

Perceptions of Gender and Leader Emergence
in Virtual Groups

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Dedication

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Abstract

This study examines perceptions of gender and leader emergence. Specifically, the study examines: (1) the extent to which gender is identifiable through anonymous, text-based communication; (2) the effect of an individual's text-based communication on other people's perceptions of that individual as an emerging leader; and, (3) the effect of an individual's physical characteristics on other people's perceptions of that individual as a leader. The mixed-methods analyses are based on data collected from 149 participants in a leadership-preparation process conducted partially in a virtual environment. The results indicate that context mediates the extent to which gender is identifiable through anonymous, text-based communication. The results also indicate that the ways in which individuals participate in a group process affect others' perceptions of those individuals as leaders. In addition, an individual's physical characteristics affect others' perceptions that the individual looks like a leader. Physical characteristics and looking leader-like do not, however, affect perceptions of being a leader.

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Chapter 1

Introduction

Institutions of higher education, business organizations, and government entities in the United States operate in a more globally competitive marketplace, face higher demands for accountability, and comprise a more diverse student body and workforce than ever before (Kezar, Carducci, & Contreras-McGavin, 2006; Slaughter & Leslie, 1997). This shift in the environment in which organizations strive to meet their goals is a chief force driving the focus on leaders and leadership. The growing interest in leadership is evident from the extensive body of literature, both scholarly and otherwise, on the subject.

Leadership lacks an inclusive, coherent definition and thus encompasses a variety of meanings. Northouse (2004) identified core components of leadership found in the literature and defined it in traditional terms as “a process whereby an individual influences a group of individuals to achieve a common goal” (p. 3). Leadership has also been defined as the social-perceptual process of being perceived by others as a leader (Lord & Maher, 1993). Some scholars argue that the context in which leadership takes place has changed and leadership now must be viewed as a collective rather than individual process (Kezar et al., 2006). From a social constructivist perspective, individual perception plays a key role in defining leadership and leaders may not exist beyond the leadership positions they hold, to which attributions of leadership are made.

From a critical-theory perspective, leadership is conceptualized as power. These perspectives on defining leadership are only a few of many.

Numerous theories and approaches to leadership have been proposed over the years. Some of the most familiar include trait, behavior, style, situational, contingency, and transformational. Leadership also has been studied from the perspectives of leader evaluation, effectiveness, and emergence. Kezar and colleagues (2006) propose revolutionary concepts of leadership, associated with ethics and spirituality, emotions, globalization, empowerment, and accountability. These concepts have received some preliminary investigation, but are in need of further research.

Considering the trait approach to leadership, one trait that has received considerable attention in research is gender¹. Gender comparisons have been made on leader emergence and effectiveness, evaluation of leaders, and leadership style (Eagly & Johnson, 1990; Eagly & Karau, 1991; Eagly, Karau, & Makhijani, 1995; Eagly, Makhijani, & Klonsky, 1992). Research also has compared the behaviors of, and subordinate satisfaction with, men and women as leaders (Dobbins & Platz, 1986).

Aspects of leadership may be affected by the context in which leadership is enacted and studied. Most of the research on leadership has been performed in experimental or face-to-face settings, whereas research on leadership in computer-mediated communication (CMC) contexts is in its infancy. Communication between people that occurs via a computer network is considered computer-mediated. CMC is

¹ Sex is defined by biological characteristics and is typically used to categorize individuals as male or female. Gender is a social construct associated with sex, and is typically used to categorize individuals as men or women. In the literature, these terms often are used interchangeably. In this dissertation, I use the term *gender* and its associated categories. When I cite other literature, I use the terms consistent with those used by the author(s).

used widely for purposes such as social networking and professional interaction. It can occur in media that support written communication, such as electronic mail, computer conferences, and chat systems, and in media that support oral communication, such as video conferencing. In this paper, I focus on written communication using CMC, and henceforth use the acronym CMC to indicate text-based CMC.

Technological advances have allowed organizations to increasingly utilize CMC for group processes and have fostered the proliferation of virtual work groups. To be sure, “computer text-processing tools and computer networks provide a high-speed information exchange and processing service that can reduce geographic, temporal, and size constraints on group communication” (Dubrovsky, Kiesler, & Sethna, 1991, p. 120). This new medium provides a context in which to study leadership that differs from groups working in person. People are present to communicate concurrently in face-to-face settings, but CMC can occur asynchronously, as in electronic mail, or synchronously, as in a chat space. In person, people communicate verbally and non-verbally and have access to social cues such as gender, race, and age of other communicators, as well as facial expressions, gestures, and the physical environment. In contrast, people using text-based CMC do so using the written word and with at least some degree of anonymity because they do not occupy the same physical space. Communicators using CMC thus do not have access to the full array of cues available in face-to-face contexts. Scholars have begun investigating how the many facets of leadership studied in face-to-face settings apply to computer-mediated settings (see for example, George & Sleeth, 2000).

Investigation of the effects of the computer-mediated context on the relationship between social identity and leadership is also underway. Some scholars contend that CMC promotes equalization due to anonymity and reduced social cues, thus neutralizing the effects of social status common in interaction that occurs in person (Dubrovsky et al., 1991; Kiesler & Sproull, 1992; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). Other scholars argue that the anonymity condition of CMC actually heightens the salience of social identity. Consequently, social identity and status play a role in the numerous facets of group work, one of which is leadership (Postmes & Spears, 2002; Spears & Lea, 1992; Weisband, Schneider, & Connolly, 1995).

Further research on social identity and leadership in the CMC context is important, particularly with regard to gender identity. Given the growing use of virtual teams for problem solving and decision-making and the propensity for women to be absent from top leadership positions, it is important that the effects of the computer-mediated medium on gender and leader emergence are understood. In the subsequent sections, I provide statistical evidence of the underrepresentation of women in top leadership positions and arguments for why it is a problem, and I outline the organization of the present study.

Statement of the Problem

In the United States, women continue to be underrepresented in the higher ranks of leadership in institutions of higher education, business organizations, and government offices. In 2006, only 23% of college and university presidents were women (*The Chronicle Almanac*, 2007). In the same year, women accounted for 15.6% of corporate

officers, 9.4% of highest titles, and 2.6% of chief executive officers of Fortune 500 companies. Further, at the current rate of change, it will take 47 years for women to reach parity with men as corporate officers (Catalyst, 2006). In government, women hold 16.3% of seats in the 110th Congress, 16% of the seats in the Senate, 16.3% of the seats in the House of Representatives, 24.1% of the seats in statewide elective executive offices, and comprise 23.5% of state legislators (Center for American Women and Politics, 2007). These disparities in representation persist despite the fact that women comprised 46.3% of the workforce in 2006, earned 45% of doctoral degrees, and received 50% of professional degrees awarded in 2005 (“The Chronicle Almanac,” 2007; U. S. Bureau of Labor Statistics, 2007). A similar, or often worse, picture exists for the state of women in top leadership positions on an international level (Rhode & Kellerman, 2007).

The underrepresentation of women in higher positions of leadership is a concern for four main reasons. First, women are an underutilized resource of human capital (Rosener, 1995). According to the resource-based theory of competitive advantage and strategy analysis, organizations gain competitive advantage by capitalizing on internal resources, including the key resource, human capital (Barney, 2006). To be sure, by underutilizing women in leadership positions organizations lose a valuable resource. Second, women bring diverse perspectives to problem-solving, which fosters innovation (Cox, 2005; Kanter, 1983). This point is related to the first, in that organizations need to maximize creativity and innovation in order to be competitive in a global marketplace. Third, it is essential that women occupy positions of leadership in order to serve as role models for other aspiring women (Brown, 2005). Finally, equitable representation of

women in the higher ranks of leadership in education, business, and government is necessary to counter the socially ingrained expectation that women are not leaders and to dismantle the gender status differential in society.

Research on the relationship between gender and leader emergence is arguably one of the most important aspects of leadership to study with regard to representation of women in top leadership positions: “Leadership diversity (especially at the top level) cannot be achieved if nontraditional employees do not emerge as leaders, do not get selected and developed as leaders” (Chen & Ven Velsor, 1996, p. 294). A substantial amount of research has investigated the relationship between gender and leader emergence and overall concludes that women are less likely than men to emerge as leaders (Eagly & Karau, 1991; Hegstrom & Griffith, 1992; Ritter & Yoder, 2004; Walker, Ilardi, McMahon, & Fennell, 1996). Such research has been focused largely on dyads and groups interacting in laboratory or face-to-face settings.

Only a limited amount of research on gender and leader emergence has been conducted with real teams in CMC contexts (Sarker, Grewal, & Sarker, 2002). Scholars have focused more on the effects of CMC on equality of participation and power inequalities due to status, rather than specifically on gender status and leader emergence (Bordia, 1997; Flanagin, Tiyaamornwong, O’Connor, & Seibold, 2002; Spears & Lea, 1994; Spears, Postmes, Lea, & Wolbert, 2002; Sussman & Tyson, 2000; Weisband et al., 1995). These studies have been primarily experimental in nature. Given the contextual differences between communication that occurs in person versus by computer, and the increasing use of CMC for decision-making and team processes, further field research on

gender and leader emergence in virtual environments is essential for organizations striving to increase the proportion of women in the top leadership ranks.

The present study addresses the gap in the literature with regard to the relationship between gender and leader emergence in a virtual context. Specifically, this study examines the relationship between perceptions of gender and perceptions of leadership in real groups working in a CMC context. The central research question is: *What effect do gendered visual cues have on perceptions of leader emergence in a computer-mediated, leadership-preparation process in which participants work anonymously in groups?*

Organization of the Study

I have organized this dissertation into five chapters. I presented the background to the study in Chapter 1. I review the theoretical and empirical literature relevant to the relationship between gender and leader emergence in Chapter 2. In Chapter 3, I present the conceptual framework and methodology I used for this study, including the research questions, an explanation of the data collection process, the variables, and the analytical approach I employed. I present the results of the analyses in Chapter 4. Finally, in Chapter 5 I discuss the results, the implications for theory and for practice, the limitations and strengths of this study, and directions for further research.

Chapter 2

Review of Literature

In this chapter, I draw from the psychology, sociology, leadership, and technology literature to provide a review of theoretical and empirical scholarship relevant to the relationship between gender and leader emergence. The literature that best informs this relationship covers the constructs of and relationships between gender, status, social influence, and factors affecting leader emergence. I review the literature relevant to these constructs and relationships as they occur in both face-to-face and computer-mediated communication (CMC) contexts.

I divide this literature review into four sections. In the first section, I introduce the constructs of status and social influence and present the perspectives of expectation states theory and social role theory as they pertain to gender, status, and influence or leadership. I conclude this section with a discussion of barriers to social influence and leadership for women. In the second section, I extend the discussion of status effects to the context of CMC. Due to the condition of at least some degree of participant anonymity in CMC, the process of impression formation in CMC differs somewhat from that in face-to-face communication. I review the literature relevant to how impressions are formed and how these impressions convey status in CMC in the third section. Finally, I discuss the literature relevant to leader emergence, in both face-to-face and CMC contexts. I organize this section by categorizing the main factors that have been shown to affect leader

emergence. I label the categories contextual factors, individual-level factors other than gender, dominance and gender, and gender and gender role.

Gender, Status, and Social Influence

Social influence, simply defined as having an effect on others, can occur through the spectrum of means from normative to collaborative to dictative; it is perceived to be congruent with leadership and is associated with career advancement and salary increases (Dreher, Dougherty, & Whitely, 1989; Kanter, 1977; Northouse, 2004). The effects of gender manifest, in part, as normative social influence, such that an individual of a given gender may be perceived as influential simply because that individual complies with gender-based behavioral expectations (Deutsch & Gerard, 1955; Eagly, 1983). Men typically are perceived as more influential than are women and actually exert greater influence than do women; however, gender differences in social influence are moderated by gender composition of the group, gender-type of the task, and the competence, dominance, and communality of the person attempting to influence (Carli, 2001; Eagly & Wood, 1982). It follows that if women are not perceived as influential and are not as successful at exerting influence as are men, women will be less likely to emerge as leaders and consequently less likely to advance to positions of top leadership.

Status characteristics affect an individual's ability to influence others. A status characteristic is "any characteristic of actors around which evaluations of and beliefs about them come to be organized" (Berger, Rosenholtz, & Zelditch, 1980, p. 479). Status characteristics include gender, race, age, occupation, and physical attractiveness, among others. For example, in American society, men have higher status than women, white

people have higher status than people of color, and university presidents have higher status than deans. Berger, Cohen, & Zelditch (1972) offer the empirical generalization that status differences determine the power and prestige hierarchy in task-oriented groups. In 1980, Berger, Rosenholtz, and Zelditch provided empirical support for this generalization. They reviewed applied research that showed that sex, race, and physical attractiveness function as status characteristics. Males, white people, and physically attractive people were given and took more opportunities to perform and had more influence over other group members.

Numerous theories address the mechanisms by which gender functions as a status characteristic, and by which status affects ability to influence. I will focus on two theories that are widely known and the most relevant to this dissertation: expectation states theory and social role theory. Both of these theories are based on social-structural factors that contribute to gender differences in social behavior. Each theory is narrow in one regard and broad in another. Expectation states theory focuses on power dynamics. It deals with status and influence in the narrow context of task-oriented groups, but broadly encompasses status distinctions of any type. Social role theory focuses on the social roles that men and women occupy. It deals with status and influence in the larger context of society, but focuses specifically on these constructs as related to gender. Following a review of these two theories, I present a brief review of additional factors related to status and social roles that act as barriers to leadership for women.

Expectation States Theory

Expectation states theory, first proposed by Berger, Cohen, & Zelditch (1966), posits that, in task-oriented groups, different performance expectations are associated with different states of a status characteristic. Expectations arise out of prior beliefs and interaction, and are shared by both the dominant and subordinate group. It is these expectations that determine exercise of influence by the individual holding a particular status characteristic. For example, all other factors being equal (e.g., reputation for ability, reward level, gender-neutral task), because of their higher status, men are expected to be more influential than are women and thus are allowed by other members to exert more influence.

Expectation states theory treats individuals as information-processing mechanisms, who combine all relevant status characteristics, such as gender, race, age, and occupational title, to form aggregated expectation states (Berger et al., 1980). A status characteristic is not salient or relevant just because it is known to the perceiver. Under expectation states theory, status characteristics become salient either by being relevant to the task (e.g., groups working on a gender-typed task) or by providing a basis of discrimination among group members (e.g., mixed-gender groups). Performance expectations thus are based on a combination of salient status characteristics. Gender plays a substantial role in expectation formation, as it is often salient and is highly utilized in person perception, categorization, and stereotyping (Fiske, Haslam, & Fiske, 1991; Kunda & Thagard, 1996; Ridgeway, 2001; Stangor, Lynch, Duan, & Glass, 1992).

Expectation states also determine behavior, and thus are maintained through subsequent interaction. That people behave in ways that confirm the expectations of others is supported by a wealth of research (for a review, see Eagly, Wood, & Diekmann, 2000). Put in terms of gender, women are less likely to engage in leadership behaviors as they act in accordance with expectations that women are not leaders. Ridgeway (2001) claims that expectation states theory underlies the underrepresentation of women in top leadership positions:

The performance expectations and legitimacy reactions created by gender status beliefs create multiple, nearly invisible nets of comparative devaluation that catch women as they push forward to achieve positions of leadership and authority and slow them down compared to similar men . . . especially in occupations and contexts not culturally linked with women.
(p. 652)

Social Role Theory

Social role theory, developed by Eagly (1987), contends that differences in social behavior between men and women result from the different social roles they hold. Social roles are “the shared expectations that apply to persons who occupy a certain social position or are members of a particular social category” (Eagly et al., 2000, p. 130). According to social role theory, social roles were established and are maintained by the sexual division of labor and subsequent gender hierarchy in American society. As a result, women are expected to occupy domestic roles, which are of relatively lower status and

typified by communal characteristics, and men are expected to occupy provider roles, which are of relatively higher status and typified by agentic characteristics. Women are expected to exhibit communal behaviors, such as nurturing, and men are expected to exhibit agentic behaviors, such as dominance.

As with expectation states, social roles also determine behavior. Eagly and colleagues (2000) provide a review of literature that shows that people engage in expectancy-confirming behavior with regard to social roles and gender roles. Given that leadership traditionally has been conceptualized in masculine, agentic terms (Rosener, 1995), women are less likely than men to be expected to possess the characteristics necessary to fit the role of leader.

People who occupy high status social roles also are afforded more legitimate authority to exert influence (French & Raven, 2005). Indeed, research shows that people who occupy higher status roles in organizations are perceived to be more influential and less easily influenced than people who occupy lower status roles. Eagly and Wood (1982) conducted three experiments in which subjects were read a scenario that portrayed one employee attempting to influence another. When subjects were given information about the employees' job titles, they judged that compliance was more likely when the employee attempting to influence had a higher status title than the other employee. This was true regardless of the gender of the employees. Gender status played a role in perceived influence, however, when information on job titles was not given. In this case, subjects perceived males to hold higher status job titles and judged that compliance was more likely when a male was attempting to influence a female. Given that in the United

States, occupational sex segregation is still prevalent and higher status roles in organizations are held more often by men than by women (Eagly, 1987; Eagly et al., 2000), it follows that men have more opportunity to exert influence and be perceived as leaders than do women.

Summary

Both expectation states theory and social role theory predict that, in general, men have higher status than do women and thus are more influential and more likely to emerge as leaders. Both theories also consider certain contextual factors that affect levels of influence, such as gender-type of the task, task expertise of the individual, and group composition. Due to these contextual factors, in certain situations women may be more influential and more likely to be perceived as leaders than are men. For example, women are allowed more influence when performing feminine-typed tasks, fulfilling social roles typical for women, and in women-only groups—particularly those that do not contrast in gender with the authority structure of the organization (Eagly et al., 2000; Ridgeway & Diekema, 1992). In a review of both theories, Ridgeway and Diekema (1992) conclude that, with regard to goal-oriented interaction, expectation states theory “provides a clearer account of the interactional means by which women are maintained in a disadvantaged position in society” (p. 175). Their conclusion is based on the argument that by focusing on the power and prestige order created by performance expectations, expectation states theory considers the more proximate causes of behavior than does social role theory.

Additional Barriers to Influence and Leadership for Women

In addition to, or perhaps as an extension of, status effects and social roles, other factors function to impede women in their quest to be leaders. In a review of the literature on gender and social influence, Carli (2001) detailed several such factors. The factors are: (1) men tend to resist influence by women; (2) people perceive women as less knowledgeable and influential than men on male and neutral-typed tasks; (3) women must show superior competence compared to men in order to be evaluated similarly; (4) regardless of competence, women are less likely than men to be perceived as influential or as leaders; (5) women are expected to fulfill prescriptive norms by displaying warmth and acting communally and collaboratively (this is especially true as perceived by men); and, (6) women must be perceived as likeable in order to be perceived as influential.

Heilman, Wallen, Fuchs, and Tamkins (2004) provide a specific example of some of the factors noted above. They conducted three experiments to study reactions to a woman's success in a male gender-typed job. The 242 subjects were undergraduate and graduate students and employees of a financial services company. The researchers found that women who violated stereotype by being successful at traditionally male tasks were perceived to be more interpersonally hostile than were women who exhibited unclear performance and men who succeeded at the same tasks. Further, when information about level of performance at a traditionally male task was *not* provided, subjects almost always rated women as less competent and less achievement-oriented than they rated men. Alternatively, if women conformed to stereotype by being successful at traditionally female or neutral tasks, they were not met with disapproval by subjects.

Heilman and colleagues also show that despite a woman's prior success and competence, being disliked can be detrimental to her career. Employees who were portrayed as likable were more highly recommended for higher salaries and special opportunities than were less likable employees, regardless of competence levels. It follows that if successful women in non-traditional settings—such as the higher ranks of administrative leadership in institutions of higher education and corporate organizations—elicit negative social reactions, they will be less likely to be recommended for professional advancement and other rewards. This is but one piece of empirical evidence out of many that confirms that women encounter additional challenges to becoming leaders as compared to men. Taken together with the results of Carli's (2001) review and the predictions of expectation states theory and social role theory, the underrepresentation of women in top leadership positions is not all that striking.

Status Effects in Computer-mediated Communication

There is debate in the literature about whether status effects that operate in traditional face-to-face communication also operate in CMC. Two features of text-based CMC that set it apart from face-to-face communication are visual anonymity and isolation, or physical separation of group members (Spears & Lea, 1992, 1994). Due to these qualities, CMC does not allow either static social-context cues, such as positions at a table, clothing, and gender, or dynamic social-context cues, such as facial expressions and gestures, to be readily apparent to users. It follows that “social distinctions, such as

status differences, will not constrain communication if senders and receivers are unaware of them. It is not sufficient for people simply to hold different status positions; they must be aware of the fact that they do” (Dubrovsky et al., 1991, p. 122). Some scholars argue that due to the reduction of social cues, CMC has the potential to weaken status-based social influence and allow for more equal participation (Kiesler, Siegel, & McGuire, 1984).

