constraint in various situations (Taynor and Deaux 1973; 1975). Viewed differently, in another context for example, an allocator may have higher performance standards for an adult as compared to that of children and will thus evaluate the children more highly for similar performance. These performance standards serve as a baseline from which evaluations and reward decisions are made.

Similarly, earlier gender studies conducted in a face-to-face setting demonstrated that engaging in "out of the traditional bounds of role-related behavior" by men and women lead to differential performance evaluations and rewards (Taynor and Deaux 1973; 1975, Jacobson and Effertz 1974), with women being perceived more favorably and more deserving of rewards than their male counterparts on comparable performance, even in "masculine" situations. For example, in a study by Taynor and Deaux (1973), the masculine situation was operationalized as a robbery case and the male or female actor helped the police to catch the robber. The women were perceived as exerting more effort in their task as compared to their male counterparts, translating to them receiving more positive evaluations. The higher performance expectancies of men provide a reason as to

why women are judged more favorably for comparable performance. While many previous studies have shown that men are evaluated more positively in different occupations and task groups than women (Eagly and Sczensy 2009), it is important to recognize that in the studies of Taynor and Deaux (1975), the subjects were provided *unambiguous and precise* information concerning the success of the actions of the person (for both women and men) of interest. As Stapel and Winkielman (1998) pointed out, constructs such as a stereotype "will be a guide to interpretation only when there is something to be interpreted, that is, when the target stimulus is ambiguous rather than unambiguous" (p. 635, cited in Biernat 2005). Various studies (Biernat 2003; 2005) have also suggested that compared to men, women are held to lower minimum standards (e.g., in lower leadership ability) and hence were more likely to be short-listed for a job. However, because "stronger evidence is needed to be certain about the person's ability", they were discriminated against in the final hiring decisions (Biernat 2003; 2005).

As a result of status differentials and expectations between women and men, it suffices for women to focus on their task and provide evidence of expertise contrary to gender-stereotypes in order to emerge as leaders. Archival capabilities of technologies reinforce the notion that women contribute to the task in a *visible* way since review of prior interactions and contributions is made possible. This argument, combined with the predictions derived from expectation states theory which purports men as having higher leadership ability than women in workgroups

(Ridgeway 2001, Eagly and Karau 2002, Biernat 2005, Eagly and Sczesny 2009) which in turn result into higher expectations for men (Jacobson and Effertz 1974) suggest that for men, they not only need to exert effort towards the task, they also need to proactively and constantly engage in impression management strategies so as to continuously manage others' expectations of themselves and elicit favorable ratings to their leader emergence. Thus the discrimination against women which translate into lower performance expectations (Jacobson and Effertz 1974, Leventhal 1976, Biernat 2005) may set a lower barrier for these women relying on higher virtualness in their emerging as leaders. In other words, the higher virtualness environment favors women over men in terms of egalitarianism. Therefore I expect that:

***H1a$_1$**: For women relying on high virtualness, ingratiation and leader emergence will be inversely related over time.*

(i.e. the impact of high ingratiation on leader emergence will decrease over time, while the impact of low ingratiation on leader emergence will increase over time).

***H1a$_2$**: For men relying on high virtualness, ingratiation and leader emergence will be positively related regardless of time.*

***H1b$_1$**: For women relying on high virtualness, supplication and leader emergence will be inversely related over time.*

(i.e. the impact of high supplication on leader emergence will decrease over time, while the impact of low supplication on leader emergence will increase over time).

***H1b$_2$**: For men relying on high virtualness, supplication and leader emergence will be positively related regardless of time.*

2.7.2 Assertive Impression Management Strategies (Self Promotion and Intimidation): Role Congruent Strategies for Men and Role Incongruent Strategies for Women

The use of self-promotion by members may enable one to be perceived as having knowledge in certain areas. Being viewed as competent is a vital predictor of leader emergence in virtual teams (Wickham and Walther 2007). In addition, given the buffering effects provided by technologies (Montoya-Weiss et al. 2001), the use of intimidation may convey the perception of one's participation in the task. In contrast to research conducted in face-to-face setting demonstrating that competitive conflict management behaviors negatively influenced team performance, others found that competitive conflict management behavior enhanced performance in a CmC setting (Montoya-Weiss et al. 2001).

In an electronic setting, there is reduced monopolization by dominant members (Yoo and Alavi 2004). Moreover, the extent of contributions made by each member is more apparent in a high virtualness given the archived interactions. Given the lower baseline applied to women in their leader emergence combined

with the greater transparency (Nemiro 2002) and equality provided by the electronic environment (Carte and Chidambaram 2004) suggest that it is less necessary for women relying on high virtualness to engage in assertive impression management strategies to emerge as leaders. In contrast and compared to their female counterparts, men need to meet a higher baseline to emerge as leaders, hence they need to continuously engage in assertive impression management strategies.

***H2a$_1$**: For women relying on high virtualness, self-promotion and leader emergence will be inversely related over time.*

(i.e. the impact of high self-promotion on leader emergence will decrease over time, while the impact of low self-promotion on leader emergence will increase over time.)

***H2a$_2$** :For men relying on high virtualness, self-promotion and leader emergence will be positively related regardless of time.*

***H2b$_1$**: For women relying on high virtualness, intimidation and leader emergence will be inversely related over time.*

(i.e. the impact of high intimidation on leader emergence will decrease over time, while the impact of low intimidation on leader emergence will increase over time.)

***H2b$_2$**: For men relying on high virtualness, intimidation and leader emergence will be positively related regardless of time.*

2.7.3 Role Neutral Impression Management Strategy for Women and Men

Exemplification which involves leading by example so as to benefit others (Jones and Pittman 1992), may result in leader emergence for both men and women. For individuals relying on high virtualness, given the greater uncertainty as well as the reduced likelihood of developing shared experiences that are necessary for task accomplishment (Chudoba et al. 2005, Staples and Webster 2008, Chudoba and Watson-Manheim 2008), strategies which encompass sacrifice and that benefit the collective group are needed. Given that equity theory (Jacobson and Effertz 1974, Leventhal 1976) suggests higher standards are applied to men in their leader emergence, it also suggest that men need to consistently remind others of what they have contributed, especially when the environment is egalitarian. Women, in contrast, face lower standards and therefore only need to prove themselves with actions rather than the use of impression management strategies. Based on the above discussion, I suggest that:

H3a*: For women relying on high virtualness, exemplification and leader emergence will be inversely related over time.*

(i.e. the impact of high exemplification on leader emergence will decrease over time, while the impact of low exemplification on leader emergence will increase over time.)

H3b*: For men relying on high virtualness, exemplification and leader emergence will be positively related regardless of time.*

2.8 Low Virtualness: The Interaction Effects of Gender and Impression Management Strategies over Time

Here I discuss the impact of impression management strategies on leader emergence for women vis-à-vis men relying on lower virtualness over time. The organization of the discussion is similar to the previous section.

2.8.1 Communal Impression Management Strategies (Ingratiation and Supplication): Role Congruent Strategies for Women and Role Incongruent Strategies for Men

The use of appropriate impression management strategies can transform the perceptions of members by diminishing the use of "potentially unfavorable status characteristics" such as gender as the means to judge and form impressions of the influencer, i.e., the individual engaging in impression management (Wayne et al. 1994, Barsness et al. 2005). Based on Social Role Theory and previous research in face-to-face settings, I argued earlier about the importance for women and men to engage in role congruent strategies so as to elicit positive evaluations from others. These initial impressions impact members' subsequent behaviors towards each other (Wayne et al. 1994). With role congruent strategies, members form more positive impressions of the influencer (Wayne et al. 1994, Rudman 1998, Bolino and Turnley 2003, Rudman and Fairchild 2004). The initial positive impression may further be reinforced and strengthened with the use of role congruent strategies over time, translating to more favorable attributions about the members' ability to

assume leadership positions in the group. Researchers have suggested that likeability may result in biased performance evaluations of the subordinate such that performance deficiencies are overlooked and the evaluations of the individual are not longer accurate (Cardy and Dobbins 1986, Barsness et al. 2005). Therefore I propose that for women relying on low virtualness, the importance of ingratiation and supplication on influencing leader emergence will increase over time. It is important to note that impression management strategies by themselves are not guaranteed ways of influencing perceptions of others (Wayne et al. 1994) and hence leader emergence. Rather, impression management strategies play an important role in members influencing other members' views about themselves, which if used appropriately, can result in them being viewed as leaders (Wayne et al. 1994, Gardner and Avolio 1998).

Regarding role incongruent strategies, we expect that for men relying on low virtualness, the negative link between these strategies (ingratiation and supplication) and leader emergence will decrease over time. As members interact initially, their initial impressions are likely to be based on demographic characteristics which translate to reliance on gender stereotyping (Rudman 1998, Harrison et al. 2002, Kanawanattanachai and Yoo 2007). As we have discussed earlier, this view is bolstered by evidence that previous studies showed that the use of role incongruent behaviors and strategies incurs disapproval and translates to negative reactions from others (Rudman and Glick 2001, Rudman and Fairchild 2004, Heilman et al. 2004). Therefore, engaging in role incongruent strategies

initially will result in negative sanctions on leader emergence. As the project progresses and members better understand each others strengths and weaknesses, the negative reactions that occur as a result of not engaging in gender stereotypic norms is likely to reduce.

While studies have shown the importance for women and men to abide in gender stereotyping behaviors in order not to result in penalties such as being viewed as weaker and less likeable (Bolino and Turnley 2003, Rudman and Fairchild 2004), these studies have been examined in the context of supervisor and subordinate or interviews. In a self-managed work group, the team's primary focus is to strive to accomplish their tasks as the project approaches completion. Given the time for the group to mature and evolve, team members are more likely to acknowledge and recognize the competencies and leadership skills of one another (Barry 1991, Harrison et al. 2002, Kanawanattanachai and Yoo 2007). Moreover, as the team project progresses towards completion, the focus of the team shifts to the production aspects whereby the establishment of group norms and social-related or interpersonal aspects takes on a relatively less prominent role (Galegher 1990, Chidambaram and Bostrom, 1996, Kanawanattanachai and Yoo 2007). The group must tie up the loose ends and integrate their results into a document as the project progresses towards the later stage (Galegher 1990, Kiesler and Sproull 1992). Coordinating the workflow and collecting information from various members are, therefore, essential as the task reaches its completion state. Members

may also need to integrate and evaluate conflicting perspectives. The needs of the task imply that the gender stereotypic bias that occurs as a result of engaging in role incongruent strategies will decrease over time as the project progresses. In sum, I expect that:

***H4a$_1$**: For women relying on low virtualness, ingratiation and leader emergence will be positively related over time*

(i.e. the impact of high ingratiation on leader emergence will increase over time, while the impact of low ingratiation on leader emergence will decrease over time.)

***H4a$_2$**: For men relying on low virtualness, ingratiation and leader emergence will be inversely related over time.*

(i.e. the impact of high ingratiation on leader emergence will decrease over time, while the impact of low ingratiation on leader emergence will increase over time.)

***H4b$_1$**: For women relying on low virtualness, supplication and leader emergence will be positively related over time.*

(i.e. the impact of high supplication on leader emergence will increase over time, while the impact of low supplication on leader emergence will decrease over time.)

***H4b$_2$**: For men relying on low virtualness, supplication and leader emergence will be inversely related over time.*

(i.e. the impact of high supplication on leader emergence will decrease over time, while the impact of low supplication on leader emergence will increase over time.)

2.8.2 Assertive Impression Management Strategies (Self-Promotion and Intimidation): Role Congruent Strategies for Men and Role Incongruent Strategies for Women

As I have noted earlier, there exists comparatively little research that employs a longitudinal approach in impression management strategies research. Impression management strategies that are assertive translate into role incongruent and role congruent strategies for women and men respectively. As suggested by Social Role Theory (Berger et al. 1997, Ridegway 2001), men engaging in role congruent behaviors are likely to elicit positive outcomes (Bolino and Turnley 2003), suggesting that role congruent strategies may lead to leader emergence. Such positive reactions are likely to have bolstering and strengthening effects on leader emergence over time with greater use of role congruent strategies. By contrast, women engaging in role incongruent strategies may result in negative consequences such as less likeability and lowered likelihood of being hired (Rudman 1998, Rudman and Fairchild 2004).

While there may be a negative impact of role incongruent strategies on leader emergence for women, this relationship is likely to diminish over time. Although individuals may rely on overt demographic characteristics to form their initial impressions of one another (Harrison et al. 2002, Kanawanattanachai and Yoo 2007), members of a self-managing work group are more likely to recognize the strengths and weaknesses of one another over time. Given the emphasis in task

accomplishment and performance for self-managing workgroups (Barry 1991, Jarvenpaa and Leidner 1998, Yoo and Alavi 2004, Kanawanattanachai and Yoo 2007), the requirement for members to engage in role congruent strategies so as to emerge as leaders is likely to diminish over time. Therefore, based on this discussion, I suggest that:

***H5a$_1$**: For women relying on low virtualness, self-promotion and leader emergence will be inversely related over time.*

(i.e. the impact of high self-promotion on leader emergence will decrease over time, while the impact of low self-promotion on leader emergence will increase over time.)

***H5a$_2$**: For men relying on low virtualness, self-promotion and leader emergence will be positively related over time.*

(i.e. the impact of high self-promotion on leader emergence will increase over time, while the impact of low self-promotion on leader emergence will decrease over time.)

***H5b$_1$**: For women relying on low virtualness, intimidation and leader emergence will be inversely related over time.*

(i.e. the impact of high intimidation on leader emergence will decrease over time, while the impact of low intimidation on leader emergence will increase over time.)

***H5b$_2$**: For men relying on low virtualness, intimidation and leader emergence will be positively related over time.*

(i.e. the impact of high intimidation on leader emergence will increase over time, while the impact of low intimidation on leader emergence will decrease over time.)

2.8.3 Role Neutral Strategy for Women and Men (Exemplification)

Exemplification represents a key mechanism that leaders can employ to convey a charismatic image (Gardner and Avolio 1998). Garnder and Cleavenger (1998) conducted a psycho-historical study to investigate the relationship between exemplification and transformational leadership. Their study shows that elements of transformational leadership (e.g., charisma, individualized consideration) were positively linked over time to exemplification. Leaders who were deemed as charismatic also used exemplification strategies most frequently.

Consistent with gender-stereotypic expectations, the results of a meta-analysis of forty-five studies indicated significant gender differences wherein women were rated higher than their male counterparts on transformational leadership dimensions (Eagly et al. 2003 as cited in Kark, 2004) while males were rated higher than women on transactional leadership dimensions. Transformational leaders engage in behaviors that portray interpersonally-related behaviors including charisma, individualized consideration, intellectual simulation, collaborative group management, participative decision-making, and promoting empowerment among group members (Eagly and Johnson 1990, Maher 1997, Careless 1998, Gershenoff and Foti, 2003, Kark, 2004). On the other hand, transactional and directive

leadership styles emphasize task-oriented issues and goal-setting, attributes that are more in line with masculinity attributes (Eagly and Johnson 1990, Maher 1997, Careless 1998, Gershenoff and Foti 2003). Transformational leadership therefore affords women a means to overcome some of the incongruity by embedding some behaviors such as mentoring and consideration that are more feminine in nature (Eagly and Karau 2002, Eagly 2007, Rosette and Tost 2010). Therefore I expect the positive impact of exemplification, an aspect of transformational leadership style, to play an important role in influencing leader emergence for both women and men over time since the initial positive impression may bring about more positive evaluations from others and these evaluations strengthened with the use of exemplification. Given that exemplification is a role neutral strategy, therefore we expect no gender differences.

***H6a**: For women relying on low virtualness, exemplification and leader emergence will be positively related over time.*

(i.e. the impact of high exemplification on leader emergence will increase over time, while the impact of low exemplification on leader emergence will decrease over time.)

***H6b**: For men relying on low virtualness, exemplification and leader emergence will be positively related over time.*

(i.e. the impact of high exemplification on leader emergence will increase over time, while the impact of low exemplification on leader emergence will decrease over time.)

2.9 Summary

In this chapter, I describe the theoretical concepts and empirical research associated with the constructs—gender and leadership, impression management strategies, virtualness and time—of interest in this dissertation. I also present my proposed model and its related hypotheses. In the upcoming chapter, I discuss the research methodology employed to investigate the proposed hypotheses.

CHAPTER 3: RESEARCH DESIGN AND METHODS

The purpose of this chapter is to describe the research methodology used in this study. Specifically, the following aspects are discussed: method of data collection, experimental procedures, the operationalization of the dependent and independent variables, and the control variables. Details related to implementation of the pilot study as well as the associated descriptive statistics and reliabilities of the instruments are also described. The objective of the pilot study was to validate the instruments, task type and the procedure of the experiments.

3.1 Subjects

The main study was conducted with students enrolled in an upper-division undergraduate business course—Principles of Management. As stated earlier, the research question of the study was "*How do impression management strategies affect leader emergence for men and women relying on varying degrees of virtualness over time?"*

These subjects were relevant to investigating the research question of interest in this dissertation for the following reasons:

- The students were formed into self-managed work groups charged with a task that had different deadlines.
- In addition, the students require technologies to collaborate on their task and thus this provides me a measure of virtualness.

- Also, subjects were evaluated by their peers which provided an incentive to engage in impression management strategies.

Also, the task involved an organizational setting and would be most relevant to subjects who had some familiarity with business organizations either through their course work or through their work experience. All students were business majors and a majority of the subjects (94%) had some work experience.

165 subjects were randomly assigned to groups of female-minority, female-majority, or all male, with each group comprising three to four members. There were a total of 44 self-managed workgroups which consisted of 15 female-minority groups, 14 female-majority groups and 14 all male groups. I controlled for group composition in my subsequent analysis. The entire study took place over a period of twelve weeks.

3.2 Experimental Procedures

The subjects were required to complete a term-paper that consisted of four deliverables as part of their course requirement.

3.2.1 Task

The topic of the paper was "Managing Organizational Change". The assignment was to research and find an example of an organization that had altered

its organizational structure or had made a significant impact on its market/industry in the last five years. The intention of this paper was to have subjects identify and describe those public organizations that had made, often times, drastic changes. Mere changes in the organization's "product offerings" were not acceptable, unless its organizational structure was also significantly altered to make the new offerings. Special care was to be taken to describe the organization before the change, describe the change and the strategies behind it, and then describe the organization after the changes had been implemented. The paper was to be a group effort, and involved four deliverables as described below.

3.2.2 Task Deliverables and Evaluation

3.2.2.1 Deliverable 1 (20 points): The group was to turn in a "topic analysis" (text of 1-2 double-spaced pages, plus 1-2 references). This topic analysis was to provide a description of the organization chosen for the analysis and a brief discussion of why this organization was chosen.