Empirical support for the contention of equalization was found in a study performed in 1986 by Siegel and colleagues. They claimed this study to be among the first controlled experiments to compare participation rates between face-to-face and CMC contexts using modern CMC hardware and software. In three experiments, undergraduate students with prior computing experience interacted in groups of three to reach consensus on career-choice problems. The results showed that individuals participated more equally, as measured by distribution of remarks among participants, in CMC versus face-to-face settings. These findings held for multiple CMC conditions: anonymous, non-anonymous, synchronous conferencing with and without controls for members being able to talk at the same time, and computer mail. Although the researchers concluded that CMC functions as an equalizing medium with regard to participation, they did not attend to status differences among participants.

Support for both the reduction of status-based influence and equalization of participation in CMC came in later studies. Dubrovsky and colleagues (1991) compared participation and influence on group decision-making in a face-to-face medium versus an electronic mail medium. The same-gender groups comprised one high-status and three

low-status members. Graduate student participants were considered high-status members and undergraduate student participants were considered low-status members. The results showed that, although high-status members participated more in all conditions, the absolute and relative participation of high-status members was reduced significantly in the CMC medium. Further, high-status members did not have more overall influence on group choice than did low-status members in the CMC medium. Dubrovsky and colleagues coined these results *the equalization phenomenon* and concluded that CMC “of the type we studied muffles social-context cues and hence social differences” (p.138).

Since these foundational studies, other empirical studies have emerged that support the contention that CMC promotes equalization of participation and reduces status-based influence. A synthesis of 18 empirical studies comparing face-to-face and CMC contexts concluded that the difference between high- and low-status member participation rate was less in CMC than in face-to-face contexts (Bordia, 1997). This synthesis comprised studies that mostly utilized student participants and differed in the degree of participant anonymity, nature of the task, time allowed to complete the task, and participant proximity in the CMC condition. Evidence that CMC reduces status-based influence in different cultures also exists. Tan, Wei, Watson, and Walczuch (1998) performed three matching laboratory experiments using students in Singapore and the United States. Group members worked on tasks by communicating either by public screen using CMC or by whiteboard in person. Regardless of condition, participants were prohibited from communicating with one another orally. The results showed that influence on opinions due to status was less in the CMC condition than in the face-to-face

condition. This held for groups comprised of students from Singapore and those comprised of students from the United States. The status comparison in this study still was between graduate and undergraduate students, and not between participants of different cultures.

Scholars who support the argument that CMC promotes equalization and reduces status effects base their case on the idea that anonymity and physical isolation are qualities that contribute to de-individuation of group members (Kiesler et al., 1984). De-individuation “has been classically defined as the loss of identity and weakening of social norms and constraints associated with submergence in a group or crowd” (Spears & Lea, 1992). Other scholars contend that member de-individuation does not promote equality, but rather enhances status effects (Matheson, 1992; Spears & Lea, 1992, 1994).

Spears and Lea (1994) question the literature that supports equalization in CMC, due to their concern that quantitative measures of equalization, such as participation rate and ratings of influence, are not good indicators of decreased status awareness by participants. They contend that there is little empirical evidence that participants are less aware of status differences in CMC. Further, they question the narrow span of status differences used in most studies that support the argument of reduced status effects in CMC, such as comparison of graduate and undergraduate students.

Spears and Lea (1992, 1994) offer a compelling critique of what they term the *reduced social cues* model described above and propose the Social Identity Model of Deindividuation Effects. Their model proposes that de-individuation may instigate the activation of social identity rather than the loss of identity, and thus permit status effects

in CMC to become heightened rather than reduced. Social identities are “those aspects of the self corresponding to valued groups or social categories to which one belongs and with which one identifies” (Spears & Lea, 1992, p. 45). The model holds that in conditions of anonymity, “the self tends to be perceived and presented less as a unique individual and more in terms of its similarity to the perceived prototypical attributes of the salient social group” (Lea, Spears, & de Groot, 2001, p. 528).

Spears and Lea (1992, 1994) argue that CMC may block interpersonal cues but not necessarily social category information that serves as a basis for status effects. For example, gender differences in language, communication style, and participation rate commonly found in face-to-face interaction can be readily apparent in text-based communication with the absence of identifying factors conveyed by physical presence (Carli & Bukatko, 2000; Herring, 1993; Savicki, Kelley, & Lingenfelter, 1996; Thomson & Murachver, 2001). They caution of the “dangers of romanticizing the effects of CMC by viewing it as a sort of virtual reality where the individual can escape from the strictures of ordinary identity and interaction” and contend that “identity and interaction in CMC will often be grounded in the realities of identities and relations beyond CMC, which pervade the rest of our social lives” (1994, p. 449). Support for the Social Identity Model of Deindividuation Effects and for the argument that the conditions of CMC enhance status effects rather than promote equalization are supported by empirical evidence (Postmes & Spears, 2002; Postmes, Spears, & Lea, 1998; Spears & Lea, 1992; Spears, Lea, & Lee, 1990; Weisband et al., 1995).

Impression Formation in Computer-mediated Communication

Anonymity of participants is a primary difference between CMC and face-to-face contexts and has implications for impression formation in CMC. Anonymity varies by degree depending on the type of CMC being used and the amount of identifying information available. For example, electronic mail allows exchange of information with regard to name and occupational title. These cues may be used to infer status related to gender, ethnicity, and social role; whereas, a synchronous chat space allows participants to use pseudonyms to mask their identities. Regardless of the degree of anonymity in a given CMC context, there is less individuating information available to participants than in face-to-face settings. Research in the area of impression formation in CMC employs various degrees of anonymity. Overall, the findings suggest that impressions are formed in CMC, albeit in a modified fashion as compared to face-to-face settings.

Stereotyping is the primary basis of impression formation in CMC (Jacobson, 1999; Lea et al., 2001). Stereotypes are utilized for cognitive efficiency and are relied upon more heavily in the absence of individuating information (Brewer, 1996; Kunda & Thagard, 1996; Mackie, Hamilton, Susskind, & Rosselli, 1996), which is a condition of the relative anonymity found in CMC. Further, many experimental studies conducted in the CMC context require participants to interact with multiple group members, which increases cognitive load, and to perform tasks with limited time. Both cognitive load and time pressure serve to enhance stereotyping behavior in impression formation (Brewer, 1996). The three aforementioned conditions—lack of individuating information, cognitive load, and time pressure—also operate in virtual teams working in natural

settings. Stereotyping is arguably the primary mechanism by which impressions are formed in both laboratory and natural CMC contexts. It may be, however, that impressions made of participants in a virtual context would change over time given the extended time working together, freedom to exchange of individuating information, and potential face-to-face encounters.

In absence of the cues typically used in stereotyping and impression formation in face-to-face settings, such as physical appearance and voice quality, stereotypes and impressions in CMC are based largely on language and paralinguistics (Jacobson, 1999; Lea & Spears, 1992). Paralinguistics includes such typographical marks as ellipses and exclamation marks, as well as typing errors and emoticons (e.g., ☺). Paralinguistic cues help to convey communication style. People evaluate language and paralinguistics choices and subsequently “make attributions about social and professional status, background and education and even the intent of communication” (Burgoon & Miller, 1987, p. 199).

Indeed, gender differences in language are readily apparent in CMC, to the extent that gender status can be predicted from electronic discourse in the absence of other identifying factors (Savicki et al., 1996; Thomson & Murachver, 2001). Thomas and Murachver (2001) found that without instruction as to topic or content, undergraduate females made significantly more references to emotion, provided more personal information, and used more hedges (e.g., ‘it was *sort of* interesting’) and more intensive adverbs than did undergraduate males in electronic mail messages sent to a same-sex netpal. When a separate set of undergraduate subjects were asked to identify the gender of authors of the messages, 62 to 95 percent of subjects judged correctly for 14 of 16

messages. To be sure, a further experiment confirmed that gender of the authors could be determined based solely on differences in the linguistic style of the messages. It follows that differences in language used in CMC can be used to surmise differences in social status.

An experiment by Lea & Spears (1992) showed that the amount of certain personality traits attributed to message senders related to the presence of different types of paralinguistic cues in the messages. The subjects were 24 undergraduate students who had no experience using computer-based messaging and 24 employees of a telecommunications company who had at least 18 months of experience using computer-based messaging. They completed person-perception ratings of the senders for four types of messages, each containing different types of paralinguistic cues. No other cues about the senders were given. Ratings were made on personality traits such as warmth, intelligence, dominance, competence, self-confidence, verbal fluency, assertiveness, and attractiveness. Overall, senders of messages that contained spelling errors and mistyped words were evaluated more negatively than senders of messages that did not contain additional paralinguistic cues and than senders of messages that contained exclamation marks and ellipses. These studies show that language and paralanguage play a role in impression formation in CMC, particularly in the absence of any other social cues.

Impression development in CMC also depends, in part, on the amount of time participants interact. Hancock and Dunham (2001) studied the breadth and intensity of impression formation of 40 zero-history dyads after a one-time interaction in either a synchronous CMC or face-to-face condition. Participants were asked to rate personality

characteristics of their partners after working together for a short time on a figure-matching task. They were instructed not to reveal information such as name, age, or gender. The results showed that impressions formed by participants in the CMC condition were less broad than those formed by participants in the face-to-face condition, such that participants in the CMC condition made fewer attributions about their partners. In terms of intensity, attributions made by participants in the CMC condition were more extreme than those made by participants interacting face to face. When participants were given limited time for interaction, differences in impression formation between the two contexts were evident.

Longer interaction time may allow for emergence of more similarities in impression formation between CMC and face-to-face contexts. Walther (1993) found that impressions developed more fully as participants exchanged more messages over time. Further, the level of impression development by participants in CMC settings approached that by participants interacting face to face. In this study, undergraduate students worked in groups of three on decision-making tasks over a period of five weeks. They either used asynchronous conferencing or met face to face to communicate. The subjects had not met one another prior to the experiment and were instructed not to meet each other outside of the conference. They were not instructed, however, to refrain from asking questions or socializing as a means of exchanging potentially individuating information. Given a longer time for interaction and no limits on information exchange, it appears that impression formation in CMC can be similar to that in face-to-face communication.

The aforementioned studies allude to the trend that impression formation in CMC develops more fully with longer periods of interaction. Two issues arise when attempting to compare the results of studies on impression formation performed in CMC contexts. The first is the lack of consistency of degree of anonymity allowed. For example, failing to control for social information exchange among participants may allow more individuating information to be available. Indeed, when allowed to exchange information, participants communicating via CMC use uncertainty-reduction strategies, such as questioning and self-disclosure, to a greater extent than participants communicating face to face (Tidwell & Walther, 2002). This information exchange gives others more social cues and can affect impression formation. The second issue is that results may be based on different types of CMC. Participants using asynchronous CMC have more time to compose messages than do participants using synchronous CMC. Consequently, asynchronous users have more opportunity to contemplate how they present themselves and interact, which can influence the impressions they make upon others (Walther, 1992). These issues make it difficult to draw general conclusions about impression formation in CMC from specific studies.

Leader Emergence

Similar to the construct of leadership, leader emergence lacks a consistent definition. For research purposes, leader emergence is operationalized most frequently as the group member(s) who, in initially leaderless groups of two or more, is nominated a leader by other group members, has the most influence on other group members with

regard to decision-making or opinion change, or is rated the highest by group members on quantitative measures of perceived leadership. Research has found that leader emergence is influenced by a variety of factors, such as gender, gender role, intelligence, personality traits, and participation rate. Contextual factors also have been shown to affect leader emergence. Some of these factors include the length of time the group works together, the type of task upon which the group works (i.e., masculine, feminine, or neutral), group composition, and type of group (i.e., natural or laboratory).

Studies of leader emergence typically focus on only one or a few of the factors at a time. For the sake of clarity, I organize this review of the literature on leader emergence into four categories: (1) contextual factors that affect leader emergence; (2) the effect on leader emergence when individual-level factors other than gender and gender role are considered; (3) the effect on leader emergence when both dominance and gender are considered; and, (4) the effect on leader emergence when only gender and gender role are considered.

Contextual Factors

Several contextual factors influence leader emergence. Five such factors have been considered by Moss and Kent (1996) as methodological issues in research on leader emergence. They identify the five issues as: (1) the length of time groups interact prior to assessing emergent leadership; (2) the size and composition of groups; (3) the type of task groups perform; (4) the measurement of emergent leadership; and, (5) the number of leaders allowed to emerge in a given group. Based on a review and critique of existing

empirical research, they argue that research on leader emergence should allow for a lengthy duration of group interaction prior to assessing leader emergence, allow for groups of different numbers and composition to interact naturally, utilize a gender-neutral task, employ multiple measures of leader emergence, and allow for emergence of multiple leaders.

Another factor that influences leader emergence is the type of group in which members participate (i.e., natural or laboratory). For example, a meta-analysis of research on gender and leader emergence showed that the tendency for men to emerge more frequently than women as leaders was greater in laboratory than in natural settings (Eagly & Karau, 1991). Similarly, a meta-analysis of research on the relationship between participation rate and leader emergence showed that the relationship was stronger among real groups than among laboratory groups (Mullen, Salas, & Driskell, 1989). The aforementioned contextual factors are important to keep in mind when considering the methods and results of the literature reviewed in the following sections.

Individual-level Factors other than Gender and Gender Role

Intelligence, personality traits, participation rate, amount of task contributions, and attitude toward leadership are factors that affect leader emergence. A meta-analysis using the technique of validity generalization showed that dominance and intelligence related significantly to leader emergence (Lord, De Vader, & Allinger, 1986). This meta-analysis included 31 independent samples from 24 studies. More recent analyses using meta-analytic techniques found that the Big Five personality traits (neuroticism,

extraversion, openness to experience, agreeableness, and conscientiousness), along with intelligence, related strongly to leader emergence (Ilies, Gerhardt, & Le, 2004; Judge, Bono, Ilies, & Gerhardt, 2002). All of these analyses included studies and results based on different measures of leader emergence, subjects, and task types.

In 1949, Bass was the first to show the correlation between participation rate and leader emergence in initially leaderless groups of students. Students in this study worked on a problem in groups of ten for 30 minutes. A total of six group discussions were studied. Leadership status was measured by the sum of peer nominations for a member on 13 items that reflected leadership. Time a participant spent talking was strongly, positively correlated with leadership status. It is noteworthy that the discussions were considered a course examination on which the students were graded; therefore, students may have been motivated to participate at higher levels.

Since this early study by Bass, many other studies have found a positive relationship between participation rate and leader emergence. Indeed, a meta-analytic review of the literature confirms this relationship (Mullen et al., 1989). This analysis included 25 studies with 33 hypothesis tests, all of which used some general index of verbal participation and measure of leader emergence. The results support those of early studies, in that the group member with the highest level of verbal participation had a strong tendency to emerge as the group leader. This analysis also investigated contextual factors. The findings showed that the relationship between participation rate and leader emergence was stronger among real groups than among laboratory groups, and that the

relationship increased as the proportionate size of the high-participator's subgroup (level of expertise) decreased (or, as subgroup salience increased).

The corroboration of early studies and the more recent meta-analysis confirms that participation rate plays a role in leader emergence. This result is important given that men participate more than women in mixed-gender groups, and that group members with higher status participate more than those with lower status (Carli & Bukatko, 2000; Webster & Driscoll, 1978). It follows that men and higher-status group members are more likely to emerge as leaders based on participation rate.

Although not studied as extensively as other individual-level factors, amount of task-relevant communication and attitude toward leadership relate to leader emergence. Hawkins (1995) and Kolb (1999) studied leader emergence in mixed-sex groups of students working together over time in face-to-face settings. The group task in Hawkins' study was to produce a term paper addressing a question of either policy or value. Group interactions were coded for four types of communication: task-relevant, social-relevant, back-channel (e.g., "go on"), and task-irrelevant. Of the four types, task-relevant communication was the sole predictor of leader emergence. Further, there were no gender differences in the number of task-relevant contributions. Groups in Kolb's study worked for two months on a human-resources task and a business-situation task. Attitude toward leadership, based on a measure comprising five items, was a strong predictor of leader emergence. There were no gender differences in leader emergence, although masculine gender role was a significant predictor.

Few studies have investigated the relationships between individual-level factors and leader emergence in real groups in a computer-mediated context. Research in this area is important considering the proliferation of virtual teamwork in organizations. Miller and Brunner (2008) explored the effects of personality traits and participation rate on leader emergence. They used data from groups of graduate students participating anonymously in an innovative, virtual leadership-preparation process—the process which also serves as the context of the present study. Miller and Brunner’s study was guided by social impact theory.

Social impact is “any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behavior, that occur in an individual . . . as a result of the real, implied, or imagined presence or actions of other individuals” (Latane, 1981, p. 343). According to social impact theory, the level of social impact is determined by the product of the strength, immediacy, and number of people (Latane, 1981).

Miller and Brunner studied social impact at the level of the individual. Participants were graduate students enrolled in a leadership-preparation course. For the first three sessions of the course, participants worked on a task in groups of approximately ten using a synchronous chat medium. Participants were completely anonymous and explicitly instructed to avoid sharing any information that would compromise their anonymity to any degree. Data were collected over the course of three sessions, each of which lasted four to five hours.

In the absence of strength variables that operate in face-to-face interaction, such as gender, race, and voice quality, Miller and Brunner represented strength variables using the personality traits of emotional intensity, sensitivity, assertiveness, and exaggeration, as measured by the Comprehensive Personality Profile. They used two measures of participation rate to represent immediacy variables: total number of contributions a participant made during the first session and total number of words a participant entered during the first session. A variable for number was not considered in the analysis because of the number of group members was fixed. Social impact, the dependent variable, was measured by the number of times a group member was nominated by other members as directive or influential over the course of all three sessions. Although the authors do not explicitly indicate that they are assessing leader emergence, it is arguable that they are doing so by operationalizing social impact using perceptions of directivity or influence.

Miller and Brunner's findings indicated that the personality traits of assertiveness and exaggeration, and the participation rate measures of contribution total and word total significantly predicted social impact. Further, they argue that there likely exists a plateau for assertiveness, contribution total, and word total, as participants who scored in the central ranges of assertiveness and participation produced more social impact than did participants who scored in the higher ranges. Miller and Brunner's study provides evidence regarding the effects of personality traits and participation rate on leader emergence in a CMC setting with a high level of participant anonymity.

Dominance and Gender

Researchers have questioned whether the effect of the personality trait of dominance overrides the effect of gender on leader emergence, and vice versa. Two studies described below investigated this question. Both studies were experimental and used college-aged subjects. Dominance was measured using the California Psychological Inventory dominance scale, a 36-item scale that assesses assertiveness, confidence, and task-orientation (Ritter & Yoder, 2004). Leader emergence was measured by asking members of same-sex or mixed-sex dyads to choose a leader between themselves. Hegstrom and Griffith (1992) found that gender nullified the effects of dominance. Dominance was only a predictor in same-sex dyads; in mixed-sex dyads, males emerged as leaders significantly more frequently than did females, regardless of the dominance levels. Similarly, Ritter and Yoder (2004) found that in 67% of 120 dyads, the dominant member emerged as the leader. In mixed-sex dyads, men emerged as leaders 65% of the time—significantly more than equality. It is unclear, however, whether the dominant member was a man in exactly half of the dyads. Ritter and Yoder also investigated the effect of task type in conjunction with dominance and gender. In mixed-sex dyads, dominant women doing feminine-typed tasks were significantly more likely to emerge as leaders than were dominant women doing either masculine- or neutral-typed tasks.

These studies support the relationship between gender and leader emergence in mixed-sex groups; further, they substantiate that gender overrides the effects of dominance on leader emergence. When considering these results, it is important to recall

the methodological issues in leader emergence research discussed previously. The methodologies of these studies ran contrary to many of Moss and Kent's (1996) recommendations with regard to duration of group interaction, size of groups, number of measures of leader emergence, and number of leaders allowed to emerge. Further, there was no task upon which the dyads worked aside from choosing a leader.

Gender and Gender Role

There is debate in the literature about whether gender or gender role plays a more substantial role in leader emergence. Although confusing and perhaps inappropriate, gender is defined in most research as either the biological sex of male or female, or the socially constructed gender identity of man or woman. Gender roles are "the shared expectations that apply to individuals on the basis of their socially identified sex" (Eagly et al., 2000, p. 127). They are classified as masculine, feminine, androgynous, or undifferentiated according to Bem's (1974) taxonomy. Thus, the construct of gender role is employed in research as a categorical variable. Kolb identifies this practice as a methodological issue and warns that "it should be kept in mind that this treatment of gender scores limits variability in the data and results in individuals who may be very similar in gender orientation being treated in analysis as though they were quite different" (1997, p. 390). In spite of the confines of how they are operationalized, gender and gender role are employed judiciously as variables in research.

The relationship between gender role and leader emergence has been substantiated in the literature. A meta-analysis of the results from 31 independent

samples from 24 studies showed that the gender roles of masculinity and femininity related significantly to leader emergence (Lord et al., 1986). This analysis did not consider the gender roles of androgynous or undifferentiated individuals, and did not specify the specific effects of masculinity and femininity on leader emergence. Further, it did not investigate the relationship between gender and leader emergence.

Other researchers have addressed this gap and found that leader emergence is predicted by gender role but not by gender (Kent & Moss, 1994; Kolb, 1997; Moss & Kent, 1996). Kent and Moss (1994) and Moss and Kent (1996) studied groups working together throughout the semester on gender-neutral tasks. They measured the gender role of undergraduate and MBA students using the Bem Sex Role Inventory (Bem, 1974) and allowed for emergence of more than one leader in each group. Both studies found significant main effects for gender role on all measures of leader emergence. Masculine types were significantly more likely to emerge as leaders than were feminine types on all measures. Further, androgynous types were significantly more likely to emerge as leaders than were feminine types on three of the four measures in the Moss and Kent study.

In terms of gender, Kent and Moss (1994) found that women were slightly more likely to be perceived as leaders than were men, but only when the means were adjusted to account for the percentage of women in the group. They caution the validity of this finding due to unequal distribution of women in the groups, and note that only a small amount of variance in leader emergence was accounted for by gender. Moss and Kent (1996) found no significant main effect for gender. They argue that “gender no longer plays a central role in emergent leadership” (p. 94), although they qualify their assertion

by adding that different results may occur in different contexts (e.g., mixed-gender groups working in a traditionally female context).

Some scholars believe that gender is a more appropriate focus than gender role in the study of leader emergence. With regard to the use of gender role as a variable assessed by the Bem Sex Role Inventory, Karau and Eagly posit that “masculinity and femininity are general measures of self-reported agentic and communal tendencies and include items not directly relevant to leadership” (1999, p. 325). They performed a meta-analysis of 54 studies that compared men and women in mixed-sex groups on one or more measures of leader emergence (Eagly & Karau, 1991). They also considered multiple contextual factors that affect leader emergence discussed earlier. The majority of studies included in the meta-analysis were experimental, used college-aged students as subjects, and did not include gender typing of the task.

Eagly and Karau found that, overall, men emerged more frequently than women on task and unspecified measures of leader emergence, whereas women emerged more frequently than men on social measures of leader emergence. In terms of contextual factors, the tendency for men to emerge: (1) decreased when emergence was assessed after more than 20 minutes of group interaction; (2) was greater with masculine-typed tasks than with feminine-typed tasks, but did not differ from the tendency to emerge with neutral-typed tasks; (3) was greater in groups with equal gender representation than in groups without balanced representation; (4) was greater in laboratory than in natural settings; and, (5) was greater for tasks lower in social complexity. With regard to these findings, Carli and Eagly (1999) posit:

[The tendency for men to emerge as leaders] should not be interpreted as a biased tendency to choose men over women, despite behavioral equivalence of the sexes. Instead, the preference for men may primarily reflect a tendency to define leadership in terms of strictly task-oriented contributions, which men deliver somewhat more than women do, at least in part because of resistance to high levels of task-oriented contributions from women. (p. 219)

Studies that have been conducted since Eagly and Karau's 1991 meta-analysis also have found that gender is an important factor in leader emergence, and support the findings that men tend to emerge as leaders more frequently than do women (Karau & Eagly, 1999; Ritter & Yoder, 2004; Walker et al., 1996).

Few studies have investigated the effects of gender on leader emergence in real teams of individuals beyond college-age and over an extended period of time. Neubert and Taggar (2004) studied teams comprised of employees working on production and assembly tasks in a manufacturing organization. They studied 18 teams with a mean size of 12 members and mean member age of 44 years. Females comprised 67% of the sample. The duration of time teams worked together ranged from six weeks to five years, with a mean slightly greater than three years. Using peer nomination as a measure of leader emergence, Neubert and Taggar found that gender moderated the relationship between certain individual characteristics and informal leader emergence. Specifically, a high level of conscientiousness, emotional stability, and team member network centrality predicted leader emergence more for men than for women; and, a high level of general

mental ability predicted leader emergence more for women than for men. What is significant about these results as related to the present study is not as much the finding that gender moderated the effects of individual characteristics on leader emergence, but that gender affected leader emergence in real teams working together for an average duration of over three years.

With a few exceptions, the research reviewed above was conducted on laboratory groups and in face-to-face settings. Given the rising use of CMC for group work in many organizations, it is important to consider the relationship between gender and leader emergence in real groups in the computer-mediated context. One study thus far has investigated this relationship. Sarker and colleagues (2002) studied eight virtual teams of four to five students from both a university in the United States and one in Norway. The subjects worked in mixed groups (across institutions) throughout the semester on a task that involved developing application systems to solve business problems. Leader emergence was assessed at the initial stage and again toward the end of the project, showing consideration for the effect of time. Leader emergence was measured by a leadership index, or the ratio of the number of times a member was named group leader and the total number of group members who voted. The results showed that males emerged as leaders more than did females in the initial stages of the project, but gender did not play a significant role in leader emergence in the later stages of the project. The authors posit that women may emerge more as leaders over time due to their social leadership abilities, and that group members may pay less attention to gender (and other

characteristics that are not visible in CMC) as they become more focused on task productivity.

Conclusion

In this chapter, I reviewed important theoretical concepts and empirical findings relevant to the relationship between gender identity and leader emergence in both face-to-face and computer-mediated contexts. The results of this review provide a framework from which to launch further study. In the next chapter, I describe the conceptual framework and methodology of a study designed to investigate further the relationship between gender and leader emergence in a CMC context.

Chapter 3

Conceptual Framework and Methodology

The background and literature review I presented in Chapters 1 and 2 indicate a need for additional field research on the relationship between gender identity and leader emergence in computer-mediated communication (CMC) contexts. This is particularly true given the propensity for women to be underrepresented in top leadership positions and the growing use of virtual teams in organizational settings. In this chapter, I describe the conceptual framework, research questions, and research design of this study.

Conceptual Framework and Research Questions

The purpose of this study is to examine the relationship between perceptions of gender and perceptions of leadership in the context of computer-mediated interaction. Computer-mediated interaction can take many forms. In this study, participants interacted with one another solely using text-based communication, by typing their thoughts via computer into a shared chat space. Participants also were able to interact synchronously within the chat space. Synchronous communication allows two or more people to exchange dialogue at or around the same time, as is the case with face-to-face conversation. Participants used the type of computer-mediated communication described to work anonymously in groups on a decision-making task. The central research question of the present study is: *What effect do gendered visual cues have on perceptions of leader emergence in a computer-mediated, leadership-preparation process in which*

participants work anonymously in groups? The framework within which I investigated this central question comprises four related research questions (Table 1). In this section, I present each research question and discuss its conceptual grounding.

Research Question 1 relates to the role that text-based communication plays in perceptions of leader emergence. The question is designed to reveal why certain participants in this study were perceived as leaders when the only factor available on which to base perceptions was how they interacted with the group using text-based communication. The findings related to this question help to establish an understanding of perceptions of leader emergence when physical characteristics of participants are unknown to the group. The results also serve as a basis for comparison for future research questions in this study.

Broadly speaking, Research Question 1 is grounded in the wealth of literature that concludes that certain aspects of communication influence perceptions. Specifically, task-relevant content and participation rate relate to perceptions of leader emergence (Hawkins, 1995; Miller & Brunner, 2008; Mullen et al., 1989), and language choices are used in impression development when non-verbal cues are lacking (Burgoon & Miller, 1987). Research Question 1 is: *What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are unknown?*

Research Question 2 and Research Question 3 relate to perceptions of leadership based on physical identity. They are designed to explore the role that physical characteristics of a participant play in perceptions of that participant *looking* like a leader

Table 1: Research Questions

Central Research Question:

What effect do gendered visual cues have on perceptions of leader emergence in a computer-mediated, leadership-preparation process in which participants work anonymously in groups?

Research Question 1:

What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are unknown?

Research Question 2:

What effect do the physical characteristics of an individual have on other people's perceptions of that individual as looking leader-like?

Research Question 3:

What effect do the physical characteristics of an individual have on other people's perceptions of that individual as an emerging leader?

Research Question 4:

What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are known?

or *being* a leader. Further, they are designed to reveal which specific aspects of physical identity, if any, are involved in the construction of leadership perceptions.

Research Question 2 and Research Question 3 share a conceptual grounding. Gender identity, the characteristic that is the focus of this study, is arguably the most salient aspect of physical appearance. It is prominent in person perception, categorization, and stereotyping (Fiske et al., 1991; Kunda & Thagard, 1996; Ridgeway, 2001; Stangor et al., 1992). Gender stereotypes may influence perceptions of leadership because people are likely to process information automatically and unintentionally in terms of gender category rather than leadership category (Baumgardner, Lord, & Maher, 1993). According to expectation states theory, gender functions as a status characteristic, such that in mixed-gender groups and absent other discriminating information, men are expected to be more leader-like than women (Berger et al., 1966).

Further, people develop implicit leadership theories, or “personal assumptions about the characteristics and abilities needed for successful leadership” (Nye & Forsyth, 1991, p. 361). These assumptions are based on prototypical concepts of leaders that people develop through experience and serve as a basis for future categorization of people as potential leaders (Rosch, 1978; Lord & Maher, 1993). Most people’s vision of a prototypical leader implicitly includes the gender characteristic of being a man, given that leadership traditionally has been conceptualized in masculine terms and that people have had more experience with men than women as leaders (Lord et al., 1986; Nye & Forsyth, 1991; Rosener, 1995). Research Question 2 is: *What effect do the physical characteristics of an individual have on other people’s perceptions of that individual as*

looking leader-like? Research Question 3 is: *What effect do the physical characteristics of an individual have on other people's perceptions of that individual as an emerging leader?*

One important difference between Research Question 2 and Research Question 3 is the basis upon which leadership perceptions are made. Without going into detail about research design, which I address in the next section, leadership perceptions as measured for Research Question 2 are based solely on physical appearance, and as measured for Research Question 3 are based on both physical appearance and text-based communication. Research Question 4 is necessary in order to distinguish the effect of physical characteristics from that of text-based communication on leadership perceptions in the results of Research Question 3. As such, Research Question 4 is designed to determine the extent to which knowledge of physical identity overshadows the effect of text-based communication on perceptions of leader emergence. Research Question 4 is: *What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are known?*

The central research question of this study concerns the relationship between perceptions of gender and perceptions of leader emergence in a computer-mediated context. When taken together, the findings of the four research questions described above inform the central research question. Specifically, the results will help elucidate the effects of text-based communication and gendered visual cues on perceptions of leader emergence in real groups working on a decision-making task in a virtual environment.

Methodology and Analytical Framework

I employed a mixed-methods design, which entailed analyzing both quantitative and qualitative data. This approach was beneficial in that it allowed me to achieve triangulation by converging findings from quantitative and qualitative data sources, to explore in greater detail the meaning underlying the quantitative findings, and to remain open to new ways of thinking about the matter at hand (Miles & Huberman, 1994). This study was approved by the University of Minnesota Institutional Review Board (see Appendix A). In this section, I provide details about the sample and data collection, an assumption check, measures and variables, and data analysis.

Sample and Data Collection

The quantitative and qualitative data I used for this study were collected concurrently from 2002 to 2006 and represent only a portion of a larger data set. I used data from a group of 149 student participants—the vast majority of whom were graduate students—who were enrolled in one of two innovative, virtual leadership-preparation courses. The courses focused on the relationship between power, identity, and leadership using Experiential Simulations[®], a partially online leadership-preparation process developed and copyrighted by Professor C. Cryss Brunner at the University of Minnesota. A brief description of the process follows:

Using standard online course development tools—website, chat room, threaded discussion, and video and audio clips—an instructional plan was developed in which course participants, first with real identities masked

and later altered completely, met online for the first third of the course to collaborate on an assigned decision-making task...Participants' interactions occur in carefully designed leadership/policy forming situations, intended to illustrate how perceptions and understandings of others' identity shape the way leaders enhance or restrict others' participation in decision making. At the same time, through private communication with the instructor, course participants reflect on questions posed related to identity (gender, race, class, etc.) constructs, power conceptions, and the decision-making processes at play with the group. (Brunner, Hammel, & Miller, 2003, p. 75)

The two courses were conducted in the same way with regard to the online sessions, but differed in gender composition and content focus. For the course Women in Leadership, all of the participants were women with the exception of one man. For the course The School Superintendent, the gender of the participants was approximately evenly split between women and men. The required readings and the focus of the group task was varied somewhat to fit the focus of the particular course, as indicated by the course title. The *point* of the task for both courses, however, was for participants to engage in a group decision-making process within which the dynamics of power and identity were enacted.

A prerequisite for the course was that participants remain completely anonymous to one another until a specific time identified by the instructor. At the time the participants enrolled in the course, they were instructed to refrain from speaking about

the course to other students or attempting to identify other enrollees. Prior to the first class session, participants had not met face to face and did not have clues to the identities of other participants. Participants signed informed consent forms and were aware that presented identity would shift during the course.

The virtual component of the Experiential Simulations[®] process comprised the first three class sessions, which lasted four to five hours each. I focus on the first two sessions, as they served as the basis for the data collection for this study. During these sessions, each participant worked from a different, self-chosen, and undisclosed location. For example, a participant may have worked from an office, a coffee shop, or a home. Participants logged into a virtual chat space and used only synchronous, text-based communication to work as a group on a given decision-making task. They were identified in the chat space alpha-numerically; for example, Student10.

Participants were instructed numerous times to avoid identifying themselves in any way during the sessions. Further, they were given no clues as to identifying characteristics of group members such as gender, race, age, education level, or professional position. While the chat space was monitored by researchers to ensure compliance with the expectation that participants not divulge identifying information, the actual anonymity achieved was not absolute. For example, participants may have inadvertently disclosed identifying information during the interaction; information such as gender, racial minority status, or professional position. This extent of anonymity was of particular importance to this study because influence based on gender often is confounded by position power (Eagly, 1983).

Between the first and second sessions, participants were given access to electronic photographs of the participants in their group. Unbeknownst to the participants, however, the photographs were not accurate representations of the members of their group (with the exception of their own photograph), but were photographs of people who were not members of their group. These modified-persona photographs represented participants with one or more physical qualities (e.g., gender, race, age) randomly assigned to each participant. Physical qualities were assigned to the modified-personas such that the gender and racial/ethnic composition of each group would be believable with regard to the course type. In essence, participants' *true* identities continued to be masked to all other participants. Prior to the second session, participants were instructed to avoid discussing the photographs or identifying themselves in any way while engaging in the second session; however, participants were asked to place a copy of the modified-persona photographs adjacent to their computers so that they could refer to them visually during the second session.

The data for this study came from transcripts of chats, threaded discussions between participants and the course instructor, and an initial on-line interview—all of which were archived using an online course-management system. Specifically, I used data from three sets of reflective questions posed by the instructor, to which participants responded after the first session (prior to viewing the photographs), prior to the second session (after viewing the photographs) and after the second session. The questions were constructed to encourage participants to reflect on issues of power and identity in relation to the group decision-making process.

Assumption Check

A foundational assumption of this study is that the participants in the leadership-preparation process were completely anonymous to one another during the first online session of the process. I was particularly concerned with anonymity of gender identity in this study. Although extensive measures were taken to ensure that participants remained completely anonymous to one another throughout the session, text language had to be used as a means for participants to communicate. Research shows that gender differences in language are readily apparent in computer-mediated communication, and that gender status can be predicted from electronic discourse absent other identifying factors (Savicki et al., 1996; Thomson & Murachver, 2001). As such, it was essential to test the assumption of complete anonymity by examining the effect of the potentially gendered language on the ability of participants to identify correctly the gender of other participants. The question I asked in order to check the assumption of anonymity was: *To what extent do discussions about leadership reveal the gender of the author?*

Measures, Variables, and Analyses

I chose specific questions from the sets of reflective questions that participants answered during the virtual portion of the course and from a questionnaire that participants completed prior to the course to perform the assumption check and to answer the four research questions. In this section, I present and explain the measures, variables,

and analyses I used to perform the assumption check and to investigate each research question.

Assumption check: To what extent do discussions about leadership reveal the gender of the author?

To test the assumption that participants were completely anonymous with regard to gender identity during the first session, I compared participants' assumptions of the gender of other group members to the gender self-reported by those members. I measured assumptions of gender by responses to the question asked after the first session: "Have you imagined how others in the group look, who they might be, what they might do in life? If so, what do you imagine? (Use the transcript to help answer this question. Refer to individual IDs when you describe others.)" Responses must have been based solely on the text-based communication used by group members during group task work, as extensive measures were taken prior to and during the session in order to ensure full anonymity otherwise.

Due to the nature of the question, some participants received assumptions of their gender and others did not. As such, I analyzed the data in two different ways: per-assumption and per-participant. For the per-assumption analysis, I compared each assumption of gender for a given participant to that participant's self-reported gender. Other-assumed gender served as the dependent variable, and self-reported gender (as reported on a questionnaire that participants completed prior to beginning the course) as the independent variable for this analysis. I assigned both of these dichotomous variables

the value of zero for woman and one for man. I used descriptive statistics and Chi-squared analyses to determine, based on all assumptions made: (1) the extent to which assumptions of gender were accurate; (2) the extent to which the accuracy of assumptions differed by gender of the participants for whom assumptions were made; and, (3) the relationship between accuracy of assumptions and course type.

As I desired to determine the extent to which assumptions of gender were accurate for each participant, I performed a second analysis on a per-participant basis. For this analysis, I created a dichotomous variable that served to indicate whether or not each participant's gender was perceived correctly overall. For a given participant, this variable had a value of one if 50% or more of the assumptions made by group members about that participant's gender were incorrect (indicating a mismatch between other-assumed gender and self-reported gender); otherwise it had a value of zero. For participants who did not receive any assumptions of their gender, the value was assigned as missing. I used descriptive statistics and Chi-squared analyses to investigate the same three questions as described above, but on a per-participant basis.

I performed this assumption check to determine the extent to which participants were able to identify correctly the gender of other participants through text-based communication. My concern was that if correct gender identification occurred at a significant level, then not only would the high degree of participant anonymity be called into question, but other-assumed gender may have affected the independent and dependent variables in the remainder of the study.

RQ1: What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are unknown?

To explore Research Question 1, I analyzed the reasons participants gave after session one as to why they perceived certain group members as being leaders. I operationalized leader emergence with the constructs of perceived directivity and perceived influence. Leadership is traditionally defined in terms of an individual's ability to influence, or have an effect on, others to achieve a common goal (Northouse, 2004). Directivity is associated with leadership in that it is a style in which the leader "decides and announces his [*sic*] decision without consulting subordinates beforehand" or "may manipulate, sell, persuade, negotiate, or bargain in lieu of giving orders" (Bass, 1990, p. 437).

Undoubtedly, this approach to defining leadership reflects a traditional, "power-over" conception of leadership (Clegg, 1989; Hartsock, 1974), and does not attend to the conception of leadership as collaborative, or "power-with" (Follett, 1942; Sarason, 1990). Although the pre-established measures of leader emergence that I used for this study limited the conception of leadership to a more traditional sense, it was clear from the data that participants integrated both power-over and power-with conceptions of leadership in their reasons for nominations. Further, at no time were the constructs of *directive* and *influential* pre-defined for the participants; thus, they based their responses on their own interpretations of these terms.

The specific questions I used as measures of leader emergence were, “Which person or persons in the group seems to be the most directive? Support your conclusions,” and “Which person or persons in the group seems to be the most influential? To the positive? To the negative? Support your conclusions.” Participants were asked these questions after the first online session. They did not have cues to any aspects of identity of other group members during the first session, and thus their responses had to be based solely on the text-based communication used during group task work.

A simple count of nominations of who was perceived as being directive or influential would have done little to elucidate what it was about the text-based communication that influenced perceptions of leader emergence. To address this issue, I analyzed the qualitative portion of the responses, derived from the “support your conclusions” aspect of the questions. It was not the the aim of this study to perform in-depth language analysis to relate perceptions of leadership to particular nuances of language and communication used by participants, but rather to identify the factors that contributed to perceptions of leader emergence when no physically identifying characteristics were available.

To this end, I employed the constant comparative method of data analysis (Glaser & Strauss, 1967), as it is well-suited for the concept-building nature of qualitative research. I included in the analysis only responses associated with a clear nomination of a group member(s) as being directive or as being influential. I grounded the coding in the data first by coding to identify common themes that emerged from the responses, and

then by coding to create categories comprising similar themes. Although it would have been optimal to perform member checks to verify the accuracy of my interpretations of the data, it was not realistic due to the length of time that had passed since participants responded to the questions. Further, the data were derived from the direct written responses of participants and had not been transcribed by another party, which eliminated the risk of inaccurate reconstruction of responses. This qualitative analysis helped to reveal the relationship between aspects of text-based communication and perceptions of leader emergence in the absence of identifying cues.

Trustworthiness of the qualitative data was established through the constant comparative method for analysis. I did not assign categories or themes *a priori*; rather, I allowed them to emerge from the data. The categories and themes that emerged provided coverage as well as conceptual distinctions; they well represented the content of the narrative.

RQ2: What effect do the physical characteristics of an individual have on other people's perceptions of that individual as looking leader-like?

Identifying information relative to physical characteristics was made available to participants prior to the second online session, at which time they were given access to a set of modified-persona photographs of other participants. To address Research Question 2, I assessed the effects of certain physical characteristics portrayed by the modified-persona photographs on two measures of perceptions of looking leader-like. Indeed, "one of the most fundamental principles of person perception is that people often form their

first impressions of others on the basis of their immediately apparent features, such as social category memberships . . . and physical appearance” (Stangor et al., 1992, p. 207); further, stereotypes associated with certain social categories function to inform initial perceptions of the inexplicit qualities of individuals. Leadership ability is one such inexplicit quality.