3.2.2.2 Deliverable 2 (40 points): The group was to turn in a "rich outline" (text of 4-6 double-spaced pages, plus 3-4 references). This outline was to offer a more detailed discussion and description of some of the changes that took place in this organization as well as an outline of the arguments demonstrating the need for such organization change.

3.2.2.3 Deliverable 3 (60 points): The group was to submit a draft (text of 7-8 double-spaced pages, plus at least 5-6 references). The group was expected to improve on the previous submission and offer a more detailed discussion of the argument demonstrating organization change and the impacts the change had had on the organization and its industry.

3.2.2.4 Deliverable 4 (80 points): The group was to turn in their completed final paper (text of at least 10 double-spaced pages, plus at least 7-8 references), based on the following format:

- Introduction .
- Company description and profile (before and after changes)
- Change description and implementation
- Arguments demonstrating organizational change
- Conclusion
- References

This project accounted for about 17% of the course grade. The amount of time given to the subjects for each of the deliverables was as follows—first deliverable (two weeks); second deliverable (three weeks); third deliverable (four weeks); final deliverable (three weeks). All groups received feedback after each deliverable, which would enable them to avoid the same mistakes in their subsequent deliverable and assess how they had performed. The subjects completed all associated surveys prior to receiving their grade for a given deliverable.

The above task was chosen as it was gender-neutral. There was no explicit mention of gender terms or gender context. In addition, the concepts that were required to complete the case study were taught to all the students who were required to attend the lectures. Moreover, some of these concepts were also examined in the quizzes for the course.

3.2.3 Participation and Motivation

Participation in the study—defined as completing the surveys associated with this study—was voluntary; however, completion of the four deliverables was required to get regular course credit. Students who participated in the study received extra credit for their course. If they completed all surveys (10 surveys), they were awarded 14 extra credit points for the course which had a total of 1200 points. Further, if everyone in their group completed all surveys, they and their group members were awarded another 10 extra credit points. If they completed 9/8/7/6/5/4/3/2/1 survey(s), they were awarded 12/11/8/6/5/4/3/2/1 extra credit point(s) respectively. The maximum extra credit they could earn was 24 points. Further, each deliverable of the project was graded and formed part of the grade for the course, including a peer evaluation at the end of the project.

This peer evaluation influenced the subject's participation grade for the course. The peer evaluation formed part of the class participation score that accounted for about 8% of the course grade. The subjects were informed prior to their project that

they were required to complete a peer evaluation at the end of the project, regardless of whether they participated in the study. Thus, the motivation to engage in the necessary impression management strategies by projecting a positive image to his or her peers existed. For students who did not want to participate, they were provided an alternative optional writing assignment for extra credit.

3.2.4. Electronic Tools

A bulletin board (an asynchronous communication tool) on "Desire to Learn" (D2L) was set up for each group. D2L offers an added capability–file uploading—in addition to other electronic capabilities found in many commercially available products. As such, members could upload files and access the files that were uploaded. Subjects were trained on how to use D2L for uploading files and exchanging messages with their group members. Subjects were told to use the bulletin board on D2L as it indicated their level of participation on each deliverable to the course instructor. No other restrictions on communication mode were imposed on the subjects. Given that this was a field experiment, subjects were permitted to conduct their meetings and discussions as their schedule permitted and at their own convenience. In the questionnaire that measures the amount of time spent by each subject on the various technologies in his or her collaboration. Subjects were requested to state the amount of time used in their collaboration for the following communication media: D2L, Email, Phone (call), Phone (text), Facebook, Instant Messenger and face-to-face. If the subjects used other

technologies besides the ones specified in the list, they were given the option to specify those technologies and were requested to indicate the amount of time that they spent on collaborating with their group members about the project using those technologies. Facebook, instant messenger and other technologies were not used by any subject in their task collaboration.

3.2.5. Experimental Procedures

One week prior to the start of the project, subjects completed a survey that measured demographic variables such as gender and control variables including GPA, Women as Managers scale, Men as Managers scale, and writing skills (Appendix A).

Upon completion of each deliverable, subjects completed two online questionnaires. One questionnaire measured impression management behaviors, the extent of virtualness and members' perceptions of leader emergence. The other questionnaire captured the roles enacted by each subject for each deliverable, as well as the type of technologies used for collaboration. The subjects received their grades for the deliverable only after they had completed the aforementioned questionnaires (Appendix B). The subjects were reminded every week that they needed to record the time they spent collaborating and communicating with their members regarding the task on a weekly basis, including the time spent online with D2L and other communication media. The subjects also completed a peer

evaluation after the completion of the entire project, but prior to receiving their grade. Along with their weekly reminders to track their collaboration, they were reminded about completing the peer evaluations at the end of the project. Students who did not participate in the study, but who worked on the project due to fulfillment of course requirement received their grades at the same time as those who participated in the study. There were three students who did not participate in the study and also did not choose the optional writing assignment. While there were a total of 184 students who chose to participate in the study, there were 6 students who completed only one or two surveys, 3 students who completed three to five surveys, and 4 students who completed six surveys. Given that these students missed completing the surveys that assessed the impression management measures for their deliverables as well as the fact that some of their group members missed some of the surveys that assessed impression management, members of these groups were dropped from the data analysis.

3.3 Operational Definition of Variables

3.3.1 Independent Variables

3.3.1.1 Impression Management Strategies:

Regarding the measurement of impression management strategies (self-promotion, supplication, intimidation, exemplification and ingratiation strategies), the instruments developed and validated by Bolino and Turnley (1999) were used. Subjects indicated the frequency of a particular behavior that they employ for the

specific deliverbale using a five-point Likert scale ("1= Very Inaccurate" to "5=Very Accurate"). Higher scores on the instrument indicated a higher level of that particular impression management strategy being enacted.

3.3.1.2 Extent of Virtualness:

While research that incorporates the contiguous notion of virtualness is scarce, previous scholars have incorporated geographical and temporal dispersion in defining virtualness (Kirkman and Mathieu 2005, Chudoba et al. 2005). In the present study, however, all groups were collocated. Indeed, as pointed out by Kirkman and Mathieu (2005), members who are collocated can and often do collaborate via electronic tools, hence, the notion of virtualness does not preclude collocated team members. Virtualness, as defined in this research, refers to the extent to which one depends on electronic tools to collaborate, communicate and coordinate with others who are not located in the same setting as oneself on a particular task (Griffith et al. 2003) relative to their total communication, while also taking into account the extent of communication within the group. Virtualness as defined by Griffith et al. (2003) rests on a continuum and low virtualness indicate that members also used some technologies in their collaboration.

Consistent with this definition, each member was asked to evaluate the extent to which they employed electronic tools to collaborate with their group members on the project and the extent of their total communication on the project.

A virtualness index was calculated based on the percentage of time spent by the individual online (text-based medium) relative to their total communication, which was weighted by the average time spent communicating by group. It is important to note that average time spent by the group excludes the time spent by an individual so as not to double-count the time spent by the individual.

Key:

$Text_i$ = Amount of time spent on text-based electronic communication with the group by an individual member for a given task

$Total_i$ = Amount of time spent on all communication with the group by the individual member for a given task

Avg_g = Average amount of time spent on all communication by all other members of the group for a given task

3.3.1.3 Gender:

Based on previous research (Eagly and Karau 2002, Lips and Keener 2007), gender was treated as a dichotomous variable—men (coded as 1) or women (coded as 0).

3.3.2 Dependent Variable

3.3.2.1 Leader Emergence:

Subjects were asked to identify and select (an) individual(s) whom they perceived as being the leader(s) in their group. It is, thus, possible that more than one individual may emerge as a leader. Individuals were not permitted to choose themselves as the leader. This is in line with the definition of leader emergence- "A group member is a leader if other group members judge her or him as one" (Pavitt 1999). Further, the objective of this research is to examine how the use of impression management strategies employed by men and women influences how others perceived him or her as a leader. *Leader emergence* is the ratio of the number of times the individual was nominated as a leader divided by one less than the team size. There were three individuals who did not select anyone as leader. However, they did select at least one leader for the other deliverables. So their data were included in the analysis.

3.3.3 Control Variables

Given the unequal gender composition of teams, gender composition (Kanter 1977) was treated as a control variable when examining leader emergence. Other control variables included GPA, individual commitment to each deliverable, group size (Schultz 1989), writing skill, an adapted version of Women as Managers

scale (WAMS; Terborg, Peters, Ilgen and Smith 1977) and an adapted version of Men as Managers scale (MAMS). The rationale for using these control variables includes:

- GPA might demonstrate task competency;
- Differential levels of commitment are likely to affect leader emergence differently.
- Larger groups suggest that individuals may need to engage in different or more impression management strategies in order to be perceived as a leader.
- Given that the study task was a case study which involved writing, individuals who are adept at writing may gain an advantage in leader emergence.
- The WAMS and MAMS scales measure one's attitudes towards women and men in leadership positions and may influence leader emergence.

The measurements for all control variables were administered prior to the project except for the measurement of commitment which was conducted after submission of each deliverable.

3.4 Pilot Study

A pilot study was conducted in Spring 2009 using students enrolled in an undergraduate MIS course. 165 undergraduates who were enrolled in the course

signed up to participate in the study. Students who participated in the study earned extra credit for completing a set of seven surveys. Students who did not want to participate in the study were given an alternative writing assignment. Only students who had completed at least six of the seven surveys were included for analyses. The experimental procedures were carried out as described earlier, except that the deliverables involved in the pilot study involved a project related to Microsoft Access. In the main study, the project involved a management case. Also, the length of the study for the pilot study was about six to seven weeks while the length of the study for the main study was twelve weeks. Differences in experimental procedures between the pilot study and main study are described in section 3.4.2, "Lessons Learned from the Pilot Study"). The main objective of the pilot study was to validate the instruments, fine tune the experimental procedures, and examine the preliminary results.

3. 4.1 Statistics from the Pilot Study

While the impression management instrument has been validated previously (e.g. Turnley and Bolino 2003), the factor structure of this instrument was validated again. Except for two items (related to exemplification), all other items loaded on the appropriate impression management strategy. As such, these two items were dropped. I then ran the factor analysis again. This time around, all the items loaded on the correct factors, thereby resulting in a total of five factors, in line with Turnley and Bolino (2003). The inter-item reliabilities of the impression

management strategies (α of self-promotion=0.79, α of supplication=0.88, α of exemplification=0.80, α of intimidation=0.86, α of ingratiation=0.77)
were greater than 0.7, exceeding the recommended value for a reliable construct (Chin 1998). The means, standard deviations and the reliabilities for the variables of interest are displayed in Table 3.

Table 2: Means (and Std. Deviations) of Variables for Pilot Study								
Sample (N = 165)	Females = 64				Males = 101			
GPA (out of 4.00)	Female = 3.20 (.47)				Male = 2.95 (.45)			
	Deliverable 1		**Deliverable 2**		**Deliverable 3**		**Deliverable 4**	
Textuality	85.13 (47.97)		87.61 (53.40)		90.63 (59.47)		74.76 (49.72)	
Leader Emergence (Overall, Scale: 0 to 1)	.41 (.39)		.41 (.38)		.41 (.37)		.41 (.38)	
	F	**M**	**F**	**M**	**F**	**M**	**F**	**M**
Leader Emergence (Scale: 0 to 1)	.50(.38)	.36(.38)	.46(.37)	.39(.38)	.47(.36)	.37(.38)	.43(.35)	.40(.39)
IM Strategies* (Scale: 1 to 5)								
Ingratiation (4 items, $\alpha = 0.77$)	3.06(.74)	3.22(.69)	3.01(.84)	3.21(.65)	3.10(.77)	3.17(.74)	3.14(.81)	3.17(.76)
Supplication (5 items, $\alpha = 0.88$)	1.70(.59)	1.82(.65)	1.75(.66)	1.87(.68)	1.85(.65)	1.94(.65)	1.78(.60)	1.96(.65)
Self-promotion (4 items, $\alpha = 0.79$)	2.93(.73)	3.08(.67)	3.00(.78)	3.09(.62)	3.07(.73)	3.03(.66)	3.19(.75)	3.05(.70)
Intimidation (5 items, $\alpha = 0.86$)	1.83(.69)	2.02(.63)	2.00(.66)	2.12(.62)	2.10(.68)	2.14(.62)	2.08(.76)	2.18(.66)
Exemplification (3 items, $\alpha = 0.80$)	2.95(.79)	2.94(.83)	3.07(.79)	3.01(.82)	3.17(.83)	3.07(.78)	3.02(.79)	2.93(.81)

3.4.2 Lessons Learned from the Pilot Study

The pilot study offered important insights that were used to make improvements in the main study. In the pilot study, each member was assigned a sub-task, which suggested high task clarity. Such a procedure reduced task interdependency, i.e. the likelihood that members need to collaborate with one another and, hence, for gender differences to surface. In the main study, therefore, members were not assigned a sub-task. Instead, the entire task was given to each group, requiring members to devise strategies for dividing the work and collaborating on its completion.

Further, since the project to be completed in the main study involved a less structured task than in the pilot study, it took longer to complete (about twelve weeks instead of four weeks as in the pilot study), which increased the amount of discussion and the need for collaboration among members that in turn translated to increased opportunities for members to engage in impression management strategies. Also, for the main study, a confidential peer evaluation (Appendix C) was conducted after each team had completed the entire project. The students enrolled in the class were told prior to the project that they were required to complete a peer evaluation after submission of the final deliverable and that each student's participation grade for the course would be affected by the peer evaluation. There was no peer evaluation in the pilot study. Such a grading structure served to further motivate each member to contribute to the project as

well as to engage in the necessary impression management strategies to convey a positive image to others.

Moreover, the subject pool in the main study consisted of students enrolled in the Principles of Management course. These students were appropriate for the more comprehensive task that included various aspects of business. In contrast, the pilot study involved a more structured database design project appropriate for the Introduction to MIS class. As discussed above, the task that the subjects in the main study were engaged in was a decision-making one with a higher task interdependency and thus, a greater likelihood that members would engage in managing others' impressions of them. As compared to an intellective task in which there is a "demonstrably correct answer", there is no "demonstrably correct answer" to a decision-making task since the solution is normally based on qualitative criteria (McGrath 1984). As a result, there is likely to be greater negotiation and persuasion in order to reach a consensus on decision-making task compared to that of an intellective task (McGrath 1984).

In terms of instrument modification, I retained the survey questionnaire for impression management strategies given its high reliabilities and the fact that the questions were validated in prior studies (e.g., Turnley and Bolino 2001). Based on feedback from the committee, the following instruments were added: Women as Managers scale, Men as Managers scale, peer evaluation, perceptions of the role

played by each member and writing skills. The Women as Managers scale (Terborg et al. 1977) and Men as Managers scale were to determine whether biases towards women and men as leaders existed prior to the project. The peer evaluation was included to spur participants into employing impression management strategies in their task collaboration. The question related to the role played by each member provides a glimpse to what each member actually did in each deliverable. Writing skills were assessed as they could possibly influence leader emergence. To sum up, the extensive pilot study that was undertaken helped to significantly improve the methods and instruments used in the main study.

CHAPTER 4: RESULTS OF STATISTICAL ANALYSIS

In this chapter, the descriptive statistics for the constructs in this study and reliabilities of the instruments are first presented. Following that, the correlations among the variables for each time period are presented. Then I describe the results of the statistical analyses that employed a two step process: omnibus tests using Hierarchical Linear Modeling (HLM) and follow-up tests using slope analysis, where significant interaction effects were found. Given the three levels of interaction implicit in the hypotheses, a two-step analyses needed to be undertaken to test specifically whether a particular hypothesis was significant or not. I also present graphs to help understand the complex three-way interaction effects hypothesized in this dissertation. This chapter concludes with a summary of the findings.

4.1 Descriptive Statistics and Reliabilities

Table 3 provides the means and standard deviations of the variables used in this study.

Table 3: Means (and Std. Deviations) of Variables for Main Study								
Sample (N = 165)	Females = 55				Males = 110			
GPA (out of 4.00)	Female = 3.24 (.44)				Male = 3.20 (.35)			
	Deliverable 1		**Deliverable 2**		**Deliverable 3**		**Deliverable 4**	
Virtualness	76.56 (49.93)		87.68 (56.14)		90.40 (65.00)		94.15 (68.88)	
Leader Emergence (Overall, Scale: 0 to 1)	.46 (.39)		.52 (.38)		.53 (.4)		.41 (.38)	
	F	**M**	**F**	**M**	**F**	**M**	**F**	**M**
Leader Emergence (Scale: 0 to 1)	.51(.41)	.43 (.38)	.59 (.38)	.48 (.38)	.63 (.04)	.48 (.40)	.59 (.42)	.47 (.40)
IM Strategies* (Scale: 1 to 5)								
Ingratiation (4 items, α = .85)	3.10(.8)	3.14(.92)	3.03(.97)	3.18(.96)	2.84(.92)	3.12(1.01)	3.03(.91)	3.17(.98)
Supplication (3 items, α = .93)	1.86(.87)	1.96(.96)	1.89(.78)	1.92(.83)	1.73(.62)	1.89(.88)	1.87(.84)	1.97(.90)
Self-promotion (4 items, α = .85)	3.49(.81)	3.21(.92)	3.53(.87)	3.37(.95)	3.23(.92)	3.24(.96)	3.37(.85)	3.23(1.00)
Intimidation (5 items, α = .86)	1.87(.72)	1.86(.74)	1.98(.81)	1.98(.82)	2.01(.74)	1.97(.8)	2.09(.94)	2.00(.79)
Exemplification (5 items, α = .85)	3.20(.81)	3.03(.86)	3.34(.76)	3.20(.80)	3.23(.75)	3.13(.88)	3.35(.73)	3.16(.87)

Table 4 presents the means of leader emergence for men and women relying on high and low virtualness respectively.

Table 4:Means of Leader Emergence for Men and Women Relying on High Versus Low Virtualness				
High Virtualness:				
Deliverable	**1**	**2**	**3**	**4**
Women	.30	.55	.58	.54
Men	.33	.47	.52	.39
Low Virtualness:				
Deliverable	**1**	**2**	**3**	**4**
Women	.66	.63	.69	.65
Men	.51	.49	.43	.54

Table 5 presents the correlations between different impression management strategies and leader emergence for each time period.

Table 5:Correlations between Impression Management Strategies and Leader Emergence For Each Time Period					
	Communal		**Assertive**		**Role Neutral**
Deliverable	**Ingratiation**	**Supplication**	**Self-Promotion**	**Intimidation**	**Exemplification**
1	-0.014	-0.035	0.167*	0.067	0.218**
2	0.146*	-0.007	0.123**	0.111^{+}	0.205**
3	0.039	-0.045	0.167*	0.030	0.168*
4	-0.012	-0.186**	0.104^{+}	-0.152*	0.067

The mean of peer evaluations for men was 4.19 (std deviation=.85) and that for women was 4.33 (std deviation=.87). A univariate t-test test indicated that there were no significant differences in peer evaluations between men and women (F=.87; p=ns). Additional analyses also showed that there were no significant differences in peer evaluation between men and women relying on low virtualness (F=.02; p=ns) as well as between men and women relying on high virtualness (F=2.23; p=ns).