The characteristics of the modified-persona photographs that I included in the analysis were perceived gender, race, age, clothing, facial expression, and weight. Gender, race, and age are aspects of physical appearance that are highly utilized for categorization and stereotyping (Baumgardner et al., 1993; Stangor et al., 1992). A preliminary review of the reasons participants gave as to why they nominated certain group members as looking directive or influential (described in detail later) led me to include the characteristics of clothing and facial expression. I included weight because it is a characteristic for which people hold stereotypes and biases related to ability to be professionally successful (Larkin & Pines, 1979).

I took four steps to determine what the participants viewing the photographs likely would perceive as the identities of the modified-personas, and thus to determine the values for the perceived characteristic variables that I used throughout this study. First, I studied the modified-persona photographs and for each one I assigned each of the aforementioned characteristics a categorical value (e.g., age is young, expression is serious) based on my own conceptions and perceptions. Second, based on the categories into which my perceptions clustered, I constructed dichotomous variables to represent the physical characteristics of perceived gender, perceived race, perceived clothing, and

perceived weight. I coded perceived gender as zero for woman and one for man, perceived race as zero for white and one for person of color, perceived clothing as zero for neutral and one for business, and perceived weight as zero for average and one for heavy. I constructed a discrete variable to represent the physical characteristic of perceived age and coded it into three categories: young, medium, and old. I constructed another discrete variable to represent perceived facial expression and coded it into three categories: neutral, smile, and serious. Third, I had two other coders perform the same categorization exercise independently, but using the pre-determined categories and values that I had established based on my own perceptions. For example, after studying a photograph, a coder would record a value of one for the characteristic of age if that coder perceived the individual represented in the photograph to be young.

Finally, I assigned each characteristic of each modified-persona photograph a value based upon the majority rule of the three perceptions. For example, if two out of the three coders perceived that a given photograph portrayed an individual as older in age, I assigned that photograph a value of two for the variable of perceived age. Perceptions were agreed upon by at least two of the three coders for all of the characteristics of each of the modified-persona photographs. Under no circumstance were there three different perceptions of a given characteristic, and thus there was no requirement for further discussion nor for a fourth coder to offer perceptions to break a tie. This process allowed me to establish the perceived identity of each modified-persona photograph based on the perceptions of three people who did not participate in the study. The results of this process are compiled in Table 2.

Table 2: Frequency of Perceived Characteristics of Individuals Portrayed in Modified-persona Photographs ($N = 149$)

Perceived characteristic	No. (%)
Gender	
Woman	101 (68)
Man	48 (32)
Race/ethnicity	
White	96 (64)
Of color	53 (36)
Age	
Medium	90 (60)
Young	42 (28)
Old	17 (11)
Clothing	
Neutral	109 (73)
Business	40 (27)
Facial expression	
Neutral	72 (48)
Smiling	47 (32)
Serious	30 (20)
Weight	
Average	125 (84)
Heavy	24 (26)

Nominations based on participant perceptions of which group members (as portrayed by modified-personas) looked leader-like served as measures of the dependent variables in this study. I used responses to two questions participants answered after viewing the photographs but prior to the second session: “Which person or persons in the group LOOKS the most directive? Support your conclusion,” and “Which person or persons in the group LOOKS most influential? To the positive? To the negative? Support your conclusion.” The responses to these two questions yielded two dependent variables. The first dependent variable was the proportion of nominations a participant (modified-persona) received for looking directive (i.e., the number of nominations a participant received for looking directive divided by the total number of nominations made for looking directive in the given group), and the second was the proportion of nominations a participant (modified-persona) received for looking influential (i.e., the number of nominations a participant received for looking influential divided by the total number of nominations made for looking influential in the given group). I did not discriminate between nominations of influential to the positive and influential to the negative, as positive and negative are both forms of influence. Further, I did not include self-nominations for looking directive or for looking influential, as each individual participant saw her or his actual photograph among a group of modified-personas.

I included a control variable for course type in this analysis. As I mentioned earlier, the data I used were from participants in two different types of courses. Given that the courses had substantially different gender compositions, it was possible that course type may have affected the relationships between the independent and dependent

variables in this analysis. I assigned the course type variable a value of zero for participants in the Women in Leadership course type and a value of one for participants in the The School Superintendent course type.

I constructed a Pearson correlation matrix to expose the intercorrelations between all of the variables. To further determine the relationship of each independent variable to each of the two dependent variables, I performed preliminary one-way analysis-of-variance tests. I then performed two regression analyses to determine the effect of the perceived physical characteristics on perceptions of looking leader-like. I regressed the proportion of nominations for looking directive on the independent variables of perceived gender, race, age, clothing, facial expression, and weight, and on the control variable course type to determine the extent to which the physical characteristics of an individual affected other group members' perceptions of that individual as looking directive. Similarly, I regressed the proportion of nominations for looking influential on the same independent variables and control variable to determine the extent to which the physical characteristics of an individual affected other group members' perceptions of that individual as looking influential.

I also tested regression models that included independent variables that represented proportion of nominations for being directive after session one and proportion of nominations for being influential after session one. I chose to test these models to determine the extent to which initial impressions of who *was* directive or influential after one session of text-based communication under highly anonymous conditions affected perceptions of who *looked* directive or influential—despite

participants' being instructed to base their perceptions on the modified-persona photographs alone.

To provide additional insight for interpreting the regression results, I performed a qualitative analysis of the responses to the "support your conclusion" portion of the questions regarding nominations for looking directive and for looking influential. I carried out the analysis using the constant comparative method, the details of which I explained earlier for the analysis of Research Question 1.

RQ3: What effect do the physical characteristics of an individual have on other people's perceptions of that individual as an emerging leader?

For Research Question 3, I investigated the effects of physical characteristics on perceptions of *being* a leader rather than on perceptions of *looking like* a leader. To answer this question, I examined the relationship between the perceived physical characteristics of the modified-persona photographs described earlier (gender, race, age, clothing, facial expression, and weight), and two measures of perceptions of leader emergence. In order to isolate the effects of the physical characteristics on perceptions of leader emergence, I compared perceptions of leader emergence after session one, during which only text-based communication cues were available, to perceptions of leader emergence after session two, during which both text-based communication and physical-identity cues (via modified-persona photographs) were available.

I drew the data for this analysis from three questions asked of participants. Two of the questions were asked after session one and represent the quantitative portion of the

questions I used to address Research Question 1. They were: “Which person or persons in the group seems to be the most directive? Support your conclusions” (Question 9), and “Which person or persons in the group seems to be the most influential? To the positive? To the negative? Support your conclusion” (Question 10). The third question, asked after session two, was: “Review the transcript from Session Two. Match the [modified-persona] photos with the written text in the transcript. List the IDs of the people whom you think are the most influential (to the negative and to the positive), the most directive. Refer to your answers to the ninth and tenth questions in Questions Set #1. Have you changed your answer or answers? Why or why not?” The reference to the ninth and tenth questions in Questions Set #1 is a reference to the aforementioned two questions that I used in this analysis.

As with the analysis of Research Question 2, the physical-characteristic variables of perceived gender, race, age, clothing, facial expression, and weight of the modified-persona photographs functioned as independent variables and course type functioned as a control variable. The values assigned to these variables were the same as for Research Question 2. In addition, I included self-reported gender as an independent variable in this analysis, as it could have affected the results even though it is technically unknown to the other participants. I treated self-reported gender as a dichotomous variable and assigned it the value zero for woman and one for man.

I operationalized the dependent variables using two measures of perceptions of leader emergence. The first measure was the change in the proportion of nominations a participant received for being perceived as directive from after the first session to after

the second session. The second measure was the change in the proportion of nominations a participant received for being perceived as influential from after the first session to after the second session. For the analyses, I treated these two dependent variables as continuous variables on a decimal basis. To help explain the results, I also constructed and analyzed dichotomous variables that reflected only the direction of change in perceptions from after session one to after session two (i.e., increase or decrease in the proportion of nominations).

I constructed a Pearson correlation matrix to expose the intercorrelations between all of the variables. I performed preliminary one-way analyses-of-variance to determine the relationship between each independent variable and the two dependent variables (as continuous). I then performed two regression analyses to determine the extent to which the perceived physical characteristics affected perceptions of leader emergence. First, I regressed the change in the proportion of nominations a participant received for being perceived as directive from after session one to after session two on the independent variables of perceived gender, race, age, clothing, facial expression, and weight, and on self-reported gender and the control variable course type. Second, I regressed the change in the proportion of nominations a participant received for being perceived as influential from after session one to after session two on the same independent and control variables. I also tested these same two regression models with the addition of independent variables to represent proportion of nominations for looking directive and proportion of nominations for looking influential. I chose to add these independent variables as a check of the extent to which the introduction of the modified-persona photographs and

perceptions of *looking* directive or influential affected changes in perceptions of *being* directive or influential between the two sessions.

As I noted previously, I also constructed dichotomous dependent variables to represent only the direction of the change in proportions of nominations. I did so in order to provide more insight into the nature of the change in perceptions of being directive and of being influential between sessions. I assigned values to these four new variables such that, for a given participant, if the proportion of nominations for being directive increased from session one to session two, the variable for an increase in perceived directivity received a value of one for yes, otherwise it received a value of zero for no. If the proportion of nominations for being directive decreased between the two sessions, the variable for a decrease in perceived directivity received a value of one for yes, otherwise it received a value of zero for no. The same value assignment was done for changes in proportions of nominations for being influential between the two sessions.

I carried out logistic regressions using the four dichotomous, dependent variables that represented a shift up or down in perceptions of being directive and of being influential. I included the same independent variables in these logistic regressions as I described above for the linear regressions with the dependent variables as continuous. As with the previous analyses, I also tested the logistic regression models including variables to represent proportion of nominations for looking directive and proportion of nominations for looking influential.

RQ4: What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are known?

This final research question proved necessary because a quantitative change in perceptions of leader emergence, as explored for Research Question 3, was not sufficient to explain the extent to which physical characteristics were responsible for a perceptual shift. To help elucidate the role that physical characteristics and perceptions of looking leader-like played in perceptions of directivity and influence, I performed a qualitative analysis of the reasons participants gave in support of their nominations for certain group members as being directive or influential after session two. I then compared the findings of the analysis to those from Research Question 1. Recall, the questions asked of participants after session one were: "Which person or persons in the group seems to be the most directive? Support your conclusions," and "Which person or persons in the group seems to be the most influential? To the positive? To the negative? Support your conclusions." The question asked of participants after session two was: "Review the transcript from Session Two. Match the [modified-persona] photos with the written text in the transcript. List the IDs of the people whom you think are the most influential (to the negative and to the positive), the most directive. Refer to your answers in the ninth and tenth questions in Question Set #1. Have you changed your answer or answers? Why or why not?"

For this analysis, I focused on the changes—from after session one to after session two—in themes and categories that emerged from participants' responses as to

why they nominated other participants as directive or influential, and on why they did or did not change their responses. I carried out the analysis using the constant comparative method, the details of which I explained earlier for the analysis of Research Question 1. This qualitative analysis provided clarity as to the role that physical characteristics and perceptions of looking directive or influential played in the change, or lack of thereof, in perceptions of being directive or influential.

Subsequent Steps

The Experiential Simulations[®] leadership-preparation process is a semester-long process. The first three sessions are conducted in a virtual environment, and the subsequent five to six sessions are conducted face to face in a classroom setting. The data for the present study were drawn from the first two online sessions, during which participants were portrayed to their groups with modified-persona photographs. Mid-way through the third online session, participants' real photographs were exposed to the group and participants were made aware that they had been portrayed with modified identities during the previous sessions. After the real photographs were revealed, participants were given time to debrief with one another in the chat space with regard to their reactions to learning the true physical identities of other group members, to learning of the physical characteristics of the modified identities with which they were portrayed, and to being deceived. Participants also answered a set of reflective questions after the third session that addressed their reactions to the exposure of identities and deception. Further debriefing and discussion related to the online sessions occurred during the first face-to-face meeting.

Data Analysis

The data for this study initially were stored in multiple Microsoft Word and Microsoft Excel files. I organized the qualitative data into separate Microsoft Word files according to question number, and manually performed the coding procedure I outlined earlier using the features of Microsoft Word software. I organized the quantitative data into a single data set in the statistical program Statistical Package for the Social Sciences (SPSS) version 13.0. I used SPSS to generate descriptive statistics and to perform the correlation, analyses-of-variance, and regression analyses I outlined earlier.

Chapter 4

Analysis

This study's central research question relates to the effects of gendered visual cues on perceptions of leader emergence in a computer-mediated leadership-preparation process. In this chapter, I present the descriptive and analytical results of the analyses I conducted to address this central research question. First, I describe the characteristics of the study participants and the composition of each of the groups. I then report the findings of the assumption check. Finally, I present the results of the quantitative and qualitative analyses organized by research question.

Participant and Group Characteristics

Of the 149 participants in this study, about three-quarters self-reported as women and 83% self-reported as Caucasian/white. Of the 81 participants in the The School Superintendent course type, just over half self-reported as women and about two-thirds self-reported as Caucasian/white. Of the 68 participants in the Women in Leadership course type, 99% self-reported as women and 84% self-reported as Caucasian/white (note that only one participant in the Women in Leadership course type self-reported as a man). The reported ages of the participants ranged from 21 to 60 years, with a mean of 39 years. The mean age of participants in the The School Superintendent course type was 43 years, and in the Women in Leadership course type was 35 years. I studied 15 groups (course sections), eight of the The School Superintendent course type and seven of the Women in

Leadership course type. The size of the groups ranged from 5 to 15 participants, with a mean size of 11 participants. Group size and gender and racial/ethnic composition are shown in Table 3.

Assumption Check

The assumption check was designed to determine the extent to which text-based discussions about leadership revealed the gender of the author. Given that an essential component of session one was that participants remained highly anonymous to one another throughout the session, I was concerned with the extent to which participants' gender was identifiable by other participants. My concern is grounded in the literature that shows that gender differences in language and communication style are perceptible in computer-mediated communication (CMC), such that gender status can be predicted from electronic discourse in the absence of identifying factors conveyed through physical presence (Savicki et al., 1996; Thomson & Murachver, 2001). To address this concern, and the assumption that participants were, indeed, highly anonymous to one another during the session, I examined the relationship between participants' self-reported gender and assumptions of gender made by other participants.

I measured assumptions of gender by responses to the question asked after session one: "Have you imagined how others in the group look, who they might be, what they might do in life? If so, what do you imagine? (Use the transcript to help answer this question. Refer to individual IDs when you describe others)." I included in the analyses responses that clearly linked an assumed gender to a given group member, for example,

Table 3: Number, Reported Gender, and Reported Race/Ethnicity of Participants by Group and Course Type

Group	<i>N</i>	Gender (W:M)	Race/ethnicity (White:Of Color)
The School Superintendent-1	15	9:6	13:2
The School Superintendent-2	12	6:6	10:2
The School Superintendent-3	11	7:4	9:2
The School Superintendent-4	9	3:6	7:2
The School Superintendent-5	8	4:4	7:1
The School Superintendent-6	7	3:4	5:2
The School Superintendent-7	10	4:6	9:1
The School Superintendent-8	9	6:3	7:2
Subtotal	81	42:39	67:14
Women in Leadership-1	13	13:0	9:4
Women in Leadership-2	12	12:0	11:1
Women in Leadership-3	10	10:0	9:1
Women in Leadership-4	8	8:0	8:0
Women in Leadership-5	7	7:0	6:1
Women in Leadership-6	5	4:1	3:2
Women in Leadership-7	13	13:0	11:2
Subtotal	68	67:1	57:11
Total	149	109:40	124:25

“I picture 7 as a 30ish male” (AG-001; woman)²; responses that indicated a general assumption of gender for all members of a group, for example, “I figured every person in there was a woman” (AG-034; woman); and, the few responses that signified an assumption of gender based on the use of personal pronouns, for example, “I loosely assume that she is a person of color” (AG-047; man). This decision rule resulted in participants having as few as zero or as many as six assumptions made about their gender.

As I discussed in detail in the Method section of Chapter 3, due to the nature of the data, I performed two sets of analyses to test the assumption of participant anonymity. I conducted the first set of analyses on a per-assumption basis, or considering all assumptions made individually. Many participants received multiple assumptions of gender, all from different group members, but not all participants offered an assumption of gender for each member of their group. Of the resultant 223 assumptions of gender, about two-thirds were correct. When analyzed by course type, the results were more extreme. For the The School Superintendent course type, just over half of the assumptions made were correct; for the Women in Leadership course type, almost 90% of the assumptions made were correct. Chi-squared tests revealed a statistically significant relationship between other-assumed gender and reported gender when the data were examined in aggregate (Table 4), but no relationship between other-assumed gender and reported gender for The School Superintendent course type (Table 5). Descriptive statistics for accuracy of assumptions for the Women in Leadership course type are

² To protect participants’ anonymity, numerical references to individual participants are codes I assigned randomly for this study; they do not reflect the actual alphanumeric identifiers participants were assigned during the course.

Table 4: Accuracy (Per Assumption) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: Overall

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	185	146 (79)	39 (21)	100
Men	38	20 (53)	18 (47)	100
Total	223	166 (74)	57 (26)	100

$\chi^2 = 16.13, p < .001.$

Table 5: Accuracy (Per Assumption) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: The School Superintendent Course Type

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	49	26 (53)	23 (47)	100
Men	36	20 (56)	16 (44)	100
Total	85	46 (54)	39 (46)	100

$\chi^2 = 0.62, p > .05.$

Table 6: Accuracy (Per Assumption) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: Women in Leadership Course Type

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	136	120 (88)	16 (12)	100
Men	2	0 (0)	2 (100)	100
Total	85	46 (54)	39 (46)	100

Note. Chi-squared analysis not performed due to low *N* for self-reported gender category of men.

shown in Table 6; however, a Chi-squared analysis for this course type was not performed due to the fact that there was only one participant who self-reported as a man.

Overall and for each course type, women were more often mistaken as men than were men as women. Overall, women were mistaken as men 86% of the time, whereas men were mistaken as women about one-third of the time. For the The School Superintendent course type, women were mistaken as men almost 60% of the time, whereas men were mistaken as women just over 40% of the time. For the Women in Leadership course type, women were mistaken as men almost 90% of the time, whereas men were mistaken as women about 10% of the time.

I performed the second set of analyses on a per-participant basis, or based on the accuracy of assumptions of gender for each participant rather than for each assumption individually. I considered other-assumed gender of a given participant to be accurate if greater than half of the assumptions made for that participant were correct. For example, if six participants made assumptions of gender for a given group member, and more than three of those six assumptions matched the gender self-reported by that group member, I considered other-assumed gender for that group member to be accurate.

Of the 149 participants in this study, there were no assumptions of gender reported for 22% of them. Of the 116 participants who did receive assumptions as to their gender, 69% had their gender identified correctly by more than half of the people in their group who offered assumptions. A Chi-squared test revealed a statistically significant relationship between whether or not participants had their gender identified correctly by more than half of the members of their group who offered assumptions and reported

gender, showing that women were significantly more likely to have their gender perceived incorrectly than men (Table 7).

When the context of course type was considered in the second set of analyses, only 45% of the participants in the The School Superintendent course type had their gender identified correctly by more than half of the members of their group who offered assumptions, compared to almost 90% of participants in the Women in Leadership course type. Further, only 3 participants in the Women in Leadership course did not receive any assumptions as to their gender, whereas 30 participants in the The School Superintendent course did not receive any assumptions. A Chi-squared test revealed no statistically significant relationship between whether or not participants had their gender identified correctly by more than half of the members of their group who offered assumptions and reported gender for The School Superintendent course type (Table 8). Descriptive statistics for accuracy of assumptions for the Women in Leadership course type are shown in Table 9; however, a Chi-squared analysis for this course type is not valid due to the fact that there was only one participant who self-reported as a man.

Of the 36 participants for whom other-assumed gender was inaccurate, women were mismatched almost two-thirds of the time and men were mismatched almost 40% of the time. Of the 8 participants in the Women in Leadership course type for whom other-assumed gender was inaccurate, women were mismatched almost 90% of the time and men were mismatched 13% of the time. Recall, however, that only one participant in all of the sections of the Women in Leadership course type self-reported as a man. Of the 28 participants in the The School Superintendent course type for whom other-assumed

Table 7: Accuracy (Per Participant) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: Overall

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	90	68 (76)	22 (24)	100
Men	26	12 (46)	14 (54)	100
Total	116	80 (69)	36 (31)	100

$\chi^2 = 12.45, p < .01.$

Table 8: Accuracy (Per Participant) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: The School Superintendent Course Type

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	26	11 (42)	15 (58)	100
Men	25	12 (48)	13 (52)	100
Total	51	23 (45)	28 (55)	100

$\chi^2 = 0.21, p > .05.$

Table 9: Accuracy (Per Participant) of Participants' Assumptions of Other Participants' Gender After One Session of Computer-mediated Communication: Women in Leadership Course Type

Reported Gender	<i>N</i>	Correct <i>n</i> (%)	Incorrect <i>n</i> (%)	Total (%)
Women	64	57 (89)	7 (11)	100
Men	1	0 (0)	1 (100)	100
Total	65	57 (88)	8 (12)	100

Note. Chi-squared analysis not performed due to low *N* for self-reported gender category of men.

gender was inaccurate, women were mismatched just over half of the time and men were mismatched just under half of the time.

The findings of the second set of analyses corroborate those of the first. When the accuracy of the assumptions was considered for all 116 participants for whom assumptions were reported, almost 70% had their gender identified correctly. When the accuracy of the assumptions was considered with regard to the context of course type, there were much fewer correct assumptions of gender made of participants in the The School Superintendent course type compared to those in the Women in Leadership course type. Further, participants in the The School Superintendent course type were much less inclined to offer assumptions of the gender of their group members compared to participants in the Women in Leadership course type. Similar to the findings of the first set of analyses, overall and for each course type, women were more frequently mistaken as men than were men as women.

The results of both sets of analyses, per-assumption and per-participant, show that participants were able to accurately predict the gender of other participants almost 70% of the time. When the context of course type was considered, assumptions of gender were accurate only about half of the time for participants in the The School Superintendent course type, but were accurate over 85% of the time for participants in the Women in Leadership course type. Further, Chi-squared tests confirmed that there was no statistically significant relationship between assumed gender and reported gender for The School Superintendent course type. According to these findings, the assumption of

anonymity of gender identity holds for participants in the The School Superintendent course type, but does not hold for participants in the Women in Leadership course type.

Research Question 1: What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are unknown?

To address Research Question 1, I performed a qualitative analysis of the responses to two questions posed after session one (prior to participants receiving visual cues via modified-persona photographs): “Which person or persons in the group seems to be the most directive? Support your conclusions,” and “Which person or persons in the group seems to be the most influential? To the positive? To the negative? Support your conclusions.” The analysis revealed that participants’ reasons for nominating certain group members as directive were similar to their reasons for nominating certain group members as influential. The themes that emerged from the analysis were: focus on group procedure or on the task, contributions to the process, style of interaction, demonstration of leadership, and rate of participation (Table 10). Often these themes appeared in some combination in a given response, making clear that perceptions were constructed from a synthesis of multiple pieces of information. In accord with the focus of this study, I was particularly interested in the role that other-assumed gender of group members played in those members’ being perceived as directive or as influential. Strikingly, gender was not mentioned as a reason for nomination in even one of the responses. In this section, I explain each theme and present representative examples of responses.

Table 10: Emergent Themes from Reasons Participants Gave in Support of Their Nominations of Group Members as Being Directive or Influential After Session One

Theme	Description
Focus on procedure	Concerned with order, structure, rules, and process; directed the flow of the conversation
Focus on task	Kept the group on task and moving forward; directive in making decisions; performed task work
Contributions to process	Contributed ideas or suggestions to guide the task or process; put forth ideas or views that were perceived as valuable or received notable agreement from other group members; posed questions with regard to group process, decisions, and the content of the dialogue, as well as toward other members' ideas; summarized or clarified points, decisions, plans, or entire portions of dialogue
Negative or positive interaction style	Negative: dominant, opinionated, outspoken, uncompromising, pursuant of own agenda; contributed negative comments Positive: inclusive, concerned about others, good listener, in search of consensus; contributed positive comments
Demonstration of leadership	Took charge; initiated discussions and processes; facilitated dialogue and decision-making; volunteered for tasks; formally elected as group leader
Rate of participation	Typed quickly; high quantity of entries

Focus on Group Procedure or on the Task

Focus on group procedure involved concern with order, structure, rules, and process, as well as directing the flow of the conversation. As one respondent noted, “From the first 134 was interpreting how we should type (type it out), when we should start the work (task force work doesn’t begin until . . .). All, in all, 134 kept the group ‘in order’” (BI1-105; woman). Participants reflected on the significance of a member’s organizing the group process and directing conversation on their perceptions of directivity; for example:

When the group started the Task Force work in earnest, a few voices arose, and seemed to give some sort of direction to the conversation. 89 immediately asked “should we attack this with an overarching question?” and 83 instituted a system for agreeing, disagreeing and moving on that we used throughout the entire conversation. 88 also seemed to be directive, stating “I think it would be helpful to discuss what this will look like as a final product.” (BD1-073; woman)

Another participant commented:

#97 and #93, with #95 also directing conversation. #97 tended to focus the group by calling for a halt to discussion in order to attempt to formulate a definition. #93 directed the conversation by asking questions about the statements made that would lead the discussion towards definitions for the Task Force questions. #93 facilitated and directed the conversation by also calling for ‘round robins’ in order to help the group

to formulate definitions that we could later refine. #95 helped to move the discussion on to the next topic. (BD1-082; woman)

Compared to focus on procedure, focus on the task involved keeping the group on task and moving forward, being directive in making decisions, and performing task work. This response from one participant represents how some participants based their nominations on a group member's focus on the task:

I think 46 was the most influential in the sense that s/he continually attempted to keep us on track and refocus the dialogue to the task we were trying to accomplish. His/her input was on target and did not seem to stray from the topic like some of us. 46's questions like "What would the letter look like", etc. I felt indirectly influenced the group to focus on the task and come back together. When no one took the ball to run with it, 46 did and began to draft the first letter . . . which put us back on track. (BI1-038; woman)

Another participant offered a similar explanation, but had a different reaction to the task focus:

16 kept trying to make us strictly adhere to the task at hand ("I'm trying to follow the conversation in terms of the task force project." "I'm just wondering how the conversation 'fits' with the task force assignment???"). Our conversation definitely lacked focus, but I felt like tangential conversations were okay, since we needed to feel each other out a bit on the topics. (BI1-016; woman)

Contributions to the Process

Perceptions of being directive or influential based on contributions to the process concerned the way in which the nominees advanced the dialogue and problem-solving process. Participants who were considered directive or influential contributed ideas or suggestions to guide the task or process, put forth ideas or views that were perceived as valuable, or received notable agreement from other group members. They posed questions with regard to group process, decisions, and the content of the dialogue, as well as toward other members' ideas. Finally, they summarized or clarified points, decisions, plans, or entire portions of dialogue. Often these types of contributions were mentioned in combination. One participant nominated a group member as influential based on that member offering suggestions about the process and task, as well as asking questions:

27 seemed to be rather influential. 27 made suggestions on how to continue the chat as well as what people could do for our presentation. 27 also is the one who finally moved us from "gendered" to "leader." 27 would ask questions such as, "what defines leader?" and "does power define leaders?" and people would readily answer. 27 also was the first to bring up the point that we decided to talk about woman last. It got others thinking about that group decision. All in all, I feel 27's influence seemed to be looked upon as positive. (BI1-013; woman)

Another participant nominated group members as directive for their contributions of summarizing the group's ideas, putting forth ideas about the process, and asking questions:

I think that 100 is fairly directive that "she" kept reevaluating what we had and defined, tried to combine it and then ask what we thought. 100 was also the one who came up with the notion that we should go down the list giving our own definitions and then debate over them. 99 was also directive in that they asked us if we wanted to move on, asked specific questions that we needed to address and so on. 93, too, was directive towards the beginning as they asked key questions and moved things along. (BD1-077; woman)

Yet another participant revealed the significance of group members' asking questions and offering remarks that were deemed agreeable:

I definitely feel that 100 was probably the most influential member, along with 97. 100 was very articulate, posed some tough questions, and stood their ground, yet listened to others. 97 continually had great remarks that seemed to be very agreeable to the other members. (BI1-076; woman)

Interaction Style

A noticeably negative or positive interaction style contributed to participants' being nominated as directive or influential. A negative style was typified by a participant's being perceived as dominant, opinionated, outspoken, uncompromising,

pursuant of their own agenda, and/or contributing negative comments. As one respondent wrote, “once 12 became part of the conversation he/she took over and made decisions for everyone. He/She interpreted the information to [fit] his/her belief system” (BD1-009; woman). In contrast, a positive style was typified by a participant’s being perceived as inclusive, concerned about others, a good listener, in search of consensus, and/or contributing positive comments.

Participants offered specific examples of negative and positive interaction styles that affected their perceptions. One participant gave an example of a group member’s being perceived as directive due to a negative interaction style:

7 consistently attacks individual and process. 7 blocks progress and purports to be non directive but considering that everyone has to tailor their responses in order to buy 7's compliance, 7 is really running the group. You will notice that ultimately it was 7 that people deferred to relative to what we need to do for next week. The squeaky wheel [syndrome]. (BD1-014; man)

Another participant self-nominated as being influential, based on a comment from another group member who perceived the participant as having a negative style:

I think I was the most negative influence. I guess 134 said it when he/she pointed out that my task was to disagree with every tiny little thing. I ended up getting sarcastic and snotty and was tempted to rifle off a “[f_ _ _] you” on more than one occasion. I tried [so] hard to be good,

collaborative and challenging, thought provoking and a leader of the rebellion in our new job description . . . but I failed. I was nearly a thorn in the collective sides of the group. (BI1-108; woman)

Participants also noted positive interaction style as a reason for nominating particular group members; for example:

76 did a nice thinking about people who may be new to the on-line chat system, “Another thought. We have friends in our group who have not chatted before. I think it would be good to have someone take on a role to 'check in' with folks who haven't been involved in the chat for a while . . .” 76 seemed to be thinking about other persons needs quite regularly – which is great. (BI1-063; man)

Another participant explained:

114 seemed to be influential in a positive way because they kept trying to make suggestions to lead the group to accomplishing the work that needed to be done in the most efficient way, yet they weren't pushy with their ideas – they were patient with the group and made sure everyone was on board with the plan. (BI1-087; woman)

Demonstration of Leadership

In support for the use of the constructs of perceived directivity and perceived influence as measures of leader emergence in this study, participants who were nominated as being directive or influential often were portrayed by their nominators as

being leaders. Such participants were described as taking charge, initiating discussions and processes, facilitating dialogue and decision-making, volunteering for tasks, and/or being formally elected as group leader. A number of participants gave reasons for their nominations similar to this one:

22 24 18 27 16 kept everyone directed. [They] volunteered for assignments, push to have the group follow their directives and pretty much called the rest of us to task. 22 always volunteered to do projects. 24 had a tempered response that clarified our thinking. They believed that they know the right road to take. 16 thought aloud on paper. It was good to hear because if you were thinking instead of writing it got out for others to respond to. 27 bounced off the thoughts of 18, 24, and 22 enough to again help it make it to the paper. I would think as those three had written it down and kept moving. It was as if they had a script to follow. (BD1-024; woman)

Many other participants noted that they perceived a group member as being directive or influential based on that member's being formally assigned a leadership role by the group; for example:

The most directive person was 79. This individual started to drive the discussion once this individual was put in the leadership position by the group. Through out the chat session this person kept things moving either by questioning or prodding others to contribute. (BD1-065; man)

Participation Rate

Finally, participants who were perceived to have a high participation rate often were perceived as being directive or influential. These findings corroborate the findings of Miller and Brunner (2008), who studied participants working in the same context as in this study and found that an increase in immediacy (i.e., number of contributions and number of words entered) was predictive of social influence; however, they also posit that there is likely a plateau at which social influence relative to immediacy remains constant or even decreases. In the present study, participation rate was referred to by respondents as typing speed and quantity of entries, as in the responses, “Person 97 seemed to be able to type rather quickly which allowed them to have his/her voice heard” (BD1-075; woman) and “#66 was constantly chatting-sometimes on task, and sometimes being distracting” (BI1-054; man). Some participants noted the relationship between participation rate and context, as in “24 definitely had the floor the most. I think if we had been in-person, she would have been recognized as a person of expertise on and familiarity with the subject, if not the ‘leader’ per se” (BI1-016; woman). The relationship also is apparent in this participant’s response:

Student 97 seemed to be the most influential amongst the members of the group. S/he had many intelligent comments and used a lot of positive reinforcement to encourage other members to participate. The fact that student 97 was [influential] could be partially [due] to the fact that s/he was able to type fast which allowed them to respond to others while contributing many insightful contributions. Other task force members

seemed to have good ideas but since the chat moved quickly, they weren't able to share them. (BI1-074; woman)

Interconnectedness of Themes

Although all of the reasons I have discussed stood out individually, most often they were not mentioned in isolation; rather, they tended to be woven together, either in relation to one nominee or across multiple nominees in a given response. Some responses reflected this interconnectedness, such as this explanation a participant gave for nominating a group member as being influential:

146, without a doubt . . . 146 gets to the core of the assignment by summarizing for all what our task is, “my conception is that we are talking about the intersection of gender and leadership, in 3 subsets . . . defining leader, woman, and gendered” and then the next comment 146 made was “shall we begin with defining what it means to be a leader? how do we go about this task?” and then “ we could go chronologically.” This is followed by comments from others suggesting that we should proceed this way. 146 also shows an interest in what all have to say so this person seems to be focused on everyone's participation. During the “What it means to be a woman” discussion, 146 proposed some of the language we used in a working definition: “definition of woman is influenced by the biological, sociological/psychological, cultural prescriptions by those doing the defining”. This definition sparked more

directed chat about developing our definition and wordsmithing its components. In addition, 146 made light-hearted statements that 146 sound like one of the group rather than just a leader. For example, at break time, this person suggested we order pizza and . . . talked about “repressing an urge to be sarcastic and silly!!!” This person, to me, seemed the most influential and seems to be an effective leader. (B11-111; woman)

Another participant perceived two group members as being influential for multiple reasons:

#124 & 130 – To the positive – First, #130, I liked how this person facilitated parts of the conversation and moved things along at the beginning. While I was still getting warmed up, this person was active and effectively leading the discussion (e.g. innovative leader). In addition, this person was inclusive, quickly realized we needed a timer to help structure and limit discussions, and appropriately moved the discussion along in a focused and controlled manner. In summary, this person was instrumental in creating a structure we used throughout the evening. Second, #124 was consistent throughout the evening. This person was supportive and showed sincerity in responses. #127 – To the negative – Again, this person confused me. I tried a couple of times to get this person to offer ideas and/or suggestions, but they refused. I found this disappointing. In addition, this person used sarcasm, which I found to be

hard to interpret and understand. I sensed this individual got more frustrated throughout the evening. (BI1-093; man)

Another participant offered a similar example of the interconnectedness of the reasons for nominations:

23, 24, 22 and maybe 18 were the most influential to me. 24 and 22 influenced the group because they talked a lot and shared a lot of their knowledge. 24 especially referenced information at key points in the conversation that moved the conversation in a different direction. 23 raised a lot of good questions, for example in the discussion on doing gender. 18 just seemed to "be in the conversation" consistently as opposed to those of us who perhaps faded in and out. 23 and 18 seemed basically positive while 24 and 22 were a bit of both positive and negative—through the sheer quantity of their participation. 24 also had a way of making personal pronouncements that did not feel very inclusive of the group. (BI1-018; woman)

One participant sighted multiple reasons for nominating one group member as being directive:

I think 134 is the most directive. 134 did a good job of summarizing and questioning early in the experience. 134 was also recognized as the summarizer and facilitator, which was agreed upon by some, but not all weighed in on this decision. 134 used the most direct language including all caps and direct questioning of responses. At times that directiveness

was positive and productive, but I [thought] there were times it was condescending and harsh. (BD1-113; man)

In sum, the reasons participants gave in support of their nominations of group members as being directive or influential revealed that there were numerous factors related to group members' text-based communication that contributed to perceptions of leader emergence. Those factors had to do with how group members participated in the group process.

Research Question 2: What effect do the physical characteristics of an individual have on other people's perceptions of that individual as looking leader-like?

Between sessions one and two, participants were given access to a set of modified-persona photographs that were purported to represent the members of their group. The photographs depicted the area from the head to the top of the shoulders, making visible a limited amount of clothing. I employed both quantitative and qualitative methods to determine the effects that the physical characteristics of perceived gender, race, age, clothing, facial expression, and weight of the individuals portrayed in the photographs had on other people's perceptions of those individuals looking like leaders.³ Data for these analyses came from participants' responses to two questions asked of them after they viewed the photographs, but prior to the second session: "Which person or persons in the group LOOKS the most directive? Support your conclusion," and "Which

³ Unless otherwise noted, all references to physical characteristics are with regard to the characteristics of the modified-personas as perceived by the coders (see Method section of Chapter 3), not the actual characteristics of the participants.

person or persons in the group LOOKS most influential? To the positive? To the negative? Support your conclusion.”

Quantitative Analysis

The dependent variables for the quantitative analyses were the proportion of nominations a modified-persona received for looking directive and the proportion of nominations a modified-persona received for looking influential. I performed preliminary one-way analysis-of-variance tests to reveal the relationship between each independent variable—when considered alone—and the two dependent variables. The analyses showed that certain physical characteristics were statistically significantly related to perceptions of looking directive or of looking influential (Table 11). Modified-personas were more likely to be perceived as looking directive when they exhibited the characteristics of being white, dressed in business clothing, and older in age. Further, they were more likely to be perceived as looking directive when they exhibited a serious facial expression more so than a neutral expression more so than a smiling expression. Modified-personas were more likely to be perceived as looking influential when they exhibited the characteristics of being a man, dressed in business clothing, older in age, and having a serious facial expression more so than a smiling expression. One-way analysis-of-variance tests showed no significant relationship between the control variable of course type and perceptions of looking directive or influential.

Table 11: Results of One-way Analysis-of-Variance Tests for Significance of Differences in the Means of Proportions of Nominations for Looking Directive and for Looking Influential by Perceived Characteristics of Modified-persona Photographs ($N = 149$)

Perceived characteristic	No.	Proportion of nominations for looking directive			Proportion of nominations for looking influential		
		Mean	<i>SD</i>	<i>F</i>	Mean	<i>SD</i>	<i>F</i>
Gender							
Woman	101	.09	.12	2.57	.09	.11	5.17*
Man	48	.13	.17		.13	.10	
Race							
White	96	.12	.15	4.60*	.10	.11	0.10
Of color	53	.07	.12		.10	.12	
Age							
Old	17	.18	.21	4.29*	.20	.12	9.69***
Medium	90	.10	.13		.10	.11	
Young	42	.07	.12		.06	.07	
Clothing							
Neutral	109	.05	.08	73.44***	.07	.08	40.99***
Business	40	.23	.18		.19	.14	
Expression							
Smile	47	.02	.04	25.95***	.07	.07	3.85*
Neutral	72	.10	.13		.10	.12	
Serious	30	.22	.17		.14	.12	
Weight							
Average	125	.10	.14	0.22	.11	.11	1.82
Heavy	24	.09	.13		.07	.09	

Significance level: * $p < .05$. ** $p < .01$. *** $p < .001$.

I performed Pearson correlation analyses with a two-tailed test of significance to elucidate further the bivariate relationships between the variables (Table 12). These analyses showed a statistically significant relationship between the two dependent variables, such that modified-personas who were perceived as looking directive were more likely to be perceived as looking influential, and vice versa. The correlation analyses also showed statistically significant relationships between many of the independent variables for physical characteristics and the dependent variables. Modified-personas who were wearing business clothing or who had a serious facial expression were more likely to be perceived as looking directive; and, those who were older were more likely to be perceived as looking directive. On the contrary, modified-personas who exhibited a smiling facial expression were less likely to be perceived as looking directive. Being perceived as a person of color was significantly, negatively correlated with being perceived as looking directive.

In terms of being perceived as looking influential, wearing business clothing had the highest positive correlation compared to the other independent variables. Modified-personas who were older were more likely to be perceived as looking influential; whereas, those who were younger were less likely to be perceived as looking influential. Being a man and having a serious expression were positively associated with being perceived as looking influential; and, having a smiling expression was negatively associated with being perceived as looking influential. I did not address the intercorrelations between the independent variables in this analysis, as they all were dichotomous in nature and correlation values would be misleading.