Tables 6-9 present the inter-correlations among the variables for each time period. As seen from these tables, there were significant correlations among the impression management strategies (see Bolino and Turnley 1999, Turnley and Bolino 2001). However these inter-correlations are not uncommon as seen from previous studies employing the same instrument used in this study. Bolino and Turnley (1999) who developed the measure of impression management based on Jones and Pittman's (1982) impression management taxonomy also reported significant correlations among the various strategies. Their subsequent research which employed the same instrument again showed significant inter-correlations among the impression management strategies (Turnley and Bolino 2001). In each of these studies, the researchers provided evidence that the instruments demonstrate strong psychometric properties, reporting results of reliabilities and discriminant validity and convergent validity. I have done the same here, as discussed below.

Table 6: Intercorrelations Between Variables For Time Period 1											
		1	2	3	4	5	6	7	8	9	10
1	Gender	-									
2	Group Composition	0.52**	-								
3	Virtualness	-0.05	0.00	-							
4	Commitment	-0.17*	-0.09	-0.01	-						
5	Ingratiation	0.02	0.08	-0.04	-0.04	-					
6	Supplication	0.05	0.15*	0.14*	-0.25**	0.39**	-				
7	Self-Promotion	-0.15*	-0.02	-0.09	0.17*	0.62**	0.27**	-			
8	Intimidation	-0.01	0.10+	0.08	-0.17*	0.28**	0.51**	0.28**	-		
9	Exemplification	-0.10	0.07	-0.17*	0.15*	0.68**	0.33**	0.76**	0.32**	-	
10	Leader Emergence	-0.10	0.02	-0.31**	0.23**	-0.01	-0.04	0.17*	0.07	0.22**	-
Note. N=165 *$p < .05$, **$p < .01$, one-tailed.											

Table 7: Intercorrelations Between Variables For Time Period 2

		1	2	3	4	5	6	7	8	9	10
1	Gender	-									
2	Group Composition	.52**	-								
3	Virtualness	-.003	.01	-							
4	Commitment	-.13*	-.07	-.13	-						
5	Ingratiation	.07	.07	.02	.07	-					
6	Supplication	.02	.05	.01	-.29**	.33**	-				
7	Self-Promotion	-.08	.05	-.06	.15*	.72**	.16*	-			
8	Intimidation	.002	.06	.03	-.24**	.29**	.59**	.23**	-		
9	Exemplification	-.08	-.02	-.05	.16*	.74**	.27**	.75**	.29**	-	
10	Leader Emergence	-.14*	-.03	-.02	.19**	.15*	-.01	.12	.11	.21**	-

Note. N=165
*$p < .05$, **$p < .01$, one-tailed.

Table 8: Intercorrelations Between Variables For Time Period 3											
		1	2	3	4	5	6	7	8	9	10
1	Gender	-									
2	Group Composition	.52**	-								
3	Virtualness	-.05	.01	-							
4	Commitment	-.06	.05	-.09	-						
5	Ingratiation	.13*	.14*	.13	.17*	-					
6	Supplication	.09	.08	.10	-.12	.32**	-				
7	Self-Promotion	.003	.10	.08	.27**	.71**	.21**	-			
8	Intimidation	-.03	.02	.13	-.09	.22**	.64**	.23**	-		
9	Exemplification	-.06	.08	.06	.32**	.60**	.20**	.70**	.31**	-	
10	Leader Emergence	-.17*	.05	-.07	.23**	.04	-.05	.17*	.03	.17*	-
Note. n=165 *$p < .05$, **$p < .01$, one-tailed.											

Table 9: Intercorrelations Between Variables For Time Period 4

		1	2	3	4	5	6	7	8	9	10
1	Gender	-									
2	Group Composition	.52**	-								
3	Virtualness	-.033	-.08	-							
4	Commitment	-.11	-.05	-.05	-						
5	Ingratiation	.07	.11	-.09	-.02	-					
6	Supplication	.05	.02	-.11	-.25**	.39**	-				
7	Self-Promotion	-.07	.09	-.03	.06	.76**	.25**	-			
8	Intimidation	-.05	.03	-.06	-.21**	.29**	.65**	.32**	-		
9	Exemplification	-.11	-.02	-.04	.09	.73**	.32**	.78**	.36**	-	
10	Leader Emergence	-.14*	.03	-.20**	.28**	-.01	-.19**	.10	-.15*	.07	-

Note. n=165
*$p < .05$, **$p < .01$, one-tailed.

A factor analysis conducted on the impression management strategies instrument revealed four cross-loadings on items from the constructs related to self-promotion, supplication and intimidation. After dropping these items, a confirmatory factor analysis was conducted based on a randomized split half sample (n=83). This time round, all the items loaded on the appropriate factors. Further, the CFI and NNFI indices for the factor structure were .9026 and .9055 respectively. While researchers have suggested that the threshold values for an acceptable model fit for CFI and NNFI are at least .90 (Bryne 1994, Hatcher 1994, Loehlin 2004), Hu and Bentler (1999) suggested that the threshold values for CFI to be at least .95. Lance and colleagues (2006) asserted that ".. the jury is still out as to whether .90, .95, or any rule-of-thumb cutoff is appropriate for the set of overall GFIs to which they have been applied." (p. 205). Nye and Drasgrow (2011) found that the ideal cut-off value for CFI is dependent on the data characteristics such as the sample size. However given that much research has adopted .90 as the cut-off point combined with the fact that the impression management instrument has previously been validated, I proceeded with my analysis. All the t-values for the indicators were significantly different from zero at p=.001, indicating that the factor structure displayed convergent validity. Table 10 provides evidence of convergent validities, including the standardized factor loadings and t-values of the impression management constructs. Table 11 provides evidence of the discriminant validity of the constructs as indicated by the confidence intervals not including 1.0 (Anderson and Gerbing 1988). The inter-item reliabilities of the impression management

strategies are displayed in Tables 3 and 4, with reliabilities greater than 0.7 (α of ingratiation=0.85, α of supplication=0.93, α of self-promotion=0.85, α of intimidation=0.86, α of exemplification=0.85), exceeding the recommended value for a reliable construct (Fornell et al. 1981, Chin 1998). Compared to the reliabilities in the pilot study, all the reliabilities for the main study were higher.

In addition, the results showed that the WAMS score was significantly lower than the MAMS score in both high ($z=2.80$, $p<.05$) and low ($z=2.85$, $p<.05$) virtualness settings, suggesting that subjects possessed more positive attitudes towards men as compared to women as leaders. However, there were differences in how men and women scored the scales. No significant differences were found in these evaluations done by women ($z=.89$; $p=ns$), while there were significant differences for men ($z=4.38$; $p<.05$), i.e., MASM scores were significantly higher than WAMS scores.

Table 10: Convergent Validities of Impression Management Strategies

Impression Management Strategies	Standardized Factor Loadings	t-values
Ingratiation		
1. Praised other group members for their efforts so that they considered me a nice person.	.84	8.95
2. Complimented other group members so they would see me as likeable.	.72	7.17
3. Did personal favors for members of the group to show them that I am friendly.	.63	6.03
4. Took an interest in other group members' personal lives to show them that I am friendly.	.85	9.01
Supplication		
5. Acted like I know less than I really did so that other group members would help me out.	.87	9.71
6. Tried to gain assistance or sympathy from other group members by appearing needy in some area.	.89	10.15
7. Acted like I needed assistance on my part of the deliverable so that other group members would help me out.	.94	11.10
8. Pretended not to understand how to do something in order to avoid having to work on an undesirable part of the assignment.*		
9. Disclosed my weakness in a particular area so that I could avoid an unpleasant part of the assignment.*		
Self-Promotion		
10. Made other group members aware of my talents or qualifications.	.92	10.28
11. Made other group members aware of my unique skills and abilities.	.81	8.44
12. Let other group members know that I am a valuable member of the group.	.69	6.86
13. Talked proudly about my past accomplishments which might help make this deliverable successful.*		
Intimidation		
14. Was intimidating with other group members when it was necessary for the good of the deliverable.	.85	8.76
15. Used intimidation to get other group members to do their share of the work	.88	9.23
16. Spoke strongly or forcefully to get other group member to agree to do the deliverable the way I thought it should be done.*		
17. Dealt strongly or aggressively with group members who weren't contributing their fair share to the deliverable.	.71	6.96
18. Let other group members know that I was not willing to be pushed around or dictated to. *		
Exemplification		
19. Let other group members know how hard I had been working on this deliverable	.87	9.46
20. Let others know that I had been putting in a lot of time on the deliverable	.84	9.03
21. Took on more than my fair share of the deliverable so that other group members would see me as dedicated.	.64	6.14
22. Tried to appear like I had been very busy working on my part of the deliverable	.73	7.29
23. Arrived at group meetings on time and stayed until the end in order to look dedicated.	.57	5.33

*: Items dropped due to cross-loadings.
All the factor loadings are significantly different from zero at p=.001

Table 11: Discriminant Analysis of Impression Management Strategies		
Factors	**Lower Boundary for the Confidence Interval**	**Upper Boundary for the Confidence Interval**
Ingratiation and Self-Promotion	0.7841	-0.0517
Ingratiation and Exemplification	0.7951	-0.0497
Self-Promotion and Exemplification	0.8908	-0.0333
Ingratiation and Supplication	0.5516	-0.0726
Self-Promotion and Supplication	0.4362	-0.0778
Exemplification and Supplication	0.4927	-0.0744
Ingratiation and Intimidation	0.4259	-0.0811
Self-Promotion and Intimidation	0.4814	-0.0767
Exemplification and Intimidation	0.4954	-0.0755
Supplication and Intimidation	0.6791	-0.0594

4.2 Tests of Hypotheses

The hypotheses represented in my research model were first tested using Hierarchical Linear Modeling (HLM) growth curve analysis that captured the nested nature of data whereby individual predictors (e.g., virtualness, impression management strategies) and group level variables (e.g., gender composition) can coexist. Further, given that this was a longitudinal study, the data points between time periods were not independent and, thus, violated the independence assumption required by OLS regression. However, HLM accounts for such lack of

independence and enables one to examine the changes in relationships over time as prescribed in the research model and proposed in my hypotheses.

The objective of this dissertation is to examine how the joint impact of gender and impression management strategies on leader emergence differs by individuals relying on low versus high virtualness over time. It is possible that different impression management strategies play different roles in influencing leader emergence for men versus women over time as seen from my hypotheses. Further, using a continuous scale of virtualness allows me to account for the fact that members used varying amount of technologies in their collaboration. To analyze the hypotheses, the entire data was split statistically based on the extent of virtualness relied upon by members. Performing a median split enabled me to address the research question of this dissertation. Given the four factors (gender, impression management strategies, virtualness and time) embedded in the hypotheses, the analyses involved a two-step effort as recommended by Aiken and West (1991) and Curran et al. (2006). In Step 1, I conducted an HLM analyses; if significant interaction effects were found among gender, impression management strategies and time, I moved to Step 2, and conducted a slope analysis. Again, the methods suggested by Aiken and West (1991) and Preacher et al. (2006) for plotting interactions to identify whether the slopes were significant in the direction hypothesized were followed. Following the examples provided by Aiken and West (1991) and Preacher et al. (2006), no Bonferroni corrections were necessary. Tables

12 and 13 present the results for members relying on high virtualness and low virtualness respectively. Table 14 shows the results of the slope tests that were conducted when there were significant three-way interactions. The results of my analysis revealed some expected and some surprising findings, which are all described below.

Table 12: Results of Hierarchical Linear Modeling for Individuals Relying on High Virtualness (Hypotheses H1, H2 and H3)

			Communal				Assertive				Neutral	
	Unconditional Growth Model with Control Variables		H1a (Ingratiation)		H1b (Supplication)		H2a (Self-Promotion)		H2b (Intimidation)		H3 (Exemplification)	
Predictors	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**
Time	.0028 (.0046)	.600	.0095 (.0076)	1.260	.0108 (.0078)	1.380^{+}	.015 (.0076)	1.967*	.0121 (.0077)	1.575^{+}	.0121 (.0075)	1.623^{+}
Gender Composition	.0099 (.0067)	1.478^{+}	.0176 (.0077)	2.301*	.0179 (.0077)	2.317*	.0169 (.0076)	2.223*	.0172 (.0077)	2.229*	.0166 (.0076)	2.188*
Commitment	.186 (.0315)	5.897**	.1800 (.0312)	5.761**	.1807 (.0321)	5.633**	.1668 (.0314)	5.311**	.1937 (.0318)	6.083**	.1636 (.0314)	5.209**
Gender			-.0817 (.0858)	-.952	-.0794 (.086)	-.923	-.0655 (.0849)	-.771	-.0704 (.0848)	-.829	-.0761 (.0847)	-.898
IM			.0526 (.0675)	.779	.0478 (.0583)	.820	.1032 (.0597)	1.727*	.0907 (.07)	1.295^{+}	.1552 (.0684)	2.268*
IM x Time			-.0174 (.0098)	-1.780*	-.0165 (.0108)	-1.526^{+}	-.0171 (.009)	-1.896*	-.0195 (.0115)	-1.688*	-.0251 (.0106)	-2.354*
Gender x Time			-.0131 (.0092)	-1.431+	-.0135 (.0095)	-1.423^{+}	-.0166 (.0093)	-1.785*	-.0154 (.0094)	-1.642^{+}	-.0163 (.0091)	-1.792*
IM x Gender			-.0284 (.0782)	-.363	-.0708 (.0706)	-1.003	-.0126 (.0705)	-.1790	-.0633 (.0819)	-.773	-.0578 (.0794)	-.728
IM x Time x Gender			.0253 (.0113)	2.244*	.0183 (.0123)	1.493^{+}	.0196 (.0106)	1.843*	.0183 (.0133)	1.375^{+}	.0239 (.0124)	1.930*
Goodness of fit												
Deviance	200.627		184.556		191.259		176.771		190.575		179.604	
Deviance Change			16.071*		9.368		23.856**		10.052		21.023*	
N: Time1=68; Time2=83; Time3=91; Time4=89							$^{+}p<0.10$; * $p<0.05$; ** $p<0.01$, one-tailed.					

Control Variables: *Gender composition and commitment towards each deliverable*
***Note*- Attitudes towards women, attitudes towards men, writing skills, group size and GPA were initially entered into the model; however, adding the variables did not significantly improve the fit of the model and based on the principle of parsimony (Singer and Willet 2003), they were thus subsequently dropped from the analysis.

Impression Management Strategies: Ing *- Ingratiation****; SP*** *- Self-Promotion****;*** ***Exem*** *- Exemplification****; Supp*** *- Supplication****; Intim*** *– Intimidation.*
IM*-A certain impression management strategy. Replace IM with the appropriate strategy that is indicated in the column heading.*
Time*: Deliverable*

Table 13: Results of Hierarchical Linear Modeling for Individuals Relying on Low Virtualness (Hypotheses H4, H5 and H6)

			Communal				Assertive				Role Neutral	
	Unconditional Growth Model with Control Variables		H4a (Ingratiation)		H4b (Supplication)		H5a (Self-Promotion)		H5b (Intimidation)		H6 (Exemplification)	
Predictors	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**
Time	-.0014 (.0048)	-.288	.0023 (.0078)	.291	.0015 (.008)	.189	.0031 (.0083)	.379	.0017 (.0081)	.215	.0035 (.0083)	.420
Gender Composition	-.002 (.0062)	-.327	.0052 (.007)	.734	.0063 (.0071)	.882	.0041 (.007)	.578	.0056 (.007)	.795	.0049 (.007)	.695
Commitment	.0899 (.0312)	2.885**	.0778 (.0313)	2.484**	.0764 (.0315)	2.427**	.0709 (.0317)	2.235*	.0775 (.0313)	2.479**	.0719 (.0319)	2.252*
Gender			-.1234 (.0764)	-1.614^{+}	-.1417 (.0772)	-1.837*	-.1259 (.0786)	-1.601^{+}	-.1377 (.0764)	-1.801*	-.1184 (.0774)	-1.529^{+}
IM			.0789 (.0532)	1.482^{+}	.1022 (.0568)	1.800*	.0353 (.0637)	.554	.1199 (.0591)	2.030*	.0833 (.0655)	1.272
IM x Time			-.0263 (.0082)	-3.215**	-.0194 (.009)	-2.158*	-.022 (.0101)	-2.167*	-.0187 (.0082)	-2.285*	-.0155 (.01)	-1.549^{+}
Gender x Time			-.0035 (.0095)	-.374	-.003 (.0097)	-.310	-.0038 (.01)	-.376	-.0031 (.0098)	-.321	-.0047 (.01)	-.470
IM x Gender			-.0828 (.0668)	-1.241	-.1195 (.0694)	-1.722*	-.025 (.0745)	-.335	-.0865 (.077)	-1.123	-.0497 (.0779)	-.638
IM x Time x Gender			.0295 (.01)	2.940**	.0157 (.0109)	1.440^{+}	.028 (.0117)	2.395**	.0081 (.0109)	.742	.0146 (.0118)	1.241
Goodness of fit												
Deviance	193.972		178.558		183.090		179.809		181.672		183.082	
Deviance Change			15.414*		10.882^{+}		14.163*		12.300^{+}		10.890^{+}	

N: Time1=97; Time2=82; Time3=74; Time4=76

$^{+}p<.10$; * $p<.05$; ** $p<.01$, one-tailed.

Control Variables: *Gender composition and commitment towards each deliverable*
***Note*- Attitudes towards women, attitudes towards men, writing skills, group size and GPA were initially entered into the model; however, adding the variables did not significantly improve the fit of the model and based on the principle of parsimony (Singer and Willet 2003), they were thus subsequently dropped from the analysis.

Impression Management Strategies: Ing *- Ingratiation****; SP*** *- Self-Promotion****;*** ***Exem*** *- Exemplification****; Supp*** *- Supplication****; Intim*** *– Intimidation.*
IM*-A certain impression management strategy. Replace IM with the appropriate strategy that is indicated in the column heading.*
Time*: Deliverable*

Table 14: Slope Analysis for Significant Three-Way Interactions				
High Virtualness-				
Hypotheses	**Impression Management (IM)**		**Beta**	**Std Error**
H1a	Ingratiation	Women, High IM	-.006	.013
		Women, Low IM	.026**	.011
		Men, High IM	.004	.007
		Men, Low IM	-.011	.008
H2a	Self-Promotion	Women, High IM	-.001	.011
		Women, Low IM	.031**	.012
		Men, High IM	.001	.008
		Men, Low IM	-.004	.007
H3	Exemplification	Women, High IM	-.008	.011
		Women, Low IM	.032**	.011
		Men, High IM	-.005	.008
		Men, Low IM	-.003	.007
Low Virtualness-			**Beta**	**Std Error**
H4a	Ingratiation	Women, High IM	-.023*	.010
		Women, Low IM	.028*	.012
		Men, High IM	.002	.008
		Men, Low IM	-.004	.008
H5a	Self-Promotion	Women, High IM	-.018*	.010
		Women, Low IM	$.021^{+}$ (p=.05)	.014
		Men, High IM	.005	.007
		Men, Low IM	-.006	.007

4.3 Hypotheses Related to Members Relying on High Virtualness

4.3.1 Communal Impression Management Strategies

4.3.1.1 Ingratiation: $H1a_1$ proposed that for women relying on high virtualness, ingratiation and leader emergence will be inversely related (i.e. the impact of high ingratiation on leader emergence will decrease over time, while the impact of low ingratiation on leader emergence will increase over time), and $H1a_2$

proposed that for men relying on high virtualness, ingratiation and leader emergence will be positively related regardless of time. As shown in Table 12, there were significant three-way interaction effects between gender, ingratiation and time (β=.0253; $p<.05$). Further, the deviance statistics for the model with the addition of these predictors was a significant improvement over the unconditional growth model ($\Delta\chi^2$=16.071, $p<.05$). Partially supporting my predictions for $H1a_1$, the results showed that for women, low ingratiation increased leader emergence over time (β=.026; $p<.05$; see Figure 1 and Table 14) while there was no impact of high ingratiation on leader emergence over time (β=-.006; p=ns). Also, for men, there were no significant effects of high ingratiation (β=.004; p=ns) or low ingratiation (β=-.011; p=ns) on leader emergence over time. Instead, there were significant positive effects of ingratiation on leader emergence (β=.063; $p<.05$), supporting my predictions. Therefore $H1a_2$ was supported.

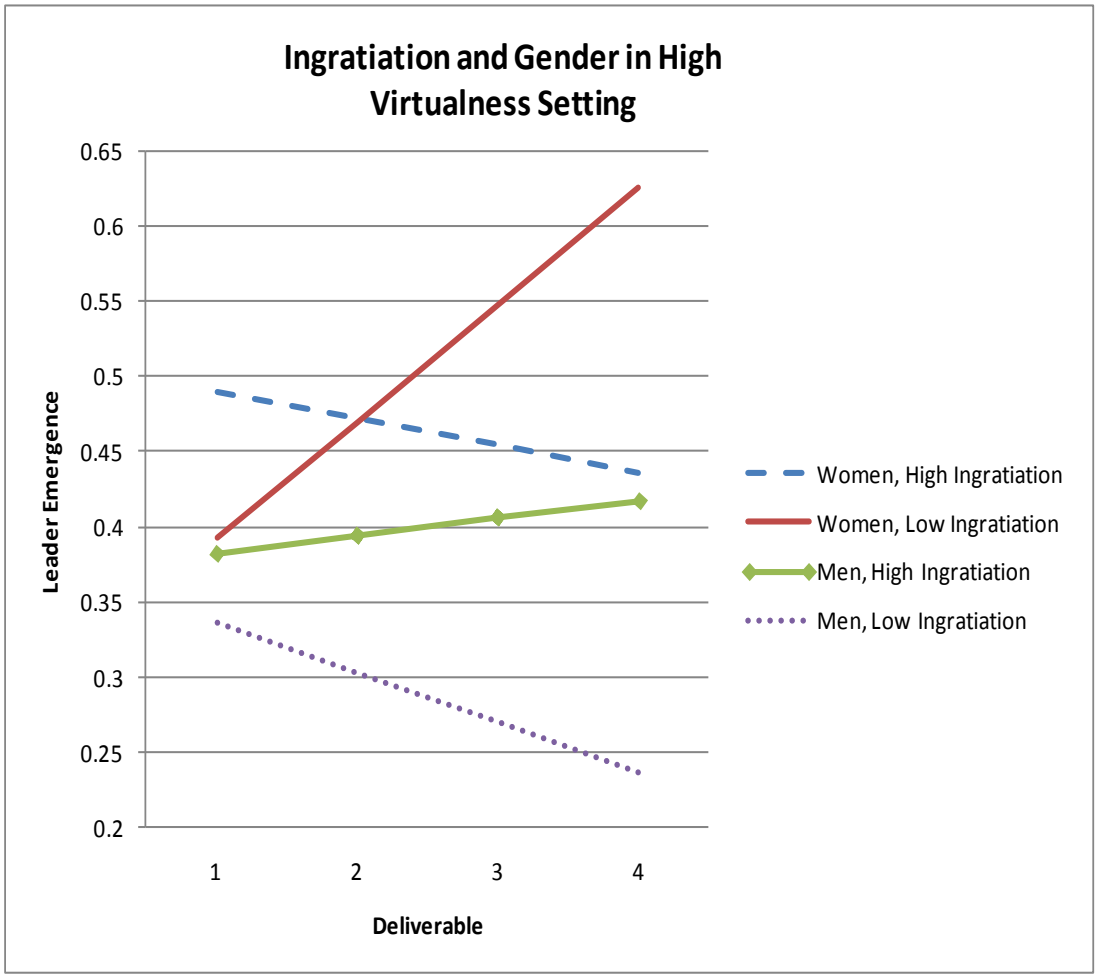

Figure 2: Ingratiation and High Virtualness

4.3.1.2 Supplication: $H1b_1$ proposed that for women relying on high virtualness, supplication and leader emergence will be inversely related over time (i.e. the impact of high supplication on leader emergence will decrease over time, while the impact of low supplication on leader emergence will increase over time), and $H1b_2$ proposed that for men relying on high virtualness, supplication and leader

emergence will be positively related regardless of time. However, there were no significant three-way interaction effects of gender, supplication and time on leader emergence (Table 12; β=.0183; p=ns). Further, the deviance statistics indicated that the unconditional growth model fit the data better ($\Delta\chi^2$=9.368, p=ns) than the model with the interaction effects. Therefore $H1b_1$ and $H1b_2$ were not supported. Moreover, neither the two-way interaction effects (time*supplication: β=-.0024; p=ns; gender*supplication: β=.0124; p=ns) nor the main effects (β=-.0024; p=ns) were significant.

4.3.2 Assertive Impression Management Strategies

4.3.2.1 Self-Promotion: $H2a_1$ proposed that for women relying on high virtualness, self-promotion and leader emergence will be inversely related over time (i.e. the impact of high self-promotion on leader emergence will decrease over time, while the impact of low self-promotion on leader emergence will increase over time), and $H2a_2$ proposed that for men relying on high virtualness, self-promotion and leader emergence will be positively related regardless of time. Analysis showed that there were significant three-way interaction effects between gender, self-promotion and time on leader emergence (Table 12; β=.0196; p<.05). Also the deviance statistics showed a significant improvement of the revised model over the unconditional growth model ($\Delta\chi^2$=23.856, p<.01). Additional probing showed that for women, low self-promotion increased leader emergence over time (β=.031; p<.05; Figure 2 and Table 14) while there was no impact of high self-

promotion (β=-.001; p=ns) over time. Therefore H2a$_1$ was partially supported. For men, there were no significant effects of high self-promotion (β=.001; p=ns) or low self-promotion (β=-.004; p=ns) on leader emergence over time. Consistent with my predictions, for men, there was a positive relationship between self-promotion and leader emergence, regardless of time (β=.0881; p<.05). Thus H2a$_2$ was supported.

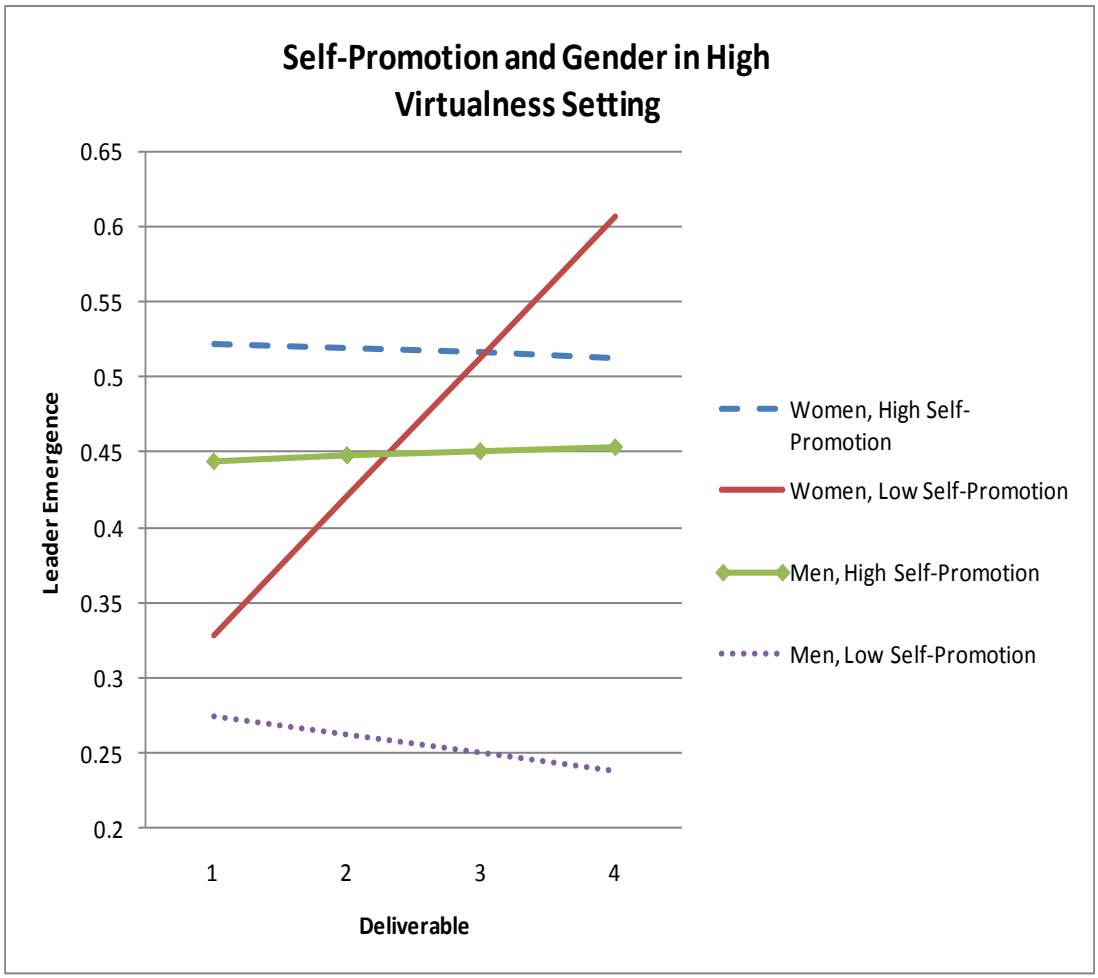

Figure 3: Self-Promotion and High Virtualness

4.3.2.2 Intimidation: $H2b_1$ proposed that for women relying on high virtualness, intimidation and leader emergence will be inversely related over time (i.e. the impact of high intimidation on leader emergence will decrease over time, while the impact of low intimidation on leader emergence will increase over time), and $H2b_2$ proposed that for men relying on high virtualness, intimidation and leader emergence will be positively related regardless of time. As presented in Table 12, there were marginally significant three-way interaction effects of gender, intimidation and time on leader emergence (Table 12; β=.0183; $p<.10$). Also the deviance statistics did not show a significant improvement of the revised model over the unconditional growth model ($\Delta\chi^2$=10.052, p=ns). Therefore $H2b_1$ and $H2b_2$ were not supported. Further, neither two-way interaction effects (time*intimidation: β=-.0051; p=ns; gender*intimidation: β=.0285; p=ns) nor main effects (β=.0118; p=ns) were significant.

4.3.3 Role Neutral Impression Management Strategy

4.3.3.1 Exemplification: H3a proposed that for women relying on high virtualness, exemplification and leader emergence will be inversely related over time (i.e. the impact of high exemplification on leader emergence will decrease over time, while the impact of low exemplification on leader emergence will increase over time) and H3b proposed that for men relying on high virtualness, exemplification and leader emergence will be positively related regardless of time. Interestingly, the pattern of results was similar to that of self-promotion for

individuals relying on high virtualness. The results showed that there were significant three-way interaction effects between gender, exemplification and time on leader emergence (Table 12; β=.0239; $p<.05$). Also the deviance statistics showed a significant improvement of the revised model over the unconditional growth model ($\Delta\chi^2$=21.023, $p<.05$). Further analysis shows that for women, low exemplification increased leader emergence over time (β=.032; $p<.05$; see Figure 3 and Table 14) while there was no significant impact of high exemplification on leader emergence over time (β=-.008; p=ns). For men, there were no significant effects of high exemplification (β=-.005; p=ns) or low exemplification (β=-.003; p=ns) on leader emergence over time. However, for men, there was a positive relationship between exemplification and leader emergence regardless of time (β=.096; $p<.05$), supporting my predictions. Therefore H3a was partially supported and H3b was supported.

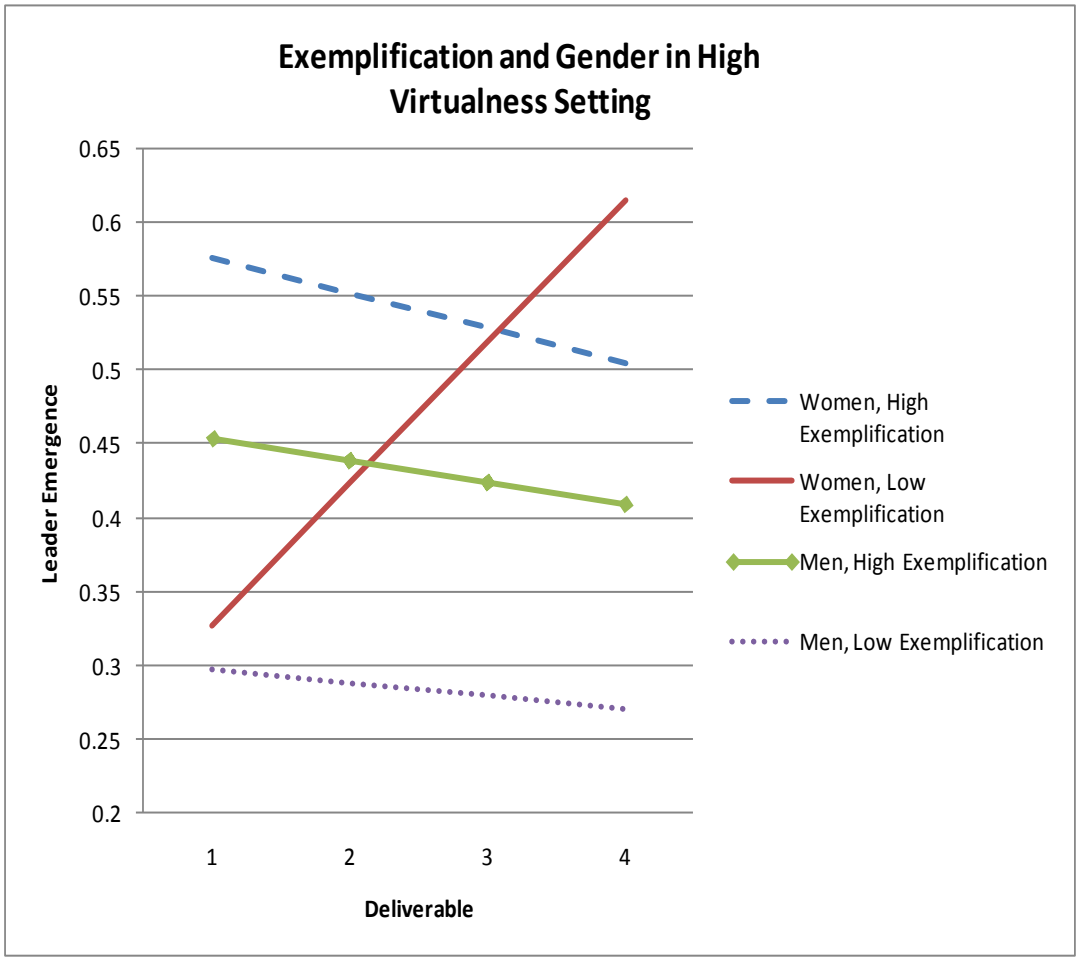

Figure 4: Exemplification and High Virtualness

4.4 Hypotheses Related to Members Relying on Low Virtualness

4.4.1 Communal Impression Management Strategies

4.4.1.1 Ingratiation: $H4a_1$ proposed that for women relying on low virtualness, ingratiation and leader emergence will be positively related over time (i.e. the impact of high ingratiation on leader emergence will increase over time, while the impact of low ingratiation on leader emergence will decrease over time)

and $H4a_2$ proposed for men relying on low virtualness, ingratiation and leader emergence will be inversely related over time (i.e. the impact of high ingratiation on leader emergence will decrease over time, while the impact of low ingratiation on leader emergence will increase over time). As shown in Table 13, there were significant three-way interaction effects between gender, ingratiation and time (β=.0295; $p<.05$). Regardless of gender, there was no significant impact of ingratiation on leader emergence initially (β=.08; p=ns). Further, the deviance statistics for the model with the addition of these predictors was a significant improvement for the unconditional growth model ($\Delta\chi^2$=15.414, $p<.05$). Surprisingly, probing showed that the results were rather similar to those of ingratiation for individuals relying on high virtualness. Contrary to my predictions for women, the results showed that low ingratiation increased leader emergence over time (β=.028; $p<.05$; See Figure 4 and Table 14) while high ingratiation decreased leader emergence over time (β=-.023; $p<.05$). Therefore $H4a_1$ was not supported. In fact, it was in the opposite direction that I have predicted. For men, there were no significant effects of high ingratiation (β=.002; p=ns) or low ingratiation (β=-.004; p=ns) on leader emergence over time. Therefore $H4a_2$ was not supported.