Table 12: Correlation Matrix of All Variables

Variables	1	2	3	4	5	6	7	8	9
1 Being directive session 1	—								
2 Being influential session 1	.65***	—							
3 Looking directive	.11	.16	—						
4 Looking influential	.15	.24**	.51***	—					
5 Being directive session 2	.51***	.46***	.22**	.23**	—				
6 Being influential session 2	.47***	.46***	.08	.15	.52***	—			
7 Change in being directive	-.49***	-.19*	.12	.09	.50***	.05	—		
8 Change in being influential	-.29***	-.68***	-.11	-.13	-.05	.34***	.25**	—	
9 Change directive increase	-.05	.13	.19	.14	.65	.27**	.71***	.09	—
10 Change directive decrease	.52***	.27**	-.08	-.05	-.16*	.16	-.69***	-.15	-.52***
11 Change influential increase	-.12	-.37***	.00	-.05	.08	.35***	.20*	.68***	.18*
12 Change influential decrease	.33***	.64***	.09	.12	.10	-.01	-.23**	-.69***	-.04
13 Self-reported gender man	.03	.07	-.09	-.11	.02	.11	-.01	.02	.00
14 Perceived gender man	-.13	-.05	.13	.18*	-.02	.02	.11	.07	.11
15 Perceived race of color	.01	-.06	-.17*	-.03	.00	-.05	-.01	.03	-.03
16 Perceived age medium	-.11	.00	-.02	-.01	.06	.01	.17*	.01	.15
17 Perceived age young	.12	.03	-.14	-.21*	-.03	.01	-.15	-.02	-.15
18 Perceived age old	.01	-.03	.22**	.31***	-.04	-.03	-.05	.01	-.02
19 Perceived clothing business	-.04	.03	.58***	.47***	.04	.07	.08	.03	.04
20 Perceived expression neutral	.00	-.03	.02	.03	.02	-.06	.02	-.02	.02
21 Perceived expression smiling	.06	.03	-.40***	-.19*	-.06	.06	-.12	.03	-.10
22 Perceived expression serious	-.07	.01	.44***	.18*	.05	.00	.12	-.01	.08
23 Perceived weight heavy	.05	.05	-.04	-.11	.07	-.08	.02	-.12	.01
24 Course type The School Superintendent	-.02	-.02	-.02	-.02	-.02	-.02	.00	.00	-.03

Significance level: * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12: Correlation Matrix of All Variables (Continued)

Variables	10	11	12	13	14	15	16	17	18
10 Change directive decrease	—								
11 Change influential increase	-.13	—							
12 Change influential decrease	.29***	-.69***	—						
13 Self-reported gender man	-.02	-.14	.06	—					
14 Perceived gender man	-.10	.18	-.13	.04	—				
15 Perceived race of color	-.04	-.09	.05	-.01	-.24**	—			
16 Perceived age medium	-.10	-.07	.08	.06	-.06	-.03	—		
17 Perceived age young	.18	.07	.03	-.01	-.27**	.22**	-.77***	—	
18 Perceived age old	-.01	.08	-.17	-.08	.48***	-.26**	-.44***	-.23**	—
19 Perceived clothing business	-.02	.01	.03	-.03	.20*	-.04	.15	-.28**	.16*
20 Perceived expression neutral	.00	-.11	.03	.11	-.21*	.26**	.40***	-.22**	-.31***
21 Perceived expression smiling	.12	.13	-.06	-.05	.00	-.20*	-.19*	.12	.12
22 Perceived expression serious	-.14	-.02	.03	-.08	.26**	-.09	-.28**	.13	.24**
23 Perceived weight heavy	.05	-.11	.01	-.02	.01	-.33***	.06	-.28**	.30***
24 Course type The School Superintendent	-.10	-.10	.01	.53***	.14	-.08	.03	-.09	.08

Significance level: * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 12: Correlation Matrix of All Variables (Continued)

Variables	19	20	21	22	23	24
19 Perceived clothing business	—					
20 Perceived expression neutral	.14	—				
21 Perceived expression smiling	-.31***	-.66***	—			
22 Perceived expression serious	.19*	-.49***	-.34***	—		
23 Perceived weight heavy	-.14	.12	.02	-.17*	—	
24 Course type The School Superintendent	.16	-.09	-.05	.16	-.08	—

Significance level: * $p < .05$. ** $p < .01$. *** $p < .001$.

I performed two multiple linear regressions to determine the extent to which the physical characteristics of the modified-persona photographs predicted proportions of nominations for looking directive, and the extent to which they predicted proportions of nominations for looking influential. I present the results of the regressions (with standardized beta coefficients) in Table 13. First, I regressed the dependent variable of proportion of nominations for looking directive on the independent variables of perceived gender, race, age, clothing, facial expression, and weight, and on the control variable of course type. I recoded the variables of perceived age and facial expression into indicator variables for this and subsequent regression analyses; average age and neutral expression were the reference groups, respectively. I entered all of the independent variables into the regression simultaneously. The model predicted 53% of the variance in proportion of nominations for looking directive and was significant at the $p < .001$ level. The results of the regression revealed that modified-personas who were of color had lower proportions of nominations for looking directive compared to modified-personas who were white. Modified-personas who were wearing business clothing had higher proportions of nominations for looking directive compared to those who were wearing neutral clothing. Compared to those who exhibited a neutral facial expression, modified-personas who exhibited a smiling expression were less likely to be nominated as looking directive, and those who exhibited a serious expression were more likely to be nominated as looking directive. As for the effect of the control variable of course type, modified-personas in the The School Superintendent course type were less likely to be nominated as looking directive compared to those in the Women in Leadership course type. Though significant

Table 13: Standardized Regression Coefficients for Proportion of Nominations for Looking Directive and for Proportion of Nominations for Looking Influential

Variable	Looking directive ^a	Looking influential ^a	Looking directive ^b	Looking influential ^b
Man	-.121	-.058	-.104	-.043
Person of color	-.193***	-.010	-.118**	.004
Young age	.002	-.104	-.016	-.118
Old age	.128	.335***	.123	.348***
Business clothing	.473***	.350***	.465***	.331***
Smiling expression	-.220**	-.108	-.226**	-.121
Serious expression	.274***	.008	.280***	.000
Heavy weight	-.031	-.200*	-.042	-.219**
The School Superintendent class	-.154*	-.122	-.154*	-.119
Directive session 1	—	—	.113	.038
Influential session 1	—	—	.064	.226*
R ²	.530***	.325***	.556***	.388***
Adjusted R ²	.499***	.281***	.520***	.339***

Note. Dashes indicate that the variables were not included in the analysis.

^aModels do not include variables for being directive after session one or for being influential after session one. ^bModels include variables for being directive after session one and for being influential after session one.

Significance level: * $p < .05$. ** $p < .01$. *** $p < .001$.

in the analysis-of-variance and correlation results, the relationship of old age to proportion of nominations for looking directive was not significant in the regression, which shows that among competing variables, old age was not as strongly related to perceptions of looking directive as were some other characteristics. On the contrary, the control variable of course type emerged as predictive of proportion of nominations for looking directive in the regression, but did not emerge as significantly related in the previous analyses.

Second, I regressed the dependent variable of proportion of nominations for looking influential on the independent variables of perceived gender, race, age, clothing, facial expression, and weight, and on the control variable of course type. Again, I entered all of the independent variables into the regression simultaneously. The model predicted 33% of the variance in proportion of nominations for looking influential and was significant at the $p < .001$ level. The results of the regression revealed that, compared to modified-personas who were of medium age, those of older age were more likely to be nominated as looking influential. As was the case with perceptions of looking directive, modified-personas who were wearing business clothing had higher proportions of nominations for looking influential than did those who were wearing neutral clothing. Contrary to the findings of the analysis-of-variance and correlation tests, weight emerged as related to perceptions of looking influential. Modified-personas who were heavy in weight were less likely to be nominated as looking influential compared to those who were average in weight. Further, the relationship of gender and of having a serious expression to perceptions of looking influential did not emerge in the regression. This

finding shows that among competing variables, gender and having a serious expression were not as strongly related to perceptions of looking influential as were some other characteristics.

As I stated earlier, participants were instructed to base their nominations for who looked directive or influential solely on the modified-persona photographs. I was curious as to whether or not perceptions of who *was* directive or influential after the first session affected perceptions of who *looked* directive or influential based on the modified-persona photographs. As such, I performed the same analyses as above, but also included independent variables to represent proportion of nominations for being directive after session one and proportion of nominations for being influential after session one. Pearson correlation analyses with a two-tailed test of significance showed a statistically significant relationship between these two independent variables, such that participants who had a greater proportion of nominations for being directive were more likely to be nominated as being influential, and vice versa. In addition, participants who had a higher proportion of nominations for being influential after session one were more likely to be nominated as looking influential based on the modified-persona photographs (Table 12).

Multiple linear regressions showed that neither the proportion of nominations for being directive nor the proportion of nominations for being influential after session one contributed significantly to the prediction of proportion of nominations for looking directive; however, the proportion of nominations for being influential after session one did contribute significantly to the prediction of proportion of nominations for looking influential (see Table 13). Participants who received more nominations for being

influential after session one were more likely to have their modified-personas be perceived as looking influential. Further, with the addition of the two new independent variables to the regression model for perceptions of looking influential, the relationship between heavy weight and perceptions of looking influential became slightly more significant, and the R^2 value of the model increased from 33% to 39% and remained significant at the $p < .001$ level.

Qualitative Analysis

To triangulate the findings of the quantitative analyses, I performed qualitative analyses of the responses to the “support your conclusion” portion of the two questions participants answered with regard to which group members (modified-persona photographs) they thought looked directive or influential. Reasons participants gave in support of their nominations clustered into three broad themes: (1) nominations based purely on characteristics that could be directly observed from the photographs; (2) nominations based on inferences, made both with and without links to characteristics that could be directly observed from the photographs; and (3) nominations based on inferences made in relation to stereotypes or mental models. I present a summary of the themes and categories in Table 14.

Of note is that a few participants outwardly expressed doubt that the photographs were accurate depictions of the members of their group; however, they did continue to answer the questions. An example of such suspicion is revealed in this portion of one response, “I don't think the photos show who my classmates ‘really’ are” (BI2-020;

Table 14: Emergent Themes and Categories from Reasons Participants Gave in Support of Their Nominations of Group Members as Looking Directive or Looking Influential

Theme/category	
Observable characteristics	
Gender:	Man
Race:	White
Age:	Older
Facial expression:	Serious, eyes direct (directive); serious or smiling (influential)
Pose:	Head position, look into camera
Clothing:	Business or professional attire
Hair style:	Clean cut, professional style, gray color, facial hair
Inferences: made with or without reference to observable characteristics	
Experienced, intelligent, educated	
Confident, strong	
Serious, focused, task-oriented	
Authoritative, an authority, assertive, powerful (directive only)	
Professional, professional position held (directive only)	
Leader, listened to, respected (influential only)	
Exhibited positive attributes (influential only)	
Exhibited negative attributes (influential only)	
Inferences: made with reference to stereotypes or mental models	

woman). Another respondent claimed, “I refuse to accept the implication that people look like their personalities, especially in their photos. AND I still don’t think they are real” (LI-105; woman). Most participants offered candid responses in support of their nominations, and if they did harbor doubts about the reality of the photographs, they did not articulate them. In this section, I explain each theme that emerged and provide representative examples of responses.

Nominations based on observable characteristics.

Some nominations were based purely on characteristics that could be directly observed from the photographs. The characteristics noted most frequently were gender, race, age, facial expression, pose, clothing, and hair style. References to gender, race, and age almost always reflected that older, white men were perceived as looking directive or influential. Put simply by one respondent, “23 looks the most directive. First, he is a he. He also has gray hair which makes me think he is distinguished. He also looks Caucasian” (LD-015; woman). Another respondent noted that the relationship between gender and perceived influence may be affected by the gender composition of the group:

I would suggest that 110, again, would be the most influential, perhaps to the negative. I come at this question/answer with preconceptions of how even one or two men within a group [of] women can sometimes alter the dynamics of the group. (LI-087; woman)

The facial expressions that led a member to be perceived as looking directive were described as serious, without a smile, and eyes direct; whereas, for being perceived

as looking influential they were sometimes described as serious and other times described as smiling or pleasant. Observed pose had to do with how members held their heads or looked directly into the camera during the photograph. Members who were perceived as dressed in business or professional attire, or who were wearing glasses, tended to be perceived as looking directive or influential. Further, members were nominated based on their hair style, including a clean, professional style, gray color (also connoting age), and facial hair. The observed characteristics that served as bases for nominations often were mentioned in combination, as in this response which addressed facial expression, clothing, hair style, and pose:

57 looks the most directive to me. Part of it is that she is not smiling.

Another part of it is that she is wearing glasses, which suggests intelligence. In addition, she is wearing a tailored, dressy shirt with a bold color. The cut of her hair, and the direct look into the camera all suggest the visuals of a direct person. (LD-054; woman)

Further, as many nominees were portrayed as men, wearing a tie was a commonly mentioned reason, along with others, for being perceived as looking directive or influential:

35 looks the most directive to me . . . The features that make him appear directive could be that he is male, gray haired, wearing a tie, with a slight tilt to his head in his pose and no smile . . . 47 looks the most directive.

No smile, serious look with wide intense eyes. (LD-029; woman)

One respondent considered how perceptions could shift with changes in certain observable characteristics:

I think 35 looks the most directive. The beard, grey hair and serious look and tie make me feel this way. It's interesting, because if 35 had a t-shirt, pony tail and big smile, I would think very differently about him.

Amazing what looks and expression can do. (LD-036; man)

In sum, observable identifying characteristics gleaned from the photographs served as bases for perception formation for many participants. Observations of gender, race, age, facial expression, clothing, pose, and hair style all played a part in nominations for who looked directive and for who looked influential.

Nominations based on inferences, with and without links to observable characteristics.

Nominations based on inferences appeared both with and without reference to the aforementioned observable characteristics. Whether freestanding or linked to an observation, the inferences made about participants who were nominated as looking directive organized into five categories: experienced, authoritative, serious, professional, and confident. The category *experienced* also included inferences that the nominee was intelligent or educated; *authoritative* also included inferences that the nominee was an authority, assertive, or had power; *serious* also included inferred focus or task-

orientation; *professional* also included inferred professional position held; and *confident* also included inferred strength.

Inferences, both freestanding and linked to an observation, made about participants who were nominated as looking influential fell into six categories, some of which overlap with those noted for nominations for looking directive. The six categories were: experienced, leader, exhibited positive attributes, exhibited negative attributes, confident, and serious. The categories *experienced*, *confident*, and *serious* were the same as with nominations for looking directive. The category *leader* also included inferences that the nominee was listened to or respected.

As was the case that nominations based solely on observable characteristics incorporated perceptions of multiple characteristics, many nominations based on inferences integrated multiple inferences. One respondent gave this reason, based on freestanding inferences (not linked to observable characteristics) of experience and professional position, for nominating two group members as looking directive:

3 looks like she is an experienced leader (principal or superintendent) that is supportive and cooperative in a leadership position. 11 simply looks authoritative, but has a softer look to him. He may be a superintendent with many years [of] experience. (LD-004; man)

Another response exemplified the categories of *experienced* and *authoritative*:

I believe that # 55 is one of the people who could be directive. . . . She looks like she is intelligent and assertive, not the kind of women who

backs down. She appears to be non-defensive, which is a good leadership quality. (LD-048; woman)

This reason given for nominations of group members as influential also is based on freestanding inferences and reflects the categories of *serious, experienced, leader*, and *exhibited negative attributes*:

Perhaps I'm blurring the lines between directive and influential, but I believe again the most influential looking people are 11, 9 and 4. They look intent, serious, experienced, focused, and respected, all of which are positive attributes. As to the negative . . . I think 1 looks the most negatively influential. She looks serious and a bit crabby, someone who is skeptical of the process. And I'd have to also say that 7 looks like someone who wouldn't be in a traditional powerful position, and so needs to get it in other ways. (LI-001; woman)

One respondent explained inferences of positive and negative attributes, but also noted cognitive dissonance with making them based solely on photographs:

I don't know how one can support a conclusion that is based on purely superficial impressions. I guess I would say the positive influencers look friendly, open and confident while the negative influencers look closed off, anxious or hostile. (LI-051; woman)

Many inferences were not freestanding; rather, they were linked to the observed characteristics of gender, race, age, facial expression, pose, clothing, and hair style. Inferred experience, intelligence, and education were most commonly linked to observed

age. One respondent made the link explicit with this reason for nominating a group member as looking directive:

23 also looks as though he may be directive. He is older, so I feel as though he may believe he knows what needs to be done. He has done certain things before, so he feels as though he can get people moving and they can learn from his experiences. (LD-016; woman)

Another respondent inferred the experience, or wisdom, of a nominee based on observed facial expression and hair (beard), along with age:

From the photo, I would expect #93 to influence the group in a positive manner. The photo gives me the impression of a “teddy bear” individual. The graying beard also relays a sense of a grandfather along with the smile. As such, the impression is one who is wise and should be listened to. (LI-077; woman)

This nomination for looking influential was based on experience and intelligence inferred from age, hair style, and clothing:

I think 57 and 56 look most influential, both to the positive. They look professional and experienced. 56 is a bit older and has a wiser look to her perhaps because of her age. She looks like she has answers and she looks definitive but also approachable. 57 looks very professional and intelligent with her smooth, well-kept hair, smart-looking glasses, and crisp, blue-collared shirt. (LI-044; woman)

Inferences made of group members as being authoritative, assertive, or powerful contributed to perceptions of those members as looking directive, but not as consistently to perceptions of those members as looking influential. These inferences often were based on observed facial expression, but at times were based on observed gender, age, race, and clothing. When asked which group member looked the most directive, one respondent wrote, “I think number 49 does. Broad shoulders, older, and he is wearing a suit. Right or wrong these images with his expression make him come off as more of an authority” (LD-025; man). Another respondent noted facial expression, although could not isolate what it was about them that made the nominees appear directive: “It is something about their eyes and facial expression that send to me a sense of power and directiveness” (LD-040; woman). Yet another respondent recognized how inferences based solely on gender are superficial with the response, “I believe that 110 in particular looks more authoritative than the rest, mainly because he is male. How unfortunate that even I am drawn to that shallow conclusion!” (LD-097; woman). This nomination for a group member as looking influential brings to bear the relationship between a person’s observable identity and expectations of that person as being assertive enough to challenge the status quo:

I think that #107 looks the most influential – to the positive. She appears – for whatever unexplainable reason – like a person who is a voice of reason, who has experienced a successful career and is willing to challenge norms. That may come primarily from her facial expression or

it may be her race, age and gender speaking more loudly to something that I expect, but can't explain. (LI-081; man)

Inferences made that group members were serious, focused, or task-oriented contributed to those members' being perceived as looking directive more than as looking influential. When linked to observed characteristics, these inferences most often were linked to expression. This reason given in support for nominations of multiple group members as looking directive is an example:

They aren't smiling as much, which could be taken as a "no-nonsense" attitude. They look more firm and disciplined. I know it is presumptuous to think this simply because they aren't smiling as much, but based on my first impression this is what I think. (LD-022; woman)

This respondent gave similar reasons, but also made specific note of the gender and race of the nominees:

I hate to say it but I think from the picture only it looks to me like 9 and 11 (white males) would be the most directive. They have serious, experienced looking faces that look to be quite directive. I also think from the pictures that 2, 1, and 12 look to be directive. They have "solid faces" and look like they wouldn't take too much "flack". (LD-007; man)

Occasionally, observations of clothing and hair style were mentioned in combination with facial expression as bases for inferred seriousness, as was the case in this response:

When I first looked at the pictures, my first inclination was that 131 was the most directive because 131 was the most serious. Everything from the

smile to the dress to the haircut indicated seriousness. However, that seriousness does not always say directive. (LD-114; man)

Many respondents inferred that certain group members looked professional or that they held specific professional positions based on their photographs. These inferences led members to be perceived as looking directive, but not as looking influential. Further, the inferences were based largely on clothing, but also on other observed characteristics. One respondent made explicit the link between observations and inferences with the statement, “I believe the suit, along with being white and middle age and what that leads me to believe his job currently is, etc . . . contributes to that belief [of looking directive]” (LD-057; man). Another respondent made specific inferences about the position held by the nominee in the response, “the expression, combined with lack of color in her clothes, and the shape of her face, lends an air of ‘teacher’ to it. Teachers are associated with authority and being directive” (LD-084; woman). Many respondents made the general inference that nominees looked professional, sometimes based on one observable characteristic, but at other times based on many, as in this response:

I think that from the photos ALONE student number 86 LOOKS the most directive . . . based on assuming her age (older), clothing, (appears to be wearing a suit) her haircut (professional) and her glasses (creates a serious look). She looks professional and task orientated. (LD-074; woman)

Inferred confidence or strength contributed to perceptions of looking influential more so than to perceptions of looking directive. Facial expression, along with pose, were

the most-often cited observations upon which the inferences were based. Some respondents based inferences of confidence on pose alone, as in “they have a slight turn of the head,” (LD-008; woman) or “his chin is held a bit high in the air” (LD-040; woman). One respondent inferred confidence of the nominee based on both observed pose and expression:

4 looks influential in a positive way for several reasons...she is looking directly at the camera with a confident and self-possessed expression. She has just the hint of a smile on her face (much like the Mona Lisa!) which suggests she is approachable yet in charge. (LI-010; woman)

Certain group members were perceived as looking influential from the photographs based on inferences that they were leaders or would be listened to or respected. As was the case for many of the other categories of inferences, inferences of leadership most frequently were made with regard to facial expression. One respondent made explicit the link between facial expression and inferences that the nominee would be listened to and respected by others:

I think 4 looks influential to the positive. She has a stately looking face that I would expect grounded opinions from and whose words would carry some weight. From her picture, she looks like the kind of person that others would listen to and have respect for. (LI-007; man)

Another respondent offered a detailed explanation of how the nominee would behave as a leader—inferred, perhaps, only from a smile:

Student number 141 looks like a quiet leader. He looks like the type of person who would sit in a room and listen to a fierce debate, wait for an opportunity, and then share a few short comments to bring the group to consensus. Perhaps it is his collegial smile that makes me think this. (LI-112; woman)

Perceptions of certain group members as looking influential also were surmised from inferences of positive or negative attributes. (Recall that influence can be conceptualized in either positive or negative terms). The specific attributes inferred varied greatly, but were based primarily on facial expression. For example, one respondent's reason for nominating others as looking influential to the positive was, "these people seem laid back and have a nice approachable smile that makes them seem friendly. They have a look about them that makes them seem like they love life" (LI-002; man). In contrast, another respondent wrote, "12 looks influential in a negative way because the expression on her face suggests a rigid, up tight, know-it-all" (LI-010; woman). One respondent remarked on both inferred positive and negative attributes in support for nominations:

Students 98 and 95 "look" most influential to the positive. Based on my preconceptions their physical looks appear to be collaborative, enough of a smile to seem approachable, not too tense/rigid, dressed to present a look that they care about themselves and not overly stated. Students 100 and 96 have a slight grin that could appear to look cynical. I might

question their intent and the possibility that they could influence to the negative. (LI-072; woman)

In sum, although a few participants were hesitant to make judgments based on photographs alone, a large majority conjured perceptions of leadership based on extensive inferences made both with and without links to characteristics observed from the photographs.