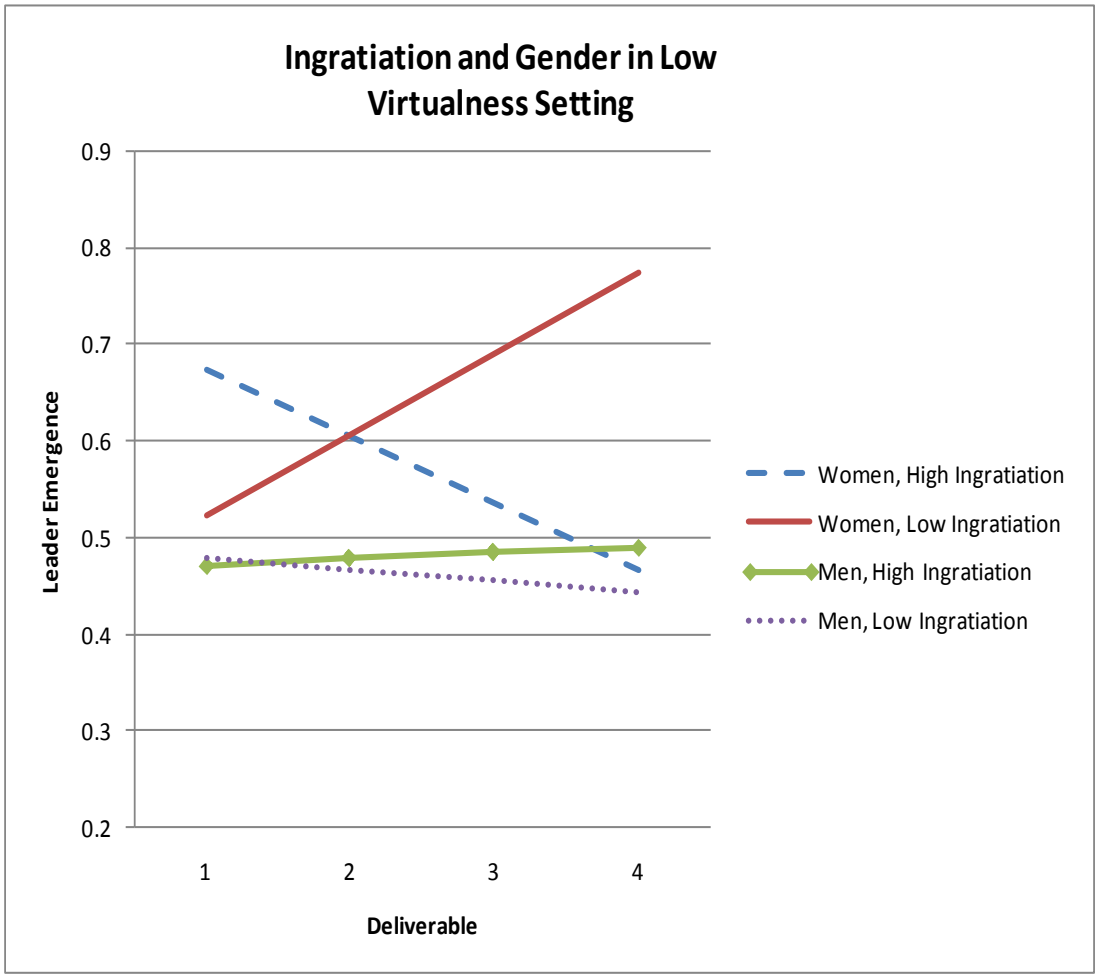

Figure 5: Ingratiation and Low Virtualness

4.4.1.2 Supplication: $H4b_1$ proposed that for women relying on low virtualness, supplication and leader emergence will be positively related over time (i.e. the impact of high supplication on leader emergence will increase over time, while the impact of low supplication on leader emergence will decrease over time) and $H4b_2$ proposed for men relying on low virtualness, supplication and leader emergence will be inversely related over time (i.e. the impact of high supplication on leader emergence will decrease over time, while the impact of low supplication

on leader emergence will increase over time). There were no significant three-way interaction effects of gender, supplication and time on leader emergence (Table 13; β=.0157; p=ns). After dropping the insignificant interaction effects, the results showed that there were significant two-way interaction effects between supplication and time on leader emergence (β=-.0087; p<.05). Slope analysis showed that high supplication marginally decreased leader emergence over time (β=-.0082; p<.10). There were no significant effects of low supplication on leader emergence over time (β=.0068; p=ns). Therefore $H4b_1$ and $H4b_2$ were not supported.

4.4.2 Assertive Impression Management Strategies

4.4.2.1 Self-Promotion: $H5a_1$ proposed that for women relying on low virtualness, self-promotion and leader emergence will be inversely related over time (i.e. the impact of high self-promotion on leader emergence will decrease over time, while the impact of low self-promotion on leader emergence will increase over time) and $H5a_2$ proposed that for men relying on low virtualness, self-promotion and leader emergence will be positively related over time (i.e. the impact of high self-promotion on leader emergence will increase over time, while the impact of low self-promotion on leader emergence will decrease over time). As presented in Table 13, there were significant three-way interaction effects of gender, self-promotion and time on leader emergence (Table 13; β=.028; p<.01). In addition, analysis revealed that regardless of gender, there was no significant

impact of self-promotion on leader emergence initially (β=.04; p=ns). In addition, the deviance statistics for the revised model involving the predictors showed that there was a significant improvement over the unconditional growth model ($\Delta\chi^2$=14.163, p<.05). Probing showed that for women, high self-promotion decreased leader emergence over time (see Figure 5 and Table 14; β=-.018; p<.05) while low self-promotion increased leader emergence over time (β=-.021; p=.05). Thus, $H5a_1$ was partially supported. For men, there were no significant effects of high self-promotion (β=.005; p=ns) or low self-promotion (β=-.006; p=ns) on leader emergence over time. Therefore, $H5a_2$ was not supported.

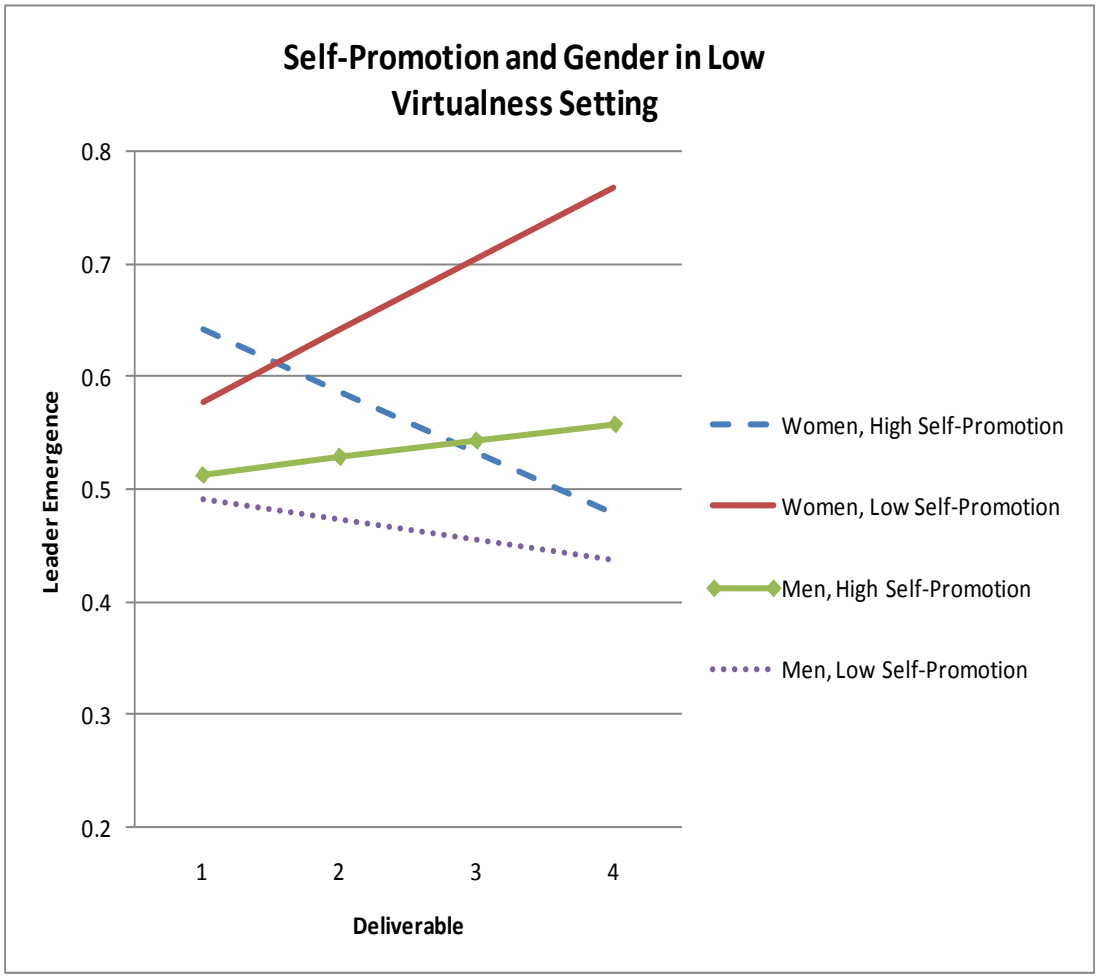

Figure 6: Self-Promotion and Low Virtualness

4.4.2.2 Intimidation: $H5b_1$ proposed that for women relying on low virtualness, intimidation and leader emergence will be inversely related over time (i.e. the impact of high intimidation on leader emergence will decrease over time, while the impact of low intimidation on leader emergence will increase over time) and $H5b_2$ proposed for men relying on low virtualness, intimidation and leader emergence will be positively related over time (i.e. the impact of high intimidation on leader emergence will increase over time, while the impact of low intimidation

on leader emergence will decrease over time). The results showed that there were no significant three-way interaction effects between gender, intimidation and time on leader emergence (Table 13; β=.0081; p=ns). After dropping the insignificant interaction effects, the results showed that there were significant two-way interaction effects between intimidation and time on leader emergence (β=-.014; p<.01). Specifically, the slope analysis showed that intimidation had a positive impact on leader emergence initially (β=.068; p<.05). Further, regardless of gender, high intimidation decreased leader emergence over time (β=-.0126; p<.05) while low intimidation increased leader emergence over time (β=.011; p<.05). The deviance statistics showed a significant improvement of the revised model over the unconditional growth model ($\Delta\chi^2$=17.545, p<.01). Therefore, $H5b_1$ and $H5b_2$ were not supported.

4.4.3 Role Neutral Impression Management Strategy

4.4.3.1 Exemplification: H6a and H6b proposed that for women and men relying on low virtualness, exemplification and leader emergence will be positively related over time respectively. As presented in Table 13, there were no significant three-way interaction effects of gender, exemplification and time on leader emergence (β=.0146; p=ns). The deviance statistics showed that the revised model was a marginal improvement over the unconditional growth model ($\Delta\chi^2$=10.890, p<.10). I then dropped the three-way interaction effects to determine if there were any two-interaction or main effects. No two-way interaction effects

(exemplification*gender: β=.014; p=ns; exemplification*time: β=-.005; p=ns) or main effects were found (β=.0378; p=ns). Therefore H6a and 6b not supported.

4.5 Summary

Table 15 presents a summary of the findings.

Table 15: Summary of Findings			
Members Relying on High Virtualness			
Impression Management Strategy	**Hypotheses**	**Findings**	**Supported ?**
Ingratiation	$H1a_1$	For women, low ingratiation increased leader emergence over time.	Partially Supported
	$H1a_2$	For men, there was a positive impact of ingratiation on leader emergence, regardless of time.	Supported
Supplication	$H1b_1$ and $H1b_2$	No impact of supplication for both women and men.	Not Supported
Self-Promotion	$H2a_1$	For women, low self-promotion increased leader emergence over time.	Partially Supported
	$H2a_2$	For men, there was a positive impact of self-promotion on leader emergence, regardless of time.	Supported
Intimidation	$H2b_1$ and $H2b_2$	No impact of intimidation for both women and men.	Not Supported
Exemplification	H3a	For women, low exemplification increased leader emergence over time.	Partially Supported
	H3b	For men, there was a positive impact of exemplification on leader, regardless of time.	Supported
Members Relying on Low Virtualness			
Impression Management Strategy	**Hypotheses**	**Findings**	**Supported ?**
Ingratiation	$H4a_1$	For women, low ingratiation increased leader emergence over time. High ingratiation decreased leader emergence over time.	Not Supported
	$H4a_2$	No impact of ingratiation for men.	Not Supported
Supplication	$H4b_1$ and $H4b_2$	Regardless of gender, high supplication marginally decreased leader emergence over time.	Not Supported
Self-Promotion	$H5a_1$	For women, low self-promotion increased leader emergence over time. High self-promotion decreased leader emergence over time.	Partially Supported
	$H5a_2$	No impact of self-promotion for men.	Not Supported
Intimidation	$H5b_1$ and $H5b_2$	Regardless of gender, high intimidation decreased leader emergence over time. Low intimidation increased leader emergence over time.	Not Supported
Exemplification	H6a and H6b	No impact of exemplification for both women and men.	Not Supported

It is important to note that several control variables that were predicted to influence leader emergence were dropped from the analysis. This is based on the recommendations of the principle of parsimony as argued by Singer and Willet (2003) in their recommendation for HLM analysis. Appendix C (Tables 16 and 17) presents the results with the incorporation of all control variables for members relying on high and low virtualness respectively. The findings are essentially the same.

At the start of this chapter, descriptive statistics and the inter-correlations among variables of interest investigated in this study were provided. The psychometric properties of the impression management instrument were also analyzed. Then, results of the two-step data analysis techniques using HLM and slope analysis were presented. The above table summarizes those hypotheses that were supported and those that were not. The results provide an understanding of how virtualness and gender moderate the role of impression management strategies on leader emergence over time. Overall, it appears that virtualness does provide a more egalitarian setting for women than for men. This notion is further reinforced when compared to women relying on lower virtualness who face negative evaluations in leader emergence for the use of certain impression management strategies. In the next chapter, I discuss these findings in greater detail.

CHAPTER 5: DISCUSSION OF RESULTS

The objective of this dissertation is to investigate whether impression management strategies affect leader emergence for men and women relying on varying degrees of virtualness over time. An underlying premise of this study is that virtualness may provide a more conducive setting for both women and men to engage in role incongruent strategies in emerging as leaders over time. I used various theories including Role Congruity Theory (Eagly and Karau 2002), Expectation States Theory (Ridgeway 2001), Cues-filtered Out approach (Sproull and Kiesler 1986), Channel Expansion Theory (Carlson and Zmud 1999), and the Accelerated Collaborative Technology Deployment perspective (Carte and Chidambaram 2004) as the basis of my arguments for the hypotheses made in this study. My data analysis revealed some expected and a few unexpected findings. This chapter discusses the implications of these results for research and practice.

5.1 Overview of Results

The results show that for individuals relying on high virtualness, there were significant three-way interaction effects between gender, some impression management strategies (ingratiation, self-promotion and exemplification) and time on leader emergence. Similarly, for individuals relying on low virtualness, there were significant three-way interaction effects between gender, some impression management strategies (ingratiation and self-promotion) and time as well as some

significant two-way interaction effects, regardless of gender, between intimidation and time.

Overall, the results of this dissertation demonstrated the following:

First, for women, less is more when it comes to relying on impression management strategies to emerge as leaders over time. Therefore, women relying on high virtualness appear to better off letting their work speak for itself and engage progressively less over time on impression management strategies—whether role congruent, role incongruent or role neutral. The same notion can be applied, in a doubly reverse fashion, to women relying on low virtualness. Their increasing reliance on impression management strategies (both role congruent and incongruent) over time was fraught with peril, in that their emergence as leaders decreased correspondingly over time.

Second, for men relying on high virtualness, they need to constantly reinforce their contributions—engaging consistently in role congruent and role neutral impression management strategies—else they get lost in the possibly egalitarian medium . For men relying on low virtualness, with the exception of using intimidation at the start, it is futile to engage in impression management strategies since doing so did not have any effect on leader emergence.

Third, for women and men relying on low virtualness, intimidation did not pay off over time. While there may have been an initial boost to leader emergence

when members briefly engaged in intimidation, it quickly faded, and engaging in more of it over time meant a concomitant decrease in leader emergence. The implications of these results are discussed below.

5.2 Implications of Findings

5.2.1 For Women

The results showed that for women relying on high virtualness, low levels of ingratiation, self-promotion and exemplification increased leader emergence over time. In other words, engaging in more impression management strategies, regardless of whether they were role congruent, role incongruent or role neutral did not increase leader emergence over time. In fact, the opposite proved to be true. As women relying on high virtualness engaged in less impression management over time, their leadership stock soared.

Surprisingly, the results revealed quite a similar trend—in a doubly reverse fashion, as mentioned earlier—for women relying on low virtualness. Specifically, high ingratiation and high self-promotion decreased leader emergence over time. Comparing these two sets of results shows that virtualness provided an advantage for women: engaging in more impression management over time had no payoff for women relying on high virtualness, while doing the same had significant penalties (in the form of reduced leader emergence) for women relying on low virtualness. In terms of engaging in impression management over time: Less was more for

women relying on high virtualness, while more was less for women relying on low virtualness.

Two key insights emerge from this set of results: first, the virtualness setting does provide women an advantage in terms of managing others' impressions; second, Role Congruity Theory needs to account for other contextual elements.

In line with the Cues-filtered Out perspective (Sproull and Kiesler 1986, Dubrovsky et al. 1991) and ACDT (Carte and Chidambaram 2004), the results of this dissertation supports the notion that the CmC setting does have an equalization effect by alleviating women relying on high virtualness the need to engage in impression management strategies and focus on the task instead. As pointed out by Nemiro (2002), the electronic environment provides an archival of messages that are accumulated over time, enabling members to review these messages. Such transparency eliminates the need for women to engage in impression management strategies and by itself is sufficient to predict leader emergence for women relying on high virtualness. Overlaying with impression management strategies does not help. In fact doing less of impression management strategies keeps the focus on getting the work done and that elevates women to leadership positions. In short, for women relying on high virtualness, "Less impression management is more.".

Using Role Congruity Theory (Eagly and Karau 2002) as our framework, I argued the importance for women and men relying on low virtualness to employ role congruent strategies so as to emerge as leaders over time. Using a similar logic and in line with prior research (Rudman 1998, Bolino and Turnley 2003), I suggested that engaging in role incongruent strategies will reduce leader emergence over time for both women and men relying on low virtualness. However and surprisingly, the results did not provide support for this notion. Take the instance of ingratiation. Scholars have argued that ingratiation represents a useful strategy that women can employ to overcome the bias that others have towards them in terms of promotions and performance evaluations (Kipnis and Schmidt 1988, Barsness et al. 2005, Westphal and Stern 2006). Furthermore, much prior research has demonstrated that for women, ingratiation not only increased likeability, but also enhanced performance appraisals and improved the likelihood of obtaining boardroom positions (Kipnis and Schmidt 1988, Barsness et al. 2005, Westphal and Stern 2006). Various other studies have also shown the importance for women who conform to gender stereotypical roles in order to attain higher social ratings and mitigate penalties for not performing well (Gardner et al. 1994; Heilman and Okimoto 2007). However, as the results from this dissertation suggest, these results do not hold for women relying on high virtualness. In fact, the opposite was true. If they engaged in less ingratiation over time, they emerged as leaders.

However, my hypothesis related to self-promotion for women relying on low virtualness was partially supported. My results show that for women, high self-

promotion decreased leader emergence over time. These results are consistent with the perspective put forth by Role Congruity Theory (Eagly and Karau 2002) which purports that role incongruent behavior (as in self-promotion) can result in a backlash effects such as lowered hireability (Rudman 1998, Rudman and Glick 2001).

While the findings for the backlash effects associated with engaging in role incongruent strategies for women are in line with that suggested by Role Congruity Theory (Eagly and Karau 2002), engaging in role incongruent strategies such as supplication did not have an impact on leader emergence for men relying on low virtualness. In sum then, the results discussed here indicate that Role Congruity Theory needs to account for contextual elements including virtualness and time in explaining the impact of impression management on leader emergence.

Some significant differences exist between this study and other research. Prior studies have generally been carried out in the context of supervisor-subordinate relationships or interview settings (Rudman 1998, Rudman and Glick 2001, Bolino and Turnley 2003). In contrast, the present study is conducted in the context of a self-managed workgroup in which members may differ in their reliance on virtualness and are charged with completing a task. Thus impression management strategies that were shown to be useful means by which women can obtain positive outcomes such as performance evaluations cannot be extended to the context of self-managed workgroup.

5.2.2 For Men

For men relying on high virtualness, my hypotheses were largely supported. The results indicated that for these men, regardless of time, ingratiation, exemplification and self-promotion increased leader emergence. Relying on high virtualness makes men less visible as compared to relying on low virtualness. As such, men need to constantly remind their peers of their contributions. Therefore, unlike their female counterparts who only need to focus on the task instead of impression management strategies, men need to continuously regulate their impression management strategies by engaging in the relevant impression management strategies in order to enhance the likelihood of emerging as leaders. In support of this notion, our results showed that there were no significant differences between the peer evalutions for men and women relying on high virtualness in peer evalutions. Therefore these results are suggestive that virtualness seems to level the playing field towards women relying on high virtualness, i.e. provides a more egalitarian and transparent setting for women.

The results of my dissertation also show that for individuals relying on low virtualness, intimidation was detrimental to leader emergence over time although there was an initial positive effect. The use of intimidation may ensure some discipline in self-managing workgroups initially. However, as pointed out by Garnder and and Cleavenger (1998), intimidation is unlikely to draw affect from followers and its use is not in line with transformational leadership styles. This notion is likely to be stronger given the non-hierarchical structure in a self-

managed workgroups. In fact, my analyses further show that for individuals relying on low virtualness, low intimidation leads to leader emergence over time.

5.3 Summary

In this chapter, I discuss the implications of my findings. The results, considered in their totality, highlight that virtualness provides an advantage for women as compared to the rest of their counterparts (i.e. men relying on high virtualness or low virtualness, and women relying on low virtualness) in leader emergence. Further, the key strategy for women to emerge as leaders is to let the work speak for itself. As such, they can focus on the task itself. By contrast, men relying on high virtualness need to continuously engage in role incongruent strategy (ingratiation), role congruent (self-promotion) and role neutral strategies (exemplification) so as to emerge as leaders. Men relying on low virtualness gain no benefits over time in terms of leader emergence using any impression management strategies. The surprising insight from all of these findings is that abiding by role congruent (or neutral) impression management strategies does not appear to matter much in influencing leader emergence in a self-managed workgroups. These results also highlight the importance of considering contextual elements (virtualness, time and self-managed workgroups comprised of peers) when applying Role Congruity Theory. These ideas, along with the contributions of this research, its limitations, directions for future research and conclusion are discussed in the next chapter.

CHAPTER 6: CONTRIBUTIONS AND CONCLUSION

This chapter is organized as follows: The first section discusses the theoretical and research implications of this dissertation. The second section highlights the strengths and contributions of the research. And, the third section discusses the limitations while the last section provides a summary of the results.

6.1 Theoretical and Research Implications

Role Congruity Theory suggests that women or men who engage in role incongruent strategies will suffer a backlash (Eagly and Karau 2002), including on leader emergence. Women are especially disadvantaged in being leaders given that leaders' behaviors tend to be identified with masculinity; thus, men are more likely to be perceived as having a greater capability to assume leadership roles (Eagly 1987, Eagly and Karau 2002). Given the determinism inherent in Role Congruity Theory, researchers have called for a need to identify situational elements that influence the relationship between gender and leadership related phenomenon (Vecchio 2002, Rosette and Tost 2010). This study heeds this call and identifies the interaction of two factors that moderate the predictions of Role Congruity Theory—virtualness and time—in the context of self-managed workgroups.

The dissertation began by employing Role Congruity Theory (Eagly and Karau 2002) as the foundation for the research model, and introduced virtualness as

a factor that would reduce the salience of gender, and hence provides a more egalitarian platform (Sproull and Kiesler 1986, Dubrovsky et al. 1991, Bhappu et al. 1997) from which both women and men can engage in role incongruent strategies to emerge as leaders over time. As a whole, this dissertation provided partial support for this notion. Further, this dissertation expands the literature related to Role Congruity Theory by pointing out the need to consider the situation in determining whether societally imposed roles and internalized expectations of individuals translate to sanctions (Diekman 2007) and hence influence leader emergence. This position is in line with recent research which highlights the importance of considering contextual factors (e.g., role context of the individual) that shift the expectations perceivers have in evaluating an individual. The results of this dissertation clearly provide evidence that Role Congruity Theory needs to account for two other contextual factors: virtualness and time in order to illuminate the conditions under which gender stereotyping applies. Future research should consider other factors that will identify the scope of Role Congruity Theory.

In addition, our results highlight the importance of taking account the temporal dimension for individuals relying on different degrees of virtualness. Had data only been collected for the first deliverable or the final deliverable, incorrect conclusions would have been reached about leader emergence in such contexts. For example, during the first deliverable, for individuals relying on low virtualness, the data suggested that regardless of gender, intimidation had a positive effect on leader emergence, while self-promotion had no impact. Both of these conclusions,

as discussed earlier, were disproved over time. However, much previous research on leadership, whether in the face-to-face context or virtual team setting, have employed a cross-sectional approach (e.g., Hoyt and Blascovich 2003, Wickham and Walther 2007, Hambley et al. 2007). While these studies provide important insights concerning leadership, the trajectory view that is provided through collection of data at different times using a longitudinal study (as in this dissertation) offers a deeper understanding of leader emergence, which is a dynamic phenomenon. The theoretical implication of this dissertation therefore underscores the criticality for subsequent leadership research to adopt a longitudinal approach.

Also, I have applied the dramaturgical impression management perspective proposed by Goffman (1959) and subsequently advanced by other scholars (e.g., Jones and Pittman 1982, Bozeman and Kacmar 1997, Turnley and Bolino 2001) to empirically examine whether impression management strategies matter in influencing leader emergence over time. To my knowledge, this is one of the few studies that empirically examine the role of impression management strategies in influencing leader emergence. Previous researchers have advocated that individuals can manage and shape perceptions of others through impression management strategies and that there is a dynamic aspect to it (Wayne et al. 1994, Bozeman and Kacmar 1997, Gardner and Avolio 1998). My dissertation that was examined in the context of self-managed workgroups supports this contention. Furthermore, it is not

in every situation that impression management strategies should be employed to portray a positive image, including to emerge as leader.

Moreover, this dissertation examined the role of impression management strategies on leader emergence in self-managing work teams (i.e., lateral relationship). Past research focused on examining the utility of impression management strategies in a supervisor-subordinate relationship or in the context of interview settings, neglecting how impression management strategies play out among peers in self-managed workgroups. In fact, those studies supporting the view that enacting role congruent strategies can enable individuals to receive enhanced performance evaluations were conducted in these contexts (e.g., Rudman 1998, Bolino and Turnley 2003). However, the findings of this study offer caution in applying those results to self-managed workgroups.

For example, the use of ingratiation by women relying on low virtualness reduced their leader emergence over time while for men and women relying on low virtualness, the use of intimidation reduced their leader emergence over time. Yet research has consistently highlighted the importance of ingratiation for women in enhancing their performance appraisals and likeability (Kipnis and Schmidt 1988, Barsness et al. 2005, Westphal and Stern 2006) while men engaging in intimidation received higher performance evaluations (Bolino and Turnley 2003). In other words, impact of role congruent strategies are not universally transferred to self-managed workgroups. Clearly, the context differs in a supervisor-subordinate

relationship versus self-managed work group. In short, our results suggest that some differential impact of impression management strategies on leader emergence over time exists for both women and men relying on lower and higher virtualness in self-managed workgroups.

6.2 Contributions of the Research

This dissertation contributes to the virtual team, impression management strategies and leadership literature in several ways. This study employed a longitudinal study in investigating how impression management influences leader emergence in self-managed workgroups comprised of men and women relying on different degrees of virtualness. Indeed, the study of online leadership has received scant attention, even less for its study over time (Taggar et al. 1999; Yoo and Alavi 2004, Wickham and Walther 2007, Zigurs and Schoonover 2008). Also studies examined within the impression management literature tend to employ a cross-sectional approach. Many studies of computer-mediated groups tend to involve cross-sectional data or in the case of longitudinal studies, they tend to involve only one survey at the end of the project. One of the exceptions was Chidambaram (1996), who studied the transmission of social information over time in virtual teams and found that the difficulties in the transmission gradually dissipated, highlighting the importance of accounting for time for studying team-related dynamics. The other exception was Carlson and Zmud (1999) who employed a multiwave study which showed that perceived richness of electronic

communication channels was positively influenced by various types of knowledge-based experiential factors, such as channel experience and communication partner experiences, that evolved over time. Furthermore, different individuals may emerge as leaders at different points of a project given that different parts of a project are likely to pose different demands. Studies have indicated that group members behave differently and that leaders adopt different behaviors at different phases of a group's lifecycle and deliverables, depending on a group's needs (Pescosolido 2001). An impression management strategy that leads to leadership emergence during the beginning of a group's lifecycle therefore may not do so later in its lifecycle. In this study a longitudinal approach involving four iterative deliverables was used to examine the relationships. The use of a longitudinal study enables one to view the relative importance of impression management strategies throughout a group's lifecycle. These results highlight the importance of taking such an approach and add broadly to our understanding of the role of impression management strategies in influencing leader emergence in virtual contexts over time.

Also noteworthy is that this study examined the role played by impression management strategies on leadership emergence in a different context than what has been done in much prior impression management studies—self-managing workgroups. The existing impression management literature is replete with studies investigating the utility of impression management strategies in a supervisor-subordinate relationship or in the context of interview settings, neglecting how

impression management strategies play out in self-managed workgroups (Blickle 2003, Bolino et al. 2008). Further, in a recent review, researchers have pointed out that certain impression management strategies such as exemplification have received relatively less attention and the attention they receive tend to rely on cross-sectional approaches (Bolino et al. 2008).

This study also examined whether virtualness provides men and women an egalitarian environment with respect to the kind of impression management strategies that they can engage in to emerge as leaders. Researchers have exerted significant effort to understand how the CmC setting promotes equalization and reduces biases associated with status cues such as gender (e.g., Dubrovsky et al. 1990, Lind 1999, Weisband et al. 1995, Bhappu et al. 1997, Sarker and Sarker 2002). However, these studies have been primarily conducted in the context of virtual teams in which all members collaborate solely via technologies (e.g., Sarker and Sarker 2002). Prior research examining the relationship between gender and leader emergence in virtual teams show that men and women did not differ with leader emergence (Sarker and Sarker 2002, Yoo and Alavi 2004). Given the increasing gender diversity of our workforce (Neubert and Taggar 2004), the fact that individuals in collocated settings can discuss and collaborate on their projects via electronic tools in varying degrees (Kirkman and Mathieu 2005) and underrepresentation of women in assuming leadership positions (Ridegway 2001, Eagly and Karau 2002, Eagly 2007), the study of how to mitigate the gender biases associated with leadership represents an important contribution.

Lastly, this study developed an index that measures the virtualness of members working in collocated teams, taking into account the extent of communication within the group. While previous research has indicated that virtualness influences group dynamics, it was generally conducted in the context of geographically dispersed groups (e.g., Chudoba et al. 2005, Gibson and Gibbs 2006, Chudoba and Watson-Manheim 2008, Ganesh and Gupta 2010), rendering their measurement of virtualness inapplicable to the context of collocated groups. Furthermore, the measurement of virtualness tends to use a frequency approach, with participants typically rating their frequency of technology use via a Likert-type scale (e.g., Ganesh and Gupta 2010). However, the amount of time taken to communicate with others, as was proposed in this study, provides a more fine-grained view of the extent to which individuals employ technologies in their collaboration. Virtualness has also been conceptualized as three types of teams: face-to-face, hybrid (combination of face-to-face and electronic communication) and virtual teams (Staples and Webster 2008). Yet in hybrid teams, it is quite possible that individuals employ varying degrees of technologies in their task collaboration (Golden et al. 2008). However, to date, there is a lack of a comprehensive measurement that accounts for virtualness in the context of collocated teams. We address this gap in this paper.

6.3 Practical Implications

This dissertation provides several implications for practice. I organize and discuss my implications with respect to the results in lower virtualnesss followed by those in higher virtualness settings. First off, my results suggest that women relying on lower virtualness are better off refraining from engaging in any impression management strategies. Indeed, as my results demonstrate, for women relying on lower virtualness, engaging in high ingratiation and high self-promotion appear to have dysfunctional impacts on their leader emergence over time. Instead, women engaging in low ingratiation and self-promotion were more likely to emerge as leaders over time.

In addition, and interestingly, my results demonstrate that regardless of gender and for individuals relying on low virtualnesss, intimidation was positively linked to leader emergence only at the start. However, this positive effect did not last long. Instead, for these individuals, high intimidation reduced leader emergence over time. On the flip side, low intimidation improved leader emergence over time. An implication drawn across all these analyses is that women relying on lower virtualness need to tread carefully in their use of impression management strategies. In fact, for women relying on low virtualness, engaging in low levels of impression management is likely to enhance their leader emergence over time.

It also appears that for men relying on low virtualness, engaging in impression management strategies does not have any effect on their leader

emergence, with the exception of intimidation at the start. Thus, men should not waste their effort in engaging in impression management strategies given its futility in leader emergence. Instead, they should redirect their cognitive resources towards other behaviors related to leader emergence such as goal-setting and integration (Pescosolio 2001, Sarker and Sarker 2002, Yoo and Alavi 2004, Wickham and Walther 2007).

Also my results suggest that for women do not like to engage in self promotion or ingratiation, they are better off relying on virtualness. Another advantage from relying more on virtualness is that they could utilize a wider range of impression management strategies without being cautious about which specific strategy deters leader emergence. In addition, men relying on high virtualness need to continuously engage in self-promotion and exemplification in order to reinforce their contributions and hence emerge as leaders.

6.5 Limitations

The current study represents a preliminary step towards a more holistic perspective of leadership by investigating over time the interrelationships between impression management strategies, gender and emergent leadership for individuals relying on low versus high virtualness. However, the design of this study was not without limitations and future studies should be aware of these as they assess the generalizability of the present results. First, work groups with longer life spans may

develop differently and exhibit different patterns of leader emergence compared to those observed here. Second, future studies should investigate more closely what impression management strategies result in leader emergence as it relates to the context of mixed-gender and same-gender groups in a virtualness environment. Third, the results must be understood in light of the larger organizational context. The subjects employed in this study were not actual task groups working in organizations, but rather students with limited or no working experience and assembled for a semester to accomplish a group project. Consequently, they may not be a group from which to make generalization. Future research is needed to establish whether similar findings can be obtained in an organizational setting. Nevertheless, given the prevalence of virtual learning teams in universities, the results may prove useful for educators who attempt to team up people across the globe for collaborative learning and discussions. These limitations however represent potential research avenues that deserve much attention.

6.6 Summary and Conclusion

To surmise, the findings of our research indicate that gender and virtualness need to be considered when examining the impact of impression management strategies on leader emergence in order to gain a more holistic understanding of the phenomenon. Importantly our study illuminates three contextual elements that moderate the predictions purported by role congruity theory. In other words role congruity theory does not necessarily apply to every setting. Our findings concur

with the view put forth by Eagly and Carli (2003) in their assertion that, "As situational theories of leadership contend (e.g., Chemers, 1997), the effectiveness of leader behaviors depends on contextual variables" (p. 808). Impression management strategies that are shown to be dependent on gender and hence useful in eliciting favorable judgments and performance evaluations from supervisors may not necessarily apply in a peer workgroup context. The use of impression management is more intricate than it seems.

APPENDIX A: PRE-STUDY SURVEY

Demographics:

1.What is your major? (check one):

- ❒ Finance
- ❒ Marketing
- ❒ Management
- ❒ MIS
- ❒ Accounting
- ❒ International Business
- ❒ Human Resources Management
- ❒ Entrepreneurship
- ❒ Other _____ (Specify major)

2.What is your gender? ❒ Male ❒ Female

3.What is your age (in years)? _____

4.What is your current OU GPA (estimate if necessary)? _____

5.How many credit hours have you completed?
at OU _____ at any other university or college _____

6.What is your ethnicity?

- ❒ Caucasian
- ❒ Asian
- ❒ American Indian
- ❒ African American
- ❒ Other (please specify) _____

7.How many months of part-time work experience do you have? _____

8.How many months of full-time work experience do you have? _____

9.What is your current marital status? (circle one)

❒ Married ❒ Single ❒ Divorced ❒ Other

10. **Women as managers scale (adapted from Terborg, Peters, Iigen & Smith 1977) (7-point Likert Scale)**

[Purpose: The women as managers scale measurement was used to determine whether biases towards women as leaders existed prior to the project.]

1. Women have the objectivity required to evaluate business situations properly.
2. Challenging work is more important to men than it is to women.
3. It is acceptable for women to compete with men for top executive positions.
4. Women possess the self-confidence required of a good leader.
5. Women are not competitive enough to be successful in the business world.

11. **Men as managers scale (adapted from Terborg, Peters, Iigen & Smith 1977) (7-point Likert Scale)**

[Purpose: The men as managers scale was used to determine whether biases towards men as leaders existed prior to the project.]

1. Men have the objectivity required to evaluate business situations properly.
2. Challenging work is more important to women than it is to men.
3. It is acceptable for men to compete with women for top executive positions.
4. Men possess the self-confidence required of a good leader.
5. Men are not competitive enough to be successful in the business world.

APPENDIX B: POST-DELIVERABLE SURVEY

Instrument Measuring Impression Management Strategies (from Bolino and Turnley 1999)

Ingratiation

1. Praised other group members for their efforts so that they considered me a nice person.
2. Complimented other group members so they would see me as likeable.
3. Did personal favors for members of the group to show them that I am friendly.
4. Took an interest in other group members' personal lives to show them that I am friendly.