Nominations based on inferences made in relation to stereotypes or mental models.

As I discussed in Chapter 3, people make assumptions about what characteristics a person must exhibit in order to be a leader; assumptions which are based on prototypes or mental models of leaders that people develop through experience (Nye & Forsyth, 1991; Rosch, 1978; Lord & Maher, 1993). The qualitative data revealed that participants recognized the effect of, and power of, this socialization and have developed their own mental models of what a leader looks like. Put simply by one respondent as a reason for nominating a group member as looking directive, “he is a white male, showing little emotions, older. His looks fit the patriarchal [*sic*] model we are used to in this country” (LD-006; woman).

Gender was a primary characteristic upon which participants based their stereotypes of leaders. One respondent lamented on the role gender played in her perceptions of others as looking directive: “Men. How awful for me to admit that. I have worked for over 20 years in corporations and thus, must be conditioned to the idea that

they ‘guy’ is the boss. I hate that. But it’s true” (LD-053; woman). Another respondent made the distinction that gender role, rather than gender itself, is a source upon which mental models of leadership are based:

Student #112 looks most directive to me. She/he looks more masculine than the others (short, straight hair). I am drawing my conclusion simply from the fact that a more male looking person would be more directive. My conclusion is completely based on societal scripts of what a leaders should look like. Yikes! Women aren’t suppose to be directive! I know many women that are directive but when I looked at the group I picked student #112 which surprises me. (LD-094; woman)

One respondent recognized not only socialization with regard to gender, but also the stereotypes that are built on the relationship between gender and race with regard to how women of color would be expected to act directive. The respondent expressed how deeply ingrained biases can be, even in spite of incongruity with conscious beliefs:

Based purely on appearance I would say student 110 looks the most directive. This answer of course is based on his gender and the way I have been socialized to understand the roles of men vs. the roles of women. But I would also say student 113 would be directive . . . based on the stereotypes I hold in the back of my mind about women of color and how they often seem to be more directive than white women in my opinion. I do not believe this to be fact and wouldn’t even say that I agree with this

statement however these stereotypes that I hold come from a deeper place that is difficult to erase. (LD-098; woman)

Many inferences based on stereotypes or mental models went beyond the basis of gender. Facial expression, race, position, clothing, and hair style also played into perceptions of group members as looking directive or influential. One respondent drew very specific inferences about a nominee who fit a stereotype the respondent held based on such observable characteristics:

#94 I would argue would influence the group in a negative manner. This person appears to be a “stereotype” with almost no hair, bulging shoulders, and the expression worn. The photo gives the impression of an aggressive man who might make stereotypical statements in order to enflame a reaction from the group. This would have a negative impact as it could generate hostility within the task force. (LI-077; woman)

Another respondent pushed against making judgments based on photographs, but in the end conveyed the effect that the media has on perpetuating stereotypes based on physical appearance:

I refuse to accept the implication that people look like their personalities, especially in their photos . . . I have come to believe that people who look professional do wield more influence. I’m thinking the stereotype executive from TV: tall, thin, beautiful, nice clothes, clean-cut, soft [spoken] . . . everything I am not. I picture 138 to be somewhat like this, the older white male administrator in a suit. (LI-105; woman)

Taken together, reasons given by participants for nominating group members as looking directive or influential demonstrated that perceptions were formed on an overall conception of a person; a conception based on the melding of observable characteristics, inferences, stereotypes, and mental models based on experience. This response, in particular, epitomizes the complexity of perception formation:

#35 . . . He is a white male, probably middle class, with a serious expression that interprets as thoughtful and fair. He looks like the stereotypical version of a [given state] superintendent and he looks like the kind of person I have taken direction from all my life. (LD-039; woman)

Research Question 3: What effect do the physical characteristics of an individual have on other people's perceptions of that individual as an emerging leader?

After the second online session of group task work, participants again were asked to make nominations for the most directive group member and the most influential group member. For the second round of nominations, participants not only had information from text-based communication, but also from modified-persona photographs. For the analysis of Research Question 3, I employed quantitative methods to determine the effects of the physical characteristics of perceived gender, race, age, clothing, facial expression, and weight of the individuals portrayed in the photographs, as well as self-reported gender of the actual group members, on perceptions of those individuals as being directive and as being influential. As with prior analyses, I included course type as

a control variable. I also ran separate analyses that included not only the variables I described above, but also independent variables for proportion of nominations for looking directive and for proportion of nominations for looking influential. I chose to enter these variables to determine if perceptions of who looked directive or influential affected perceptions of who was directive or influential during the following session.

I operationalized two dependent variables for this analysis as measures of change in perceptions of leader emergence. The first measure was the change in the proportion of nominations for being perceived as directive a participant received from after the first session to after the second session. The second measure was the change in the proportion of nominations for being perceived as influential a participant received from after the first session to after the second session. I used change in proportion of nominations—rather than just the proportion of nominations after session two—in an attempt to isolate the effect of introducing physically identifying cues. I treated the two dependent variables as continuous variables; however, I also analyzed them as dichotomous (i.e., increase or decrease in the proportion of nominations) to help explain the results.

I performed preliminary one-way analysis-of-variance tests to reveal the relationship between each independent variable, when considered alone, and the two dependent variables. These tests revealed that when considered alone, none of the perceived physical characteristics were statistically significantly related to changes in proportions of nominations for being directive or for being influential. Similarly, neither self-reported gender nor course type were significantly related to changes in proportions of nominations.

I performed Pearson correlation analyses with a two-tailed test of significance to elucidate the bivariate relationships between the variables (Table 12). As I used variables for proportion of nominations for being directive and for being influential after session one and after session two in order to calculate changes in proportion of nominations, I report on these variables as well. The correlation analyses revealed positive intercorrelations between proportion of nominations for being directive after session one, proportion of nominations for being influential after session one, proportion of nominations for being directive after session two, and proportion of nominations for being influential after session two. Further, the results showed a significant, positive relationship between the two dependent variables, such that a change in proportion of nominations for being directive in a given direction was related to a change in proportion of nominations for being influential in the same direction, and vice versa.

Being medium in age was significantly, positively related to having a change in proportion of nominations for being directive. Participants who were perceived as looking directive or as looking influential (via modified-personas) were more likely to have been perceived as being directive after session two. There were no significant relationships between the specific perceived physical characteristics and perceptions of being directive or of being influential after session two, or between the physical characteristics and changes in perceptions of being directive or of being influential from session one to session two. I did not address the intercorrelations between the independent variables, as they all were dichotomous in nature and the correlation values would be misleading.

I performed two multiple linear regressions to determine the extent to which the physical characteristics of the modified-persona photographs predicted changes in perceptions of being directive and changes in perceptions of being influential. First, I regressed the dependent variable of change in proportion of nominations for being directive on the independent variables of perceived gender, race, age, clothing, facial expression, and weight, and on self-reported gender and the control variable of course type. Second, I regressed the dependent variable of change in proportion of nominations for being influential on the same independent and control variables. In both cases, I entered all of the independent variables simultaneously. Neither model proved to predict a statistically significant portion of the variance in the dependent variable, and none of the independent variables in either model were significant predictors of the dependent variable. Further, both models failed to gain significance when I added the two independent variables of proportion of nominations for looking directive and proportion of nominations for looking influential. With the addition of these independent variables to the models, however, the independent variable of perceived old age did emerge as a significant predictor of change in the proportion of nominations for being directive at the $p < .05$ level.

As I discussed in the Method section of Chapter 3, I also constructed the dependent variables as dichotomous in order to provide more insight into the nature of the change in nominations for being directive and for being influential between the two sessions. From session one to session two, 32% of participants had an increase in the proportion of nominations for being directive, 36% had a decrease in the proportion of

nominations for being directive, 42% had an increase in the proportion of nominations for being influential, and 40% had a decrease in the proportion of nominations for being influential. Chi-squared tests revealed that the only statistically significant relationship between the four dependent variables and any of the independent variables was between a decrease in nominations for being influential and perceived old age (Table 15). Again, I did not attend to the intercorrelation values between the variables in this analysis, as they all were dichotomous in nature and the values would be misleading.

I carried out logistic regressions using the four dichotomous, dependent variables that represented a shift up or down in perceptions of being directive or of being influential. I included the same independent variables in these logistic regressions as I described earlier for the linear regressions in which the dependent variables were continuous. As with the previous analyses, I also tested the logistic regression models including variables to represent proportion of nominations for looking directive and proportion of nominations for looking influential. The results of the logistic regressions revealed that none of the models predicted a statistically significant portion of the variance in the dependent variables. Significant predictors emerged in only two of the models tested; both were models that included variables for proportion of nominations for looking directive and proportion of nominations for looking influential (Table 16). Perceived heavy weight was a negative predictor of an increase in proportion of nominations for being influential. Perceived older age was a negative predictor of a decrease in proportion of nominations for being influential; whereas, proportion of

Table 15: Relationship Between Perceived Old Age and Decrease in Nominations for Being Influential from After Session One to After Session Two

Perceived Old Age	<i>N</i>	Decrease in Nominations for Being Influential		Total (%)
		Yes <i>n</i> (%)	No <i>n</i> (%)	
Yes	17	3 (18)	14 (82)	100
No	132	57 (43)	75 (57)	100
Total	149	60 (40)	89 (60)	100

$\chi^2 = 4.08, p < .05.$

Table 16: Logistic Regression Coefficients for Direction of Change in Proportion of Nominations for Being Directive and in Proportion of Nominations for Being Influential

	Directive		Influential	
	Increase	Decrease	Increase	Decrease
Man	.575	-.421	.478	-.248
Person of color	.056	-.400	-.453	.280
Young age	-.810	.846	.082	.067
Old age	-1.302	.513	.884	-2.228*
Business clothing	-.527	.747	.149	-.066
Smiling expression	.027	.193	.268	.483
Serious expression	.601	-.730	-.546	.694
Heavy weight	.310	.231	-1.346*	1.048
The School Superintendent course type	-.284	-.458	-.339	.008
Reported gender man	.233	.203	-.642	.444
Looking Directive	1.118	-1.125	.940	.759
Looking Influential	2.956	-.312	-3.307	4.777*
X^2	11.480	10.360	15.195	15.278

Significance level: * $p < .05$.

nominations for looking influential was a positive predictor of a decrease in proportion of nominations for being influential.

The results show that, regardless of whether the dependent variables were treated as continuous or dichotomous, the physical characteristics of perceived gender, race, age, facial expression, clothing, and weight were not predictive of shifts in perceptions of being directive or of being influential from after session one to after session two. Further, neither proportion of nominations for looking directive nor for looking influential contributed to changes in perceptions of being directive or of being influential between the two sessions.

Research Question 4: What effect does the text-based communication of an individual have on other people's perceptions of that individual as an emerging leader when the individual's physical characteristics are known?

I investigated Research Question 4 using qualitative methods in order to triangulate the quantitative findings from Research Question 3. Recall that between session one and session two, participants were given access to a set of modified-persona photographs that were purported to represent their group members. Participants were asked to place a copy of the photographs adjacent to their computers for viewing during the second session. To answer this final research question, I analyzed the qualitative portions of participants' responses to the question, "Review the transcript from Session Two. Match the photos with the written text in the transcript. List the IDs of the people whom you think are the most influential (to the negative and to the positive), the most

directive. Refer to your answers in the ninth and tenth questions in Question Set #1. Have you changed your answer or answers? Why or why not?"

The analysis revealed that neither perceived physical characteristics nor perceptions of which group members looked directive or influential based on the photographs emerged as reasons why group members were nominated as being directive or influential after session two. Only a few participants commented on the effect of introducing the photographs in their reasons for nominations; more commented on the effects of time and experience. As was the case with nominations after the first session, most of the participants' reasons for nominating certain group members as being directive were similar to their reasons for nominating certain group members as being influential. The themes that emerged after the second session were quite similar to those that emerged after the first session, and again reflected that the themes were interconnected with regard to shaping perceptions of leader emergence (see Table 10 for a review of the themes that emerged after session one). The difference was that a few of the themes apparent after the first session no longer remained apparent, or as apparent, after the second session. The only differences in language used in the responses between the two sessions was that there was much more use of personal pronouns (i.e., she/he, her/his) in the responses after session two. In this section, I discuss the effects of introducing the modified-persona photographs and of time and experience, as well as explain each theme and provide representative examples of responses.

Effect of Introducing Identifying Photographs

As the exception that proves the rule, only one participant inferred that the photographs may have elicited a shift in perceived directivity and influence:

I had thought 111 seemed like a leader in the first session. Then after looking at her photo I was surprised – she didn't look like a leader to me (obviously making a judgment here). However, my observations from the second session were that she's not quite as sure of herself as I had thought from session one – maybe not such a great leader. (BD2-067, BI2-076; woman)

Merely a couple of other participants noted that the introduction of identity via the photographs may have affected how they, or other group members, participated in the group process. This response reflects how having access to visual cues may have changed the respondent's mindset:

I don't feel that photo identity affected my views. These opinions are based on comments from the discussion. . . . My answer has changed in that I considered several more group members influential during Session Two than Session One. Upon reflection, it is possible that having a photo identity provided a personal connection for me that resulted in my openness to being influenced by more group members. (BD2-050, BI2-057; woman)

Another participant mused how having access to visual cues may have changed other members' approaches to participation:

For influential members . . . #98 and #94 seemed to really attempt to author their own opinions this time. They helped to shape the direction of the conversation by introducing ideas and concepts and arguing them within the group. I would say they both elicited positive and negative responses from the group, simply because through their choice of words. Again, I can't help but wonder if they were more active because of the small sense of identity garnered by the photos we received for the group's membership. (BD2-063, B11-070; woman)

Similarly, few participants explicitly stated that the introduction of photographs did not shape their perceptions. One respondent wrote, for example, "my answers don't come from the pictures but from the transcripts. Pictures can be deceiving. I'd rather be judged and judge others based on the merits of our work . . . not the pictures presented" (BD2-023; woman). Another respondent agreed, although a bit more vehemently:

First, I don't really want to spend any time referring to the photos. That really doesn't tell me who the individual is – it brings up my stereotypes and assumptions (we all have these). However, since that is what is being asked of me, I will comply. My first reaction is that it is very distracting to try to associate a "face" to comments with no other context than the "face". The "face" really tells me nothing about the person. (B12-090; man)

Effects of Time and Experience

More participants elucidated the role that time and experience working with the group, rather than the introduction of identity, played in their perceptions of who was directive or influential during session two. One respondent explained, “All of my choices from Question Set #1 changed. I truly don’t think it was primarily due to the pictures but because I came to notice patterns in behavior more so after a longer period of time” (BD2-091, BI2-105; woman). In defense of a change in perceptions from one session to the next, another respondent proclaimed, “part of the reason is that these people were part of my group during the last half of the session that was very productive. It's amazing when you communicate more with someone your feelings and opinions about them start to change” (BI2-002; man). Yet another respondent attended to the effect of getting used to working in an unfamiliar context: “The first time in a chat room, is really different. The second time, I know I wanted to get more involved in the discussion” (BD2-060; woman).

Emergent Themes

The themes present in reasons for nominations after the first session that remained clear in reasons after the second session were: focus on group procedure or on the task, contributions of ideas to the process, style of interaction, and demonstration of leadership. The theme of rate of participation was still present in the responses after the second session, but not as evident as it was in responses after the first session. Similarly, although the theme of positive interaction style was still evident in responses for being influential after the second session, it was not as evident in responses for being directive

after the second session as it was after the first session. In terms of the theme of contributions to the process after the second session, contributions of ideas remained unmistakable in reasons for nominations for being directive and for being influential; however, contributions in terms of summarizing or clarifying information was only evident in reasons for nominations for being influential, and contributions in terms of asking questions was all but absent from the reasons given for both types of nominations.

Focus on the group procedure or on the task.

As with session one, focus on group procedure involved concern with order, structure, rules, and process, as well as directing the flow of the conversation. The comments made with regard to this theme for nominations after session two were similar to those made for nominations after session one. For example, one respondent wrote, “During the second session 11 was the most directive. 11 had to make sure we followed the process with which we all agreed to follow. There were [times] when 11 just had to come out and say we were talking out of turn” (BD2-007; woman). One nominee even earned a nickname from the group because of her focus on group procedure, revealed in the response, “We even started referring to 117 as the ‘structure gal’” (BD2-077; woman).

Focus on the task involved keeping the group on task and moving forward, being directive in making decisions, and performing task work. As was the case with responses after session one, participants had mixed reactions to such task focus. In an explanation for a nomination for being directive, one respondent remarked, “She reminded us on several occasions that we have a presentation to plan when we would get sidetracked into

discussions that didn't specifically help flesh out the details of our presentation" (BD2-077; woman). Another respondent noted that the nominee's task focus may not always have been positive with the comment, "I believe that 100 is very influential--again not in the negative; but in 100's effort to keep the group moving towards its goal, occasionally interrupted the discussion, which left the group in an awkward position" (BI2-068; woman). Yet another reason given for a nomination implied both positive and negative implications of the nominee's task focus:

I think 7 is the most directive. 7 seems to take a "no prisoners" approach to getting things done. 7's candid approach to her communication and her "task focus" helped in many occasions to get the group to move forward. 7 seems to put results in front of relationships and is ready to say/do what is necessary to get something done. (BD2-008; man)

Contributions to the process.

Nominations for being directive or for being influential after session two also were based on contributions to the process; however, in contrast to session one, the contributions were primarily in the form of offering ideas or suggestions to guide the task or process, putting forth ideas or views that were perceived as valuable, or receiving notable agreement from other group members. Contributions in terms of posing questions did not emerge as a theme in responses after session two, and contributions in terms of summarizing and clarifying points, decisions, or plans only emerged as a theme for nominations for being influential.

Responses that reflected the effect of contribution of ideas on nominations after session two were similar to those expressed after session one. For example, “The most directive in my mind was 4. 4 did not want, again, to assume the facilitator role, but she was a ‘thought leader’ in suggesting ideas, pasting in sample statements, and directing us” (BD2-003; man); and, “128 offered a new concept – round table discussion – that everyone embraced. The idea changed the focus of the group” (BI2-086; man). One respondent noted how the nominee’s contributions of ideas helped settle the group and led that nominee to have influential standing within the group:

146 still struck me as the most influential. . . . she said “we have 3 working defs . . . i say we move on” to which 150 responded “Can someone post here our 3 current defs” and she promptly posted them as if she owned them and we owned them. 146 also pushed on the idea of a gender continuum . . . and why it departed from Bem’s concept of polarization. Once she made that argument, the dissent seemed to quell. It seems to me that her thought and ideas carry weight with this group, more than any other. (BI2-103; woman)

Contributions in terms of summarizing and clarifying emerged as a theme only in reasons for nominations for being influential. One respondent explained, “Number 93, in particular, was able to redirect the conversation back to points that would have been lost. 93 also drew together separate conclusions, showing others how the conclusions were inter-related” (BI2-070; woman). Another respondent noted how a nominee’s contributions of clarifying the focus of the discussion were helpful to the group in the

response, “Even 142 – who in reviewing the chat seems to be relatively silent at points, has some really good contributions in terms of trying to clarify what we are debating and where we are going. I think that has an influential quality” (BI2-104; woman). This response also reflects that a member’s quality contributions to the group process can be influential in spite of, or in some cases perhaps because of, that member commenting less frequently.

Interaction style.