Supplication

1. Acted like I know less than I really do so that other group members will help me out.
2. Tried to gain assistance or sympathy from other group members by appearing needy in some area.
3. Acted like I need assistance on my part of the deliverable so that other group members will help me out.
4. Pretended not to understand how to do something in order to avoid having to work on an undesirable part of the assignment. *
5. Disclosed my weakness in a particular area so that I can avoid an unpleasant part of the assignment. *

Self-Promotion

1. Made other group members aware of my talents or qualifications.
2. Made other group members aware of my unique skills and abilities.
3. Let other group members know that I am a valuable member of the group.
4. Talked proudly about my past accomplishments which might have helped make this deliverable successful. *

Intimidation

1. Was intimidating with other group members when it was necessary for the good of the deliverable.
2. Used intimidation to get other group members to do their share of the work.
3. Spoke strongly or forcefully to get other group member to agree to do the deliverable the way I thought it should be done. *

4. Dealt strongly or aggressively with group members who weren't contributing their fair share to the deliverable.
5. Let other group members know that I was not willing to be pushed around or dictated to. *

Exemplification

1. Let other group members know how hard I had worked on this deliverable.
2. Let others know that I had put in a lot of time on the deliverable.
3. Took on more than my fair share of the deliverable so that other group members would see me as dedicated.
4. Tried to appear like I had been very busy working on my part of the deliverable.
5. Arrived at group meetings on time and stayed until the end in order to look dedicated.

NOTES:

- Randomly ordered and scored using a five-point Likert scale from *strongly agree* to *strongly disagree.*
- * Items dropped as a result of cross-loading on other factors.

Writing skills relative to other members in the team (5-point Likert scale; 1=weak; 2=fair; 3=good; 4=very good; 5=excellent):

[**Purpose**: Writing skills were assessed as they could possibly influence leader emergence.]

Please rate your writing skills relative to other members in your group.

Familiarity with other members in the team (5-point Likert scale):
Member Name: _____
How well do you know this member prior to working on this deliverable?

How did your group complete this deliverable? Please check all that apply.

❒ Completed this deliverable as a group
❒ Each member took turns to lead the deliverable.
❒ A majority of the members took the lead to complete this deliverable. Please list those members who took the lead. _____
❒ A minority of the members took the lead to complete this deliverable. Please list those members who took the lead. _____

Deliverable commitment (**5-point Likert scale)**:

I am committed to this deliverable.

Familiarity with other members in the team (the question will be asked only once; (5-point Likert scale):

Member Name: _____
How well do you know this member prior to working on this deliverable?

Leadership emergence:

If you were told today to pick who has (have) emerged as the leader(s) of your group for this deliverable, based on your experience with your group, who would you pick (excluding yourself)? You must select at least one leader and may select more than one leader.

_____

Extent of virtualness:

Please indicate the amount of time you spent on collaborating with your group members (**at least one member** was **LOCATED IN A DIFFERENT PLACE AS YOU** and you communicated with your group members about the deliverable via the discussion board on D2L).

1) D2L

Number of Hours: _____

2) Email

Number of Hours: _____

3) Phone (you called at least one other person about the deliverable)

Number of Hours: _____

4) Phone (you texted at least one other person about the deliverable)

Number of Hours: _____

5) Facebook

Number of Hours: _____

6) Instant Messenger (e.g., MSN, Yahoo)

Number of Hours: _____

7) Face-to-Face Meetings

Number of Hours: _____

If you've used other technologies (e.g., Skype), please specify what other technologies you used and indicate the amount of time that you spent on collaborating with your group members about the project using those technologies.

Other Technologies	**Time spent (Please state in number of hours)**
1)_____	_____
2) _____	_____
3) _____	_____
4) _____	_____
5) _____	_____

Please indicate the role that you played in this project (e.g. integrating the work of others, spelling check, etc). _____

Peer Group Evaluation (5-point Likert Scale):
Please rate yourself and your group members on the relative contributions made in preparing this deliverable.

[**Purpose**: The peer evaluation was included to spur participants into employing impression management strategies in their task collaboration.]

Name of group member: _____

1. This group member contributed useful ideas to this deliverable.
2. This group member was a valuable member of this deliverable.

APPENDIX C: TABLES (WITH NON-SIGNIFICANT CONTROL VARIABLES) OF HLM ANALYSES

Table 16: Results of Hierarchical Linear Modeling for Individuals Relying on High Virtualness (Hypotheses H1, H2 and H3) Including Non-Significant Control Variables

			Communal				Assertive				Neutral	
	Unconditional Growth Model with Control Variables		H1a (Ingratiation)		H1b (Supplication)		H2a (Self-Promotion)		H2b (Intimidation)		H3 (Exemplification)	
Predictors	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**
Time	0.0027 (0.0046)	0.592	0.0094 (0.0076)	1.238	0.0108 (0.0078)	1.377^{+}	0.0149 (0.0076)	1.944*	0.0121 (0.0077)	1.580^{+}	0.012 (0.0075)	1.612^{+}
WAMS	0.0555 (0.0579)	0.960	0.0162 (0.0594)	0.273	0.0278 (0.0594)	0.467	0.0188 (0.0586)	0.321	0.0329 (0.059)	0.557	0.0217 (0.0585)	0.371
MASM	-0.0857 (0.0752)	-1.140	-0.0598 (0.0753)	-0.794	-0.0651 (0.0758)	-0.859	-0.0508 (0.0747)	-0.680	-0.0719 (0.0753)	-0.954	-0.0548 (0.0747)	-0.733
Group Size	0.0082 (0.1209)	0.068	-0.01 (0.1189)	-0.084	0.0029 (0.12)	0.024	-0.0334 (0.1183)	-0.283	0.0182 (0.1195)	0.152	-0.0294 (0.1181)	-0.249
Writing Skills	0.0258 (0.0311)	0.829	0.0158 (0.0312)	0.507	0.0278 (0.0309)	0.900	0.0036 (0.0309)	0.118	0.0222 (0.0309)	0.719	0.0111 (0.0308)	0.359
GPA	0.0852(0.0777)	1.096	0.0562 (0.0775)	0.726	0.0541 (0.0781)	0.693	0.0506 (0.0767)	0.659	0.0543 (0.0779)	0.697	0.0521 (0.0769)	0.677
Gender Composition	0.0098 (0.0072)	1.372^{+}	0.0158 (0.008)	1.969*	0.0163 (0.0081)	2.016*	0.0152 (0.008)	1.900*	0.016 (0.0081)	1.980*	0.0148 (0.008)	1.855*
Commitment	0.1851 (0.0321)	5.773*	0.1832 (0.0319)	5.745*	0.1814 (0.0326)	5.559*	0.1702 (0.032)	5.317*	0.1945 (0.0325)	5.992*	0.1666 (0.032)	5.211*
Gender			-0.0698 (0.0875)	-0.798	-0.0652 (0.0877)	-0.743	-0.0527 (0.0867)	-0.607	-0.0539 (0.0867)	-0.621	-0.0619 (0.0868)	-0.714
IM			0.0559 (0.0673)	0.830	0.0444 (0.0583)	0.761	0.1012 (0.0596)	1.698*	0.0843 (0.0702)	1.201	0.1499 (0.0683)	2.194*
IM x Time			-0.0178 (0.0098)	-1.824*	-0.016 (0.0109)	-1.473^{+}	-0.0168 (0.0091)	-1.856*	-0.0187 (0.0116)	-1.617^{+}	-0.0246 (0.0107)	-2.310*
Gender x Time			-0.0132 (0.0092)	-1.434^{+}	-0.0135 (0.0095)	-1.423^{+}	-0.0166 (0.0093)	-1.792*	-0.0155 (0.0094)	-1.653^{+}	-0.0165 (0.0091)	-1.803*
IM x Gender			-0.033 (0.0785)	-0.420	-0.066 (0.0708)	-0.933	-0.0104 (0.0705)	-0.148	-0.0552 (0.0823)	-0.671	-0.053 (0.0794)	-0.667
IM x Time x Gender			0.0254 (0.0113)	2.260*	0.0173 (0.0123)	1.408^{+}	0.0191 (0.0107)	1.791*	0.0169 (0.0133)	1.268	0.0232 (0.0124)	1.868*
Goodness of fit												
Deviance	197.416		183.049		189.337		175.694		188.726		178.390	
Deviance Change			14.367*		8.079		21.722**		8.69		19.026**	
N: Time1=68; Time2=83; Time3=91; Time4=89							$^{+}p<0.10$; * $p<0.05$; ** $p<0.01$, one-tailed.					

Impression Management Strategies: Ing *- Ingratiation****; SP*** *- Self-Promotion****; Exem*** *- Exemplification****; Supp*** *- Supplication****; Intim*** *– Intimidation.*
IM*-A certain impression management strategy. Replace IM with the appropriate strategy that is indicated in the column heading.* ***Time****: Deliverable*

Table 17: Results of Hierarchical Linear Modeling for Individuals Relying on Low Virtualness (Hypotheses H4, H5 and H6) Including Non-Significant Control Variables

			Communal				Assertive				Neutral	
	Unconditional Growth Model with Control Variables		H4a (Ingratiation)		H4b (Supplication)		H5a (Self-Promotion)		H5b (Intimidation)		H6 (Exemplification)	
Predictors	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**	**Coefficient (Std error)**	**t**
Time	-0.0011 (0.0048)	-0.231	.0025 (.0078)	.318	0.0018 (0.008)	0.222	0.0033 (0.0083)	0.401	0.0021 (0.0081)	0.254	0.0037 (0.0083)	0.444
WAMS	0.0351 (0.0606)	0.58	.0016 (.0615)	.026	0.0066 (0.0621)	0.106	0.0154 (0.0615)	0.249	0.0097 (0.0615)	0.158	0.0085 (0.0619)	0.138
MASM	-0.0073 (0.0807)	-0.091	.0205 (.0799)	.257	0.0042 (0.081)	0.052	0.0045 (0.08)	0.057	0.0067 (0.0804)	0.084	0.0114 (0.0803)	0.142
Group Size	-0.0246 (0.0938)	-0.263	-.0105 (.0931)	-.113	-0.0112 (0.094)	-0.119	-0.0257 (0.0928)	-0.277	-0.0138 (0.0928)	-0.148	-0.0111 (0.093)	-0.119
Writing Skills	0.0346 (0.0281)	1.231	.0290 (.0281)	1.031	0.0343 (0.0281)	1.223	0.0248 (0.0283)	0.876	0.0353 (0.0277)	1.272	0.0292 (0.0286)	1.022
GPA	0.0399 (0.0751)	0.530	.0207 (.0747)	.277	0.0193 (0.0756)	0.255	0.0248 (0.0746)	0.332	0.0271 (0.0747)	0.363	0.0177 (0.0748)	0.236
Gender Composition	-0.0028 (0.0067)	-0.412	.0041 (.0076)	.542	0.0051 (0.0077)	0.661	0.0028 (0.0076)	0.362	0.004 (0.0076)	0.534	0.004 (0.0076)	0.519
Commitment	0.0832 (0.0316)	2.63*	.0739 (.0316)	2.337*	0.0727 (0.0318)	2.283*	0.0691 (0.032)	2.158*	0.0737 (0.0316)	2.335*	0.0687 (0.0323)	2.130*
Gender			-.1138 (.0795)	-1.432^{+}	-0.132 (0.0803)	-1.644^{+}	-0.1128 (0.0815)	-1.384^{+}	-0.1243 (0.0797)	-1.560^{+}	-0.107 (0.0806)	-1.328^{+}
IM			.0831 (.0532)	1.562^{+}	0.1021 (0.0568)	1.796*	0.0348 (0.0638)	0.546	0.1236 (0.0592)	2.087*	0.0901 (0.0657)	1.372^{+}
IM x Time			-.0262 (.0082)	-3.204*	-0.0192 (0.009)	-2.137*	-0.0216 (0.0101)	-2.130*	-0.019 (0.0082)	-2.323*	-0.0153 (0.01)	-1.537^{+}
Gender x Time			-.0038 (.0095)	-.397	-0.0032 (0.0097)	-0.328	-0.0039 (0.01)	-0.389	-0.0034 (0.0098)	-0.343	-0.0048 (0.01)	-0.478
IM x Gender			-.0957 (.0673)	-1.422^{+}	-0.1231 (0.0696)	-1.770*	-0.0356 (0.0754)	-0.472	-0.0883 (0.0781)	-1.131	-0.0686 (0.0794)	-0.864
IM x Time x Gender			.0301 (.0100)	3.000**	0.0158 (0.0109)	1.451^{+}	0.0286 (0.0117)	2.442*	0.0081 (0.011)	0.738	0.0155 (0.0118)	1.313^{+}
Goodness of fit												
Deviance	191.261		177.002		181.286		178.606		179.544		184.662	
Deviance Change			14.256*		9.975		12.655*		11.717		6.599	
N: Time1=68; Time2=83; Time3=91; Time4=89							$^{+}p<0.10$; * $p<0.05$; ** $p<0.01$, one-tailed.					

Impression Management Strategies: Ing *- Ingratiation;* ***SP*** *- Self-Promotion;* ***Exem*** *- Exemplification;* ***Supp*** *- Supplication;* ***Intim*** *– Intimidation.*
IM*-A certain impression management strategy. Replace IM with the appropriate strategy that is indicated in the column heading.* ***Time****: Deliverable*

REFERENCES

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

Alge, B. J., Wiethoff, C., & Klein, H.J. (2003). When does the medium matter? Knowledge-Building experiences and opportunities in decision teams. *Organizational Behavior and Human Decision Processes, 91*(1), 26-37

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. Psychological Bulletin, *103* (3), 411-423.

Ayman, R., & Korabik, K. (2010). Leadership: Why gender and culture matter. *American Psychologist, 65*(3), 157–170.

Balthazard, P., Waldman, D., Howell, J. & Atwater, L. (2004). Shared leadership and group interaction styles in problem-solving virtual teams. *Proceedings of the 37th Hawaii International Conference on System Science*.

Barry, D. (1991). Managing the bossless team-lessons in distributed leadership. *Organizational Dynamics, 20,* pp. 31-47.

Barsness, Z.I., Diekmann, K.A., & Seidel, M.L. (2005). Motivation and opportunity: The role of physical, demographic, and social proximity in impression management. *Academy of Management Journal, 48*(3), 401-419.

Berger, J., Fisek, M., Norman, R., & Zelditch, M. (1977). Status characteristics and social interaction: An expectation states approach. New York: Elsevier.

Biernat, M. (2003). Toward a broader view of social stereotyping. *American Psychologist*, *58*, 1019–1027.

Biernat, M. (2005). *Standards and expectancies: Contrast and assimilation in judgments.* New York: Psychology Press/Taylor and Francis.

Bhappu, A.D., Griffith, T.L. and Northcraft, G.B. (1997). Media effects and communication bias in diverse groups. *Organizational Behavior and Human Decision Processes, 70*(3), 199-205.

Blickle, G. (2003). Some outcomes of pressure, ingratiation and rational persuasion used with peers in the workplace. *Journal of Applied Social Psychology, 33*, 648-665.

Bolino, M.C., & Turnley, W.H. (1999). Measuring impression management in organizations: A scale development based on the Jones and Pittman Taxonomy. *Organizational Research Methods, 2*(2), 187-206.

Bolino, M.C., & Turnley, W.H. (2003). Counternormative impression management, likeability, and performance ratings: the use of intimidation in an organizational setting. *Journal of Organizational Behavior, 24*, 237-250.

Bolino, M.C., Kacmar, K.M., Turnley, W.H., & Gilstrap, J.B. (2008). A multi-level review of impression management motives and behaviors. *Journal of Management*, ***34***, 1080–1109.

Bozeman, D.P., & Kacmar, K. M. (1996). A cybernetic model of impression management processes in organizations. *Organizational Behavior and Human Decision Processes, 69*(1), 9-30.

Byrne, B. M. (1994). Structural equation modeling with EQS and EQS/Windows. Thousand Oaks, CA: Sage Publications.

Carli, L.L. (2001). Gender and social influence. *Journal of Social Issues, 57*(4), 725-741.

Carli, L.L. (2010). Gender and group behavior. In: J.C. Chrisler and D.R. McCreary, Editors, *Handbook of Gender Research in Psychology*, Springer, New York, NY, 337–358.

Cardy, R.L., & Dobbins, G.H. (1986). Affect and appraisal accuracy: Liking as an integral dimension in evaluating performance. *Journal of Applied Psychology, 71*, 672-678.

Careless, S.A. (1998). Gender differences in transformational leadership: an examination of supervisor, leader and subordinate perspectives. *Sex Roles: A Journal of Research, 39*(11-12).

Carlson, J.R., & Zmud, R.W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal, 42*, 153-170.

Carte, T.A.., & Chidambaram, L. (2004). A Capabilities-based Theory of Technology Deployment in Diverse Teams: Leapfrogging the Pitfalls of Diversity

and Leveraging its Potential with Collaborative Technology. *Journal of the AIS, 5*(11-12), 448-471.

Chidambaram, L., & Bostrom, R.P. (1996). Group development (I): A review and synthesis of development models. *Group Decision and Negotiation, 6,* 159-187.

Chidambaram, L., Lim, J.Y-K., & Carte, T. (2008). Gender, Media and Leader emergence: Examining the impression management strategies of men and women in different settings. *Americas Conference on Information Systems* (*AMCIS)* in Toronto.

Chin, W. W. (1998). The Partial Least Squares Approach to Structural Equation Modeling. In *Modern Methods for Business Research*, G. A. Marcoulides (ed.), Lawrence Erlbaum Associates, Mahwah, NJ, 295-336

Chudoba, K.M., Wynn, E., Lu, M., & Watson-Manheim, M.B. (2005). How virtual are we? Measuring virtuality and understanding its impact in a global organization. *Information Systems Journal, 15*(4), 279-306.

Chudoba K.M., & Watson-Manheim, M. B. (2008) Shared communication practices and mental models in the virtual work environment. In: Panteli N, Chiasson M (eds) *Exploring Virtuality Within and Beyond Organizations: Social, Global and Local Dimensions*. Basingstoke: Palgrave Macmillan, 55–72.

Costrich, N., Feinstein, J., Kidder, L., Maracek, J., & Pascale, L. (1975). When stereotypes hurt: Three studies of penalties for sex-role reversals. *Journal of Experimental Social Psychology, 11,* 520–530.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: group effectiveness research from the shop floor to the executive suite. *Journal of Management*, *23*, 239–290.

Curran, P. J., Bauer, D. J, & Willoughby, M. T. (2006). Testing and probing interactions in hierarchical linear growth models. In C. S. Bergeman & S. M. Boker (Eds.), *The Notre Dame Series on Quantitative Methodology, Volume 1: Methodological issues in aging research* (pp. 99-129). Mahwah, NJ: Lawrence Erlbaum Associates.

Darley, J. M., & Gross, P.H. (1983). A hypothesis-confirming bias in labeling effects. *Journal of Personality and Social Psychology 44* 20–33.

Diekman, A.B. (2007). Negotiating the double blind: Interpersonal and instrumental evaluations of dominance. *Sex Roles, 22,* 551-561.

Douglas, C., & Gardner, W.L. (2004). Transition to self-directed work teams: Implications of transition time and self-monitoring for managers' use of influence tactics. *Journal of Organizational Behavior, 25*, 47-65.

Dubrovsky, V. Kiesler, S., & Sethna, B. (1991). The equalization phenomenon: Status effects in computer-mediated and face-to-face decision-making groups. *Human-Computer Interaction, 6*, 119-146.

DuBrin, A. (1991). Sex and gender differences in tactics of influence. *Psychological Reports, 68***,** 635-646.

Eagly, A. (1987) *Sex differences in social behavior: A social-role interpretation*, Hillsdale, NJ: Erlbaum.

Eagly, A.H., & Johnson, B.T. (1990). Gender and leadership style: a meta-analysis. *Psychological Bulletin, 108,* 233-256.

Eagly, A.H., Makhijani, M., & Klonsky, B. (1992). Gender and the evaluation of leaders: A meta-analysis. *Psychological Bulletin, 111,* 3–22.

Eagly, A.H., & Johannesen-Schdmit, M.C. (2001). The leadership styles of women and men. Journal of Social Issues, *57* (4), 781-797.

Eagly, A., & Karau, S. (2002). Role Congruity Theory of prejudice toward female leaders. *Psychological Review, 109,* 573-598.

Eagly, A.H., & Karau, S.J. (1991). Gender and the emergence of leaders: a meta-analysis. *Journal of Personality and Social Psychology, 60*(5), 685-710.

Eagly, A.H. (2007). Female leadership advantage and disadvantage: Resolving the contradictions. *Psychology of Women Quarterly, 31,* 1-12.

Eagly, A.H. Johannesen-Schmidt, M.C., & Van Engen, M.L. (2003). Transformational, transactional, and laissez-faire leadership styles: A meta-analysis comparing women and men. *Psychological Bulletin, 129,* 569-591.

Eagly, A. H., & Sczesny, S. (2009). Stereotypes about women, men, and leaders: Have times changed? In M. Barreto, M. Ryan, &M. Schmitt (Eds.). *The glass ceiling in the 21st century: Understanding barriers to gender equality*, 21–47, Washington, DC: APA Books.

Elron, E., & Vigoda-Gadot, E. (2006). Influence and political processes in cyberspace. The case of global virtual teams. *International Journal of Cross Cultural Management, 6*(3), 295-317.

Erez, A., Lepine, J.A. and Elms, H. (2002). Effects of rotated leadership and peer evaluation on the functioning and effectiveness of self-managed teams: A quasi-experiment. *Personnel Psychology*, 929-948

Eskes, J. 2007. Impression management and the perceived promotability of female employees. Masters Thesis. Retrieved from http://arno.unimaas.nl/show.cgi?fid=11560 on 7th March 2011.

Fornell, C., & Larcker, D.F. (1981). Structural Equation Models with unobservable variables and measurement errors. *Journal of Marketing Research, 18(2)*, 39-50.

Galegher, J. (1990). Intellectual groupwork and information technology: the role of information systems in collaborative intellectual work. In Fulk, J. Steinfield, C.(eds), Organizations and Communication Technologies. London: Sage, 193-216.

Gardner, W.L., & Avolio, B.J. (1998). The charismatic relationship: a dramaturgical perspective. *Academy of Management Review, 23* (1), 32-58.

Gardner, W.L., Peluchette, J. V. E., & Clinebell, S. K. (1994). Valuing women in management: An impression management perspective of gender diversity. *Management Communication Quarterly, 8,* 115–163.

Gardner, W. L., & Cleavenger, D. (1998). The impression management strategies associated with transformational leadership at the world-class level. *Management Communication Quarterly, 12,* 3–41.

Gershenoff, A.B., & Foti, R.J. (2003). Leader emergence and gender roles in all-female groups. A contextual examination. *Small Group Research, 34*(2), 170-196.

Gibson, C.B., & Gibbs, J.L. (2006). Unpacking the concept of virtuality: The effects of geographic dispersion, electronic dependence, dynamic structure and national diversity on team innovation. *Administrative Science Quarterly, 51,* 451-495.

Goffman, E. (1959). *The presentation of self in everyday life*. Garden City, NY: Doubleday.

Golden, T.D., Veiga, J.F., & Dino, R.N. (2008). The impact of professional isolation on telework job performance and turnover intentions: Does time spent teleworking, interacting face-to-face, or having access to communication-enhancing technology matter?" *Journal of Applied Psychology, 93*(6), 1412-1421.

Griffith, T.L., Sawyer, J.E., & Neale, M.A. (2003). Virtualness and knowledge in teams: Managing the love triangle of organizations, individuals and information technology. *MIS Quarterly, 27* (2), 265-287.

Guadagno, R.E., & Cialdini, R.B. (2007). Gender differences in impression management in organizations: A qualitative review. *Sex Roles, 56,* 483-494.

Hambley, L., Oneill, T., & Kline, T. (2007). Virtual team leadership: The effects of leadership style and communication medium on team interaction styles and outcomes. *Organizational Behavior and Human Decision Processes*, *103*(1), 1-20.

Harrison, D., Price, K., Gavin, J., & Florey, A. (2002). Time, teams, and task performance: Changing effects of surface and deep-level diversity on group functioning. *Academy of Management Journal*, *45*, 1029–1045.

Hatcher, L. (1994). *A step-by-step approach to using the SAS System for factor analysis and structural equation modeling.* Cary, N.C.: SAS Institute Inc.

Hedlund, J., IIgen, D.R., & Hollenbeck, J.R. (1998). Decision Accuracy in Computer-Mediated Versus Face-to-Face Decision-Making Teams. *Organizational Behavior and Human Decision Processes, 76*(1), 30-47.

Heilman, M. (2001). Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. *Journal of Social Issues, Gender, Hierarchy, and Leadership, 57*(4), 657-674.

Heilman, M.E., Wallen, A.S., Fuchs, D., & Tamkins, M.M. (2004). Penalties for success: Reactions to women who succeed at male tasks. *Journal of Applied Psychology, 89*, 416-427.

Heilman, M.E., & Okimoto, T.G. (2007). Why are women penalized for success at male tasks?: The implied communality deficit. *Journal of Applied Psychology, 92* (1), 81-92.

Higgins, C.A., Judge, T.A., & Ferris, G. (2003). Influence tactics and work outcomes: A meta-analysis. *Journal of Organizational Behavior, 24,* 89-106

Hollander, E.P. *Leaders, groups, and influence*. New York: Oxford University Press, 1964.

Hoyt, C.L., & Blascovich, J. (2003). Transformational and transactional leadership in virtual and physical environments, *Small Group Research, 34(*6), 678–715.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 3*, 424-453.

Jacobson, M. B., & Effertz, J. (1974).Sex roles and leadership: Perceptions of the leaders and the led. *Organizational Behavior and Human Performance, 12,* 383-396.

Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organization Science, 10*(6), 791-815.

Johnson, C., Clay-Warner, J. & Funk, S.J. (1996). Effects of authority structures and gender on interaction in same-sex task groups. *Social Psychology Quarterly, 59(3),* 221-236.

Jones, E. E., & Pittman, T. S. (1982). *Toward a general theory of strategic self-presentation*. In J. Suls (Ed.), Psychological perspectives on the self (pp. 231-261). Hillsdale, NJ: Lawrence Erlbaum.

Joshi, A. Lazarova, M. B., & Liao, H. (2009). Getting Everyone on Board: The Role of Inspirational Leadership in Geographically Dispersed Teams. *Organization Science, 20*(1), 240-252.

Kanawattanachai, P., & Yoo, A. (2007). The impact of knowledge coordination on virtual team performance over time. *MIS Quarterly, 31* (4), 783-808.

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

Kent, R.L. & Moses, S.E. (1994). Effects of sex and gender role on leader emergence. *Academy of Management Journal, 37(5),* 1335-1346.

Kiesler, S., & Sproull, L.(1992). Group decision making and communication technology. *Organizational Behavior and Human Decision Processes, 52,* 96-123.

Kipnis, D., & Schmidt, S.M. (1988). Upward-influence styles: Relationship with performance evaluation, salary, and stress. *Administrative Science Quarterly, 33,* 528–542.

Kirkman, B.L., & Mathieu, J.E. (2005). The dimensions and antecedents of team virtuality. *Journal of Management, 31*(5), 700-718.

Kristof-Brown, A. L., Barrick, M. R.,&Franke, M. (2002). Applicant impression management: Dispositional influences and consequences for recruiter perceptions of fit and similarity. *Journal of Management, 28,* 27-46.

Lance, C.E., Butts, M.M., & Michels, L.C. (2006), The sources of four commonly reported cutoff criteria: what did they really say? *Organizational Research Methods, 9*, 202-20.

Leventhal, G.S. (1976). The distribution of rewards and resources in groups and organizations. Advances in Experimental Social Psychology, Vol. 9, Equity Theory: Toward a General Theory of Social Interaction.: Academic Press.

Lind, M.R. (1999). The gender impact of temporary virtual work groups. *IEEE Transactions on Professional Communication, 42*(4), 276-285.

Loehlin, J. C. 2004. *Latent variable models: An introduction to factor, path, and structural equation analysis* , 4th, Mahwah, NJ: Erlbaum.

Lord, R.G., De Vader, C.L., & Alliger, G.M. (1986). A meta-analysis of the relationship between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology, **71***, 402–410.

Maher, K. J. (1997). Gender-related stereotypes of transformational and transactional leadership. *Sex Roles: A Journal of Research, 37*.

McGrath, J.E. 1984. *Groups: Interaction and Performance*", Prentice-Hall, Inc, Englewood Cliffs, N.J..

Misiolek, N.I., & Heckman, R. (2005). Patterns of emergent leaders in virtual teams. *Proceedings of the 38th Hawaii International Conference on System Sciences (HICSS).*

Montoya-Weiss, M.M., Massey, A.P., & Song, M. (2001). Getting it together: Temporal coordination and conflict management in global virtual teams. *Academy of Management Journal, 44*(6), 1251-1262.

Nemiro, J. E. (2002). The creative process in virtual teams. *Creativity Research Journal, 14*, 69–83.

Neubert, M.J., & Taggar, S. (2004). Pathways to informal leadership: The moderating role of gender on the relationship of individual differences and team member network centrality to informal leadership emergence. *The Leadership Quarterly, 15*(2), 175-194

Nguyen, N.T., Seers, A., & Hartman, N.S. (2008). Putting a good face on impression management: Team citizenship and team satisfaction. *Journal of Behavioral and Applied Management, 9*(2), 148-168.
Nye, C.D., & Drasgow,F. (2011). Assessing goodness of fit: Simple rules of thumb simply do not work. *Organizational Research Methods, 14*, 548-570.

Parks, M. R., & Roberts, L.D. (1998). Making MOOsic: The development of personal relationships online and a comparison to their onine counterparts. *Journal of Social and Personal Relationships, 15*, 517–537.

Pavitt, C. (1999). *Theorizing about the group communication-leadership relationship: Input-process-output and functional models*. In L. R. Frey, D. S. Gouran, & M. S. Poole (Eds.), The handbook of group communication theory and research (313–334). Thousand Oaks, CA: Sage.

Pescosolido, A.T. (2001). Informal leaders and the development of group efficacy. *Small Group Research, 32*, 74-93.

Rice, R.E. (1984). *Mediated group communication*. In R.E.Rice and Associates. The new media: Communication, research and technology. Beverly Hills, CA: Sage, pp. 129-154.

Ridgeway, C.L. (2001) Gender, status and leadership. *Journal of Social issues, 57*(4), 637-655.

Ritter, B.A., & Yoder, J.D. (2004). Gender differences in leader emergence persist even for dominant women: An updated confirmation of role congruity theory. *Psychology of Women Quarterly, 28* (3), 187-193.

Rosette, A. S.,& Tost, L.P. (2010). Agentic women and communal leadership: How role prescriptions confer advantage to top women leaders. *Journal of Applied Psychology, 95*, 221-235.

Roya, A., & Frame, M.C. (2004). *Gender Stereotypes.* In Goethals, G.R., Sorenson, G.J., Burns, J.M. Encyclopedia of leadership. Sage Publications, Inc.

Rozell, E.J.,& Gundersen, D. E. (2003). The effects of leader impression management on group perceptions of cohesion, consensus and commitment. *Small Group Research, 34*(2), 197-222

Rudman, L.A. (1998) Self-Promotion as a risk factor for women: the costs and benefits of counterstereotypical impression management. *Journal of Personality and Social Psychology, 74(3)*, 629-645.

Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues, 57,* 743–762

Rudman, L.A., & Fairchild, K. (2004). Reactions to counterstereotypical behavior: The role of backlash in cultural stereotype maintenance. *Journal of Personality and Social Psychology, 87*(2), 157-176.

Rudman, L.A., J.E. Phelan. 2008. Backlash effects for disconfirming gender stereotypes in organizations. *Research in Organizational Behavior, 28,* 61-79.

Sarker, S., Grewal, R.,& Sarker, S. (2002). Emergence of leaders in virtual teams: what matters? Proceedings of 35th Hawaii International Conference on System Sciences.

Schein, V., Mueller, R., Lituch, T. & Liu, J. (1996). Think manager- think male: A global phenomenon. *Journal of Organizational Behavior, 17,* 33-41.

Schlenker, B.R. (1980). *Impression management*. Monterey, CA: Brooks/Cole.

Schultz, B. G., *Communicating in the Small Group: Theory and Practice*, Harper & Row, NY, 1989.

Shelly, R.K., & Munroe, P.T. (1999). Do women engage in less task behavior than men? *Sociological Perspectives, 42*(1), 49-67.

Simoff, S.J., & Sudweeks, F. (2010). *The language of leaders: Identifying emergent leaders in global virtual teams.* In: Yoong, P., (ed.) Leadership in the Digital Enterprise: Issues and Challenges. IGI Global, Hershey, PA, 232-250.

Singh, V. Kumra, S., & Vinnicombe, S. (2002). Gender and impression management: Playing the promotion game. *Journal of Business Ethics, 37,* 77-89.

Sosik, J.J., Avolio, B., & Jung, D.I. (2002). Beneath the mask: Examining the relationship of self-presentation attributes and impression management to charismatic leadership. *The Leadership Quarterly. 13*(3), 217-242.

Sproull, L., & Keisler, S. (1986). Reducing social context cues: Electronic mail in organizational communication. *Management Science, 32,* 1492- 1513.

Stapel, D. A., & Winkielman, P. (1998). Assimilation and contrast as a function of context-target similarity, distinctness, and dimensional relevance. *Personality and Social Psychology Bulletin, 24,* 634-646

Staples, D.S., & Zhao, S. (2006). The effects of cultural diversity in virtual teams versus face-to-face teams. *Group Decision and Negotiation, 15,* 389-406.

Staples, D.S., & Webster, J. (2008). Exploring the effects of trust, task interdependence and virtualness on knowledge sharing in teams. *Information Systems Journal, 18,* 617-640.

Straus, S. G. (1996). Getting a clue: The effects of communication media and information distribution on participation and performance in computer-mediated and face-to-face groups. *Small Group Research, 27,* 115–142.

Stroh, L.K. , NorthCraft, G.B. and Neale, M. A. (2002). Organizational Behavior: A Management Challenge. (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Suchan, J., & Hayzak, G. (2001). The communication characteristics of virtual teams: A case study. *IEEE Transactions on Professional Communication, 44,* 174–186.

Taggar, S., Hackett, R., & Saha, S. (1999). Leadership emergence in autonomous work teams: Antecedents and outcomes. *Personnel Psychology, 52,* 899-926.

Taynor, J., & Deaux, K. (1973). When women are more deserving than men: Equity, attribution, and perceived sex differences. *Journal of Personality and Social Psychology, 28,* 360-367.

Taynor, J., & Deaux, K. (1975). Equity and perceived sex differences: Role behavior as denned by the task, the mode, and the actions. *Journal of Personality and Social Psychology, 32,* 381-390.

Tepper, B. J., Brown, S.J., & Hunt, M.D. (1993). Strength of subordinates' upward influence tactics and gender congruency effects. *Journal of Applied Social Psychology, 23,* 1903-1919.

Terborg, J., Peters, L., Ilgen, D., & Smith, F. (1977). Organizational and personal correlates of attitudes toward women as managers. *Academy of Management Journal, 20,* 89-100.

Timmerman, C.E., S.N. Madhavapeddi. 2008. Perceptions of organizational media richness: Channel expansion effects for electronic and traditional media across richness dimensions. *IEEE Transactions on Professional Communication* **51** 18-32.

Turnley, W.H., & Bolino, M.C. (2001). Achieving desired images while avoiding undesired images: Exploring the role of self-monitoring in impression management. *Journal of Applied Psychology, 86 (2),* 351-360.

Wageman, R. (2001). How leaders foster self-managing team effectiveness: Design choices versus hands-on coaching. *Organization Science, 12(5)*, 559-577.

Wakefield, R.L., Leidner, D.E., & Garrison, G. (2008). A model of conflict, leadership, and performance in virtual teams, *Information Systems Research, 19*(4), 434-455.

Watson, C. & Hoffman, L.R. (2004). The role of task-related behavior in the emergence of leaders. The dilemma of the informed woman, *Group and Organization Management, 29*(6), 659-685.

Watson, C. (1988). When a woman is the boss. Dilemmas in taking charge. *Group & Organization Studies, 13*(2), 163-181.

Wayne, S. J., Liden, R. C., & Sparrowe, R. T. (1994). Developing leader member exchanges: The influence of gender and ingratiation. *American Behavioral Scientist, 37*, 697-714.

Wayne, S.J., & Ferris, G.R. (1990). Influence tactics, affect, and exchange quality in supervisor-subordinate interactions: A laboratory experiment and field study. *Journal of Applied Psychology, 75*, 487-499.

Westphal, J.D., & Stern, I. (2006). The other pathway to the boardroom: Interpersonal influence behavior as a substitute for elite credentials and majority status in obtaining board appointments. *Administrative Science Quarterly, 51*(2),169-204.

Whitley, B. E., Jr. & Kite, M.E. (2010). *The psychology of prejudice and discrimination* (2e). Belmont, CA: Thomson-Wadsworth.

Wickham, K., & Walther, J.B. (2007). Perceived behaviors of emergent and assigned leaders in virtual groups. *International Journal of E-Collaboration, 3*(1), 1-17.

Yoo, Y., & Alavi, M. 2004. Emergent leadership in virtual teams: What do emergent leaders do? *Information and Organization, 14*, 27-58.

Zigurs, I. & Schoonover, T. (2008). Human and technology leadership roles in virtual teams. In Kock, N.(ed.) *Encyclopedia of E-Collaboration*, Hershey, PA: Idea Group Publishing, 343-348.