Compared to after session one, a noticeably negative interaction style continued to contribute to nominations for being directive or influential after session two; however, a noticeably positive interaction style continued to contribute to nominations for being influential. As was the case for reasons given after session one, a negative style was typified by a participant’s being perceived as dominant, opinionated, outspoken, uncompromising, pursuant of their own agenda, or contributing negative comments. One participant noted that the negative style of the nominee may have influenced the participation of other group members. The participant wrote, “Most influential – negative (#124). I found this individual to be overly critical, judgmental, and concerned with expressing personal opinions. This made discussion difficult and, in my opinion, forced some to withdraw and be less involved” (BI2-088; man). Other participants offered specific examples of negative interaction styles that affected their perceptions, as in this reason given in support of a nomination for being directive:

I think 7 was directive. 7 entered the chat room just a few minutes late, but before she had the chance to get up to speed, she directed the group to her summary of the issues. 7 . . . is more about content than process. She gets impatient with the process hence her comments about being bored, and about moving on to the next item. I have developed such an intense dislike for 7 so I cannot judge fairly whether or not her influence is positive or negative. For me, it is negative because not only was she rude and sarcastic Monday night, but now she seems to need to communicate to the group that she is light years ahead of all of us and bored with having to wait for us to catch up to her. (BD2-010; woman)

Another respondent explained how the stubbornness of a group member hindered the group's progress:

I found in this session #99 to be the most directive. There was a point in the session when it felt as though it didn't matter what anyone else in the group thought; #99 was going to state and re- state the way that s/he thought it should go. It took many conversations and go-arounds to gain consensus, and it seemed at one point that #99 would hold out and not vote rather than compromise or give a little and go with group consensus. (BD2-062; woman)

Similar to reasons given after session one, a positive style was typified by a participant's being perceived as inclusive, concerned about others, a good listener, in search of consensus, and/or contributing positive comments. Take, for example, this

reason given for a nomination of a group member as influential: “I really appreciate 4's attention to responding to the inputs of others. 4 seems to be a good listener, a relationship person, and a very insightful person” (BI2-009; man). Another respondent exemplified the theme of positive interaction style with this response:

In this session I found #100 to be most influential. This person prefaced many statements with an inclusive “shall we decide” or “we should decide”; this person rarely used “I” in making statements of decision. In addition, #100 would state things to make the group re-cap or acknowledge all participants as when s/he said “Let's read over everyone's proposal.” This person is influential in a positive way. (BI2-069; woman)

Demonstration of leadership.

Reasons given for nominations of group members as being directive or as being influential after session two included the theme of those members taking a leadership role. Similar to the results from after session one, such members were described as taking charge, initiating discussions and processes, facilitating dialogue and decision-making, volunteering for tasks, and/or being formally elected as group leader. Leadership also can give a group member more control, as was clear in the response, “12 has moved into the influential role through facilitation of the whole group. Group looks to 12 to establish and maintain order which allows 12 some freedom to lead to where 12 wants to go” (BI2-

013; man). One respondent used a compelling metaphor to describe a nominee as a leader:

44 continued to be directive and was possibly the most influential in how the night went because she said, "I think we need to select a leader." Then 35 and 37 quickly chimed in by nominating 46 so that group was influential in setting up the structure that would have us with a formal leader. 46 rose to the occasion and was influential in setting out the structure. Before I had dubbed 46 the cruise director. She certainly became that and more: she became the captain. (BI2-040; woman)

The perceived leadership of one group member positively affected the engagement of another in the group process, as was revealed in this reason given for a nomination for being influential:

Now 138, here was the hero for the group. Wow, where did that come from? He had cornered the market on social justice chat in ES [Experiential Simulations[®]] 1, but really stepped out in #2. I think I would have quit had it not been for 138 mediating and leading the group to a balance of task and process. (BI2-101; woman)

Interconnectedness of themes.

It was clear from the reasons given for nominations after session one that all of the themes that emerged stood out individually, but often they were woven together. The

same holds true for the reasons given after session two. A few responses exemplified this phenomenon; for example:

I think the most influential was 12 because she was willing to again assume leadership and did a good job. She cooperated well with 11 monitoring our sharing; she reinforced people when they did well; she integrated new ideas for organizing our process quickly (e.g. go to disagrees rather than agrees); she offered to give the job to 4 (showing she didn't need to be in the position) and she worked hard to keep focus. The next most influential was 7 based solely on her bringing in a summary from the last meeting. This is something that I really value in groups. I always kid that the REAL bermuda triangle is where all flip chart papers go. People don't capture and build on the hard work done in groups. (BI2-003; man)

The interrelation of the themes also is evident in this response:

Last week I put 133 as most influential to the positive. I can see that affirmed . . . 133 is very positive. They agree with others frequently, say let's get going and call for recaps. They also ask questions in a way that invites conversation from others. I was surprised by the number of positive contributions by 139. I had them as a negative influence in the group. They really are just counter to the popular opinion - not really negative – just raises the counter point of view. The most negative influence was felt by 134 – they used sarcasm, swore, had side comments

that were unnecessary (i.e. 134 sips pop), and used a direct approach in giving factual information and opinions which seemed abrasive. 134 also contributed in a significantly positive manner. They are directive and influential in the group – in part because of the role of summarizer. Three of the six informative comments were summaries. 138 was influential in the conversation – again I think in part due to their role as facilitator. They did use this role to their advantage a couple times and leads me to believe that we should probably rotate the role of facilitator in group work for this reason. (BI2-100; woman)

Summary

Even with the addition of visual cues as to the identities of group members, the reasons participants gave in support of their nominations of certain group members as being directive or as being influential remained essentially unchanged from the reasons they gave when group members were highly anonymous. As was the case with reasons given after session one, the reasons given after session two revealed that the factors that contributed to perceptions of leader emergence had to do with how a group member participated in the group process. The findings of this qualitative analysis corroborate those of the quantitative analyses performed for Research Question 3, in that perceived physical characteristics did not—at least explicitly—contribute to perceptions of leader emergence. I discuss the results in greater detail in the next chapter.

Chapter 5

Discussion and Conclusion

I performed this study to address a gap in the literature with regard to the relationship between gender and leader emergence in real groups working over time, and with various degrees of anonymity, in a computer-mediated context. The central research question that drove this study was: *What effect do gendered visual cues have on perceptions of leader emergence in a computer-mediated, leadership-preparation process in which participants work anonymously in groups?* In the following sections, I contextualize the results of this study through discussion of the findings organized by research question, implications for theory and for practice, the limitations and strengths of the study, and ideas for directions for further research.

Discussion

This study comprised one assumption check and four research questions designed to inform the central research question. In this section, I discuss the findings related to the assumption check and the four research questions.

Assumption of Anonymity

I performed analyses to check the assumption that participants truly were interacting within their groups with a high degree of anonymity—in this case, gender anonymity. Considering both sets of analyses carried out to test the assumption of

anonymity, participants who were engaged in a group decision-making task for four to five hours using anonymous, text-based, computer-mediated communication (CMC) were able to accurately predict the gender of other participants approximately 70% of the time. When the context of course type was considered, assumptions of gender were accurate only about half of the time for participants in the The School Superintendent course, but were accurate over 85% of the time for participants in the Women in Leadership course.

For the present study, it is most imperative to focus on the results of assumption accuracy in relation to course type, as participants worked in groups in the context of a certain course type, and context is a factor that warrants attention. According to the results, it is reasonable to assume that the gender identity of participants in the The School Superintendent course type remained anonymous, but it is not reasonable to assume that the gender identity of participants in the Women in Leadership course type remained anonymous.

I argue, however, that it may have been the context itself that cultivated gendered expectations—which in turn affected assumptions of gender—rather than that gender was revealed through text-based communication. The results indicate that gendered thinking pervaded the assumptions. Gendered thinking may have come into play in at least two ways. First, expectations of who will take a given course are gendered, based on the title of the course. In a course with a title such as Women in Leadership, people are more likely to expect that most, if not all, other participants are women. Indeed, in a context in which there was more likely to be a gender imbalance (Women in Leadership course), the predictions of gender were more accurate than in a context in which there was more

likely to be gender balance (The School Superintendent course). Second, the topic of the discussion may have prompted gendered expectations. In the Women in Leadership course, the topic addressed the relationship between gender, woman, and leader. The nature of the discussion and the language used (i.e., feminine) may have led participants to assume that other participants were women.

In all cases—for both sets of analyses, overall and by course type—women were more frequently assumed to be men than were men to be women. This finding speaks to the gendered nature of the construct of leadership. It may be that participants (women and men) were more likely to assume that participants in a leadership-preparation course would be men, due to the fact that leadership often is conceptualized in masculine terms. Further, in terms of the The School Superintendent course, people are more likely to expect superintendent positions to be held by men. It is surprising, however, that women were more likely to be mistaken as men in the Women in Leadership course. As I argued earlier, it would seem more likely that women would assume, mistakenly or otherwise, that other participants were women. This apparent contradiction may be because a few participants in the Women in Leadership course who self-reported as women were assumed by many of their group members to be men because they were perceived to interact with a dominant and aggressive style typically considered as masculine (as revealed in the qualitative data). In addition, there was only one self-reported man in all of the Women in Leadership courses combined for whom to mistake gender.

In either context, it could be argued that women felt more comfortable “acting like men” in a highly anonymous environment. Indeed, they may have figured that

because their gender was masked, they would not be judged as harshly as they typically are in face-to-face settings when they interact with a stereotypically masculine style (Carli, 2001). Another consideration is that perhaps there is a certain quality that women who elect to enroll in a leadership-preparation course possess; a quality that, void of identifying characteristics, leads them to be sensed by others as men.

Effect of Text-based Communication on Perceptions of Leader Emergence when Physical Characteristics are Unknown

The results substantiate that other-assumed gender did not affect perceptions of leader emergence after one session of groups using highly anonymous, text-based CMC as a medium for their interactions. Reasons participants gave for their nominations of certain group members as being directive or as being influential after session one were based on how the group members participated in the group process. Specifically, the reasons included focus on procedure and task, contributions to the process, interaction style, demonstration of leadership, and participation rate. References to gender were conspicuously absent, at least explicitly, from the reasons specified for nominations. These findings corroborate the results of other studies performed in face-to-face contexts that show that task-relevant content and participation rate relate to perceptions of leader emergence (Hawkins, 1995; Mullen et al., 1989), and that language choices are used in impression development when non-verbal cues are lacking (Burgoon & Miller, 1987). Further, these findings corroborate the results of a study by Miller and Brunner (2008),

who found that participation rate relates to perceptions of leader emergence in a context similar to that of the present study.

There are numerous potential explanations for why references to gender were absent from the responses. The absence may be due, in part, to the fact that under highly anonymous conditions gender identity was not as readily available as a basis for stereotyping and impression formation as it often is in other contexts, and therefore did not influence perceptions of leader emergence. In the case of the Women in Leadership courses, it may be that because participants perceived the groups as relatively homogenous with regard to gender, they did not consider using assumed gender as a distinguishing factor. The absence of references to gender also could be a function of participants having learned to be “politically correct” about issues of diversity; hence, they may have avoided explicitly sighting gender as a reason for their perceptions. Further, participants may simply have been unaware of their implicit gender biases. One example is the (likely unintentional) use of gendered language in the reasons given for nominations. The terms *leader* and *dominant* were abundant in the reasons given, and have masculine connotations. In contrast, the terms *inclusive* and *considerate* also appeared regularly and have feminine connotations.

Effect of Physical Characteristics on Perceptions of Looking Leader-like

Both quantitative and qualitative analyses revealed that certain physical characteristics portrayed by modified-persona photographs affected perceptions of looking leader-like. Quantitatively, the characteristics of clothing, facial expression, and

age were central to perceptions. Being dressed in business clothing played a considerable part in perceptions of looking directive and of looking influential. Exhibiting a serious expression contributed to, whereas exhibiting a smiling expression detracted from, perceptions of looking directive. Apparent older age contributed to perceptions of looking influential.

In addition to the physical characteristics that affected perceptions, nominations for being influential after session one also predicted perceptions of looking influential. It appears from this finding that participants may not have been able to disregard fully their impressions of influence developed from the first session when making nominations of who looked influential based on the modified-persona photographs. It is not possible to ascertain the extent to which this situation existed, but it could have brought factors other than physical appearance to bear on the nominations for looking directive or influential.

The qualitative results substantiate that the physical characteristics portrayed played a part in perceptions of looking leader-like. Not only did clothing, facial expression, and age emerge as reasons for perceptions, but gender, race, pose, and hair style did as well. As with the quantitative results, individuals wearing business clothing, exhibiting a serious expression (as well as smiling for looking influential), and apparently older in age were perceived as looking directive or influential. In general, white men were perceived as looking directive or influential. Reasons given also reflected that perceptions were based on head position in the photographs and a direct look into the camera, as well as having a professional hair style, glasses, and facial hair.

Reasons for nominations for looking directive or influential were based not only on the observable characteristics discussed above, but also on inferences made about the individuals portrayed in the modified-persona photographs. Many of the inferences were freestanding, and many were made in relation to the observable characteristics. In both instances, inferences included individuals being perceived as experienced and intelligent, authoritative and powerful, serious and focused, professional, leaders, and confident. In addition, many inferences were made about individuals' having a range of positive or negative attributes.

The physical characteristics to which inferences were linked most often were age, facial expression, and clothing. Inferred experience, intelligence, and education were most commonly linked to older age. Inferences made of group members as being authoritative, powerful, serious, focused, task-oriented, confident, leaders, or respected often were based on observed facial expression—particularly a serious expression. Inferences that certain group members looked professional or that they held specific professional positions were based largely on those members being dressed in business clothing.

Inferences that served as the bases for nominations also were made in relation to stereotypes and mental models. This finding is not striking given that stereotyping is used the most when individuating information is lacking, which was the case in this study (Brewer, 1996; Kunda & Thagard, 1996). The responses reflected that participants recognize that they have been socialized to conceive of leaders as men and leadership as masculine. Many participants expressed that they have established their mental models of

leaders as white men based on their past experiences. Indeed, most people in the United States are socialized to conceptualize leadership in masculine terms and have had more experience with men than women as leaders (Lord et al., 1986; Nye & Forsyth, 1991; Rosener, 1995). Given these realities, it is not surprising that gender was a primary characteristic upon which participants based their stereotypes of leaders, and thus their nominations for looking directive or influential.

The results of this qualitative analysis revealed, as Stangor and colleagues (1992) contend, that stereotypes associated with certain social categories function to inform initial perceptions of the inexplicit qualities of individuals. In this case the inexplicit qualities were those of directive and influential—qualities that are associated with leadership. Taken together, reasons given by participants for nominating group members as looking directive or influential demonstrated that perceptions were formed on an overall conception of a person; a conception based on the melding of observable characteristics, inferences, stereotypes, and mental models based on experience.

Effect of Physical Characteristics on Perceptions of Leader Emergence

I was interested in determining the extent to which the introduction of physical characteristics via modified-persona photographs affected perceptions of leader emergence. Quantitative analyses showed that the physical characteristics of perceived gender, race, age, facial expression, clothing, and weight were not predictive of shifts in perceptions of being directive or of being influential from after session one (without photographs) to after session two (with photographs). Further, neither proportion of

nominations for looking directive nor for looking influential contributed to changes in perceptions of being directive or influential after the photographs were made available.

One argument for why physical identity was not related to changes in perceptions of leader emergence is that perhaps the impressions that participants formed of others based on the first session were strong enough to override the effect of exposure to physically-identifying photographs. According to the reasons given for nominations for being directive or influential after session one, participants already had judged others based on participation in the group process. The results may have differed if the photographs were introduced earlier in the group process. Indeed, “stereotypes may have greater impact on impressions when observed before rather than after individuating information has been observed” (Kunda & Thagard, 1996, p. 299).

It also may be the case that other factors not measured in this study were responsible for the changes in perceptions of leader emergence. One such factor is time. First, by the end of the second session, participants had spent more time engaged with one another in the group process. Impressions could have shifted as participants had more experience upon which to base perceptions. Second, participants gained experience working in the chat space—a potentially unfamiliar context—over time. The increase in familiarity with the medium itself may have allowed participants to interact within their groups in a different way as they became more comfortable. As I discuss in more detail in the following section, the theme of time emerged from the qualitative reasons given for shifts in perceptions. Another factor that may be responsible for changes in perceptions of leader emergence is that participants may have changed how they participated in the

process from the first to second sessions. If true, changes in participation could have occurred for various reasons, such as a difference in mood, frustration with the process, progression of the group work such that it required a different approach, or as a result of self-reflection and conscious effort.

Effect of Text-based Communication on Perceptions of Leader Emergence when Physical Characteristics are Known

The findings of qualitative analyses for which I compared the reasons participants offered in support of their nominations for group members as being directive or influential after session one to those offered after session two corroborated the quantitative results. Indeed, the themes that emerged from the responses after session two were remarkably similar to those that emerged from the responses after session one. They all had to do with how group members participated in the group process. As was the case with reasons for nominations after session one, references to physical characteristics—the one of particular interest in this study being gender—were strikingly absent from reasons for nominations after session two.

Perceived gender of group members drawn from the photographs made available to participants prior to session two did not come into account, at least explicitly, with regard to perceptions of leader emergence. In fact, only a small number of participants remarked on the effect of the photographs at all, and some of those who did claimed that the photographs did not influence their perceptions. Similar to the explanation that I offered earlier with regard to the absence of references to gender in the responses given

after session one, the absence in responses after session two arguably could be a result of participants' avoiding explicitly sighting gender as a reason for their perceptions in order to appear "politically correct," or, participants may simply have been unaware of their implicit gender biases.

It may be that the factors of time and experience working with group members in an unfamiliar medium make a larger contribution to perception formation than observable identity. Although time did not emerge as a dominant theme from the qualitative data, the mention of its effects by some participants warrants consideration. Those who did mention time and experience reflected on the effects in terms of having more interactions with group members and becoming more comfortable with the group process and chat medium, such that they (or others) participated differently. In this case, the qualitative data hinted at the importance of a variable that I could not control in the quantitative analyses: that when comparing impressions of who is directive or influential taken at two different points in time, longer interaction time alone can enhance impression development. The relationship between interaction time and impression development has been found in groups using asynchronous CMC over a period of five weeks; although, participants were not instructed to refrain from asking questions or socializing as a means of exchanging potentially individuating information (Walther, 1993).

Summary

When the results of all of the inquiries of this study are taken together, it is clear that participants perceived other group members as *being* directive or as *being* influential

based on how those members participated in the group process, and not based on physical identity. This held true when physically-identifying characteristics were not available, as well as when they were available. As I discussed earlier in this chapter, however, it is important to consider the potential rationales for why gender did not appear in the reasons for nominations. It also is clear from the results that participants perceived other group members as *looking* directive or as *looking* influential based on certain physical characteristics. Although the characteristic of gender did not prove significant in the quantitative analyses, it did emerge from the qualitative analyses as a reason for perceptions of looking leader-like.

Implications for Theory

This study informs current theoretical-level research in two areas. First, the results of this study contribute preliminarily to the extension of expectation states theory and social role theory with regard to context. Both expectation states theory and social role theory predict that, in general, men have higher status than do women and thus are more influential and more likely to emerge as leaders. Both theories also consider certain contextual factors that affect levels of influence, such as gender-type of the task, task-expertise of the individual, and group composition. Due to these contextual factors, in certain situations women may be more influential and more likely to be perceived as leaders than are men.

The results of the current study indicate that expectation states theory and social role theory should be modified to consider as a contextual factor the extent to which

gender status is explicit during initial impression formation. In the present study, participants reported their initial perceptions of leader emergence after four to five hours of working in groups under highly anonymous conditions. Under these conditions, in which only an individual's text-based communication was available, the assumed gender status of an individual did not play a substantial role in perceptions of that individual being perceived as a leader. Indeed, the high level of anonymity under which initial impressions were formed may have countered the effects of gendered status expectations as described by expectation states and social role theories.

Expectation states theory and social role theory also would be well-served to account for differences that may occur in face-to-face versus CMC contexts. Results of the present study indicate that gender status did not contribute—at least explicitly—to perceptions of leader emergence in groups working over time in a synchronous, computer-mediated context. This result held true at various degrees of anonymity, both with and without visual cues as to physical identity and in both same-gender and mixed-gender groups.

Second, the results of this study contribute to the debate in the literature with regard to the extent to which CMC promotes equalization of participation and leader emergence. Past research in this area has not strictly controlled for level of anonymity, and most has not focused on gender status. The results of the current study support the existence of the equalization phenomenon, specifically with regard to gender and leader emergence, in real groups working over time using synchronous, text-based CMC. It must be considered, however, that the high level of anonymity with which participants

interacted during the first session may have played a key role in the occurrence of equalization. Future research that tests theories related to equalization in a CMC context should be organized around the degree of anonymity employed and focus on equalization with regard to specific status characteristics.

Implications for Practice

The results of this study suggest several implications for practice. The conceptual grounding for this study was based, in part, on the fact that women are less likely than men to emerge as leaders and to occupy top leadership positions. The current study found that this trend did not hold in groups working over time using synchronous, text-based CMC and with varying degrees of anonymity. Given that the first session occurred under highly anonymous conditions, gender was not available for use in impression formation or stereotyping. The high degree of anonymity may be a primary reason why gender did not affect perceptions of leader emergence, either after the first session or after physical identities were revealed. Restricting women to interacting in highly anonymous, computer-mediated conditions in order to mask gender is not a solution, however, to improving women's opportunities to emerge as leaders. What may be helpful, though, is for *initial* interactions to take place with some degree of anonymity, so that impression formation could occur prior to exposure to gender identity. This process may be more realistic for virtual work groups, but could be accomplished for people who eventually would work together face to face by initiating interactions via chat space (or other identity-restricting media) with gender-neutral pseudonyms.

This study also has implications for leadership development. The results provide a preliminary indication that, regardless of the availability of physically-identifying cues, how an individual participates in the group process affects perceptions of that individual as an emerging leader. According to this study, in order to improve their chances of being perceived as directive or as influential, leaders should: focus on group procedure and the task at hand; contribute ideas and questions; summarize and clarify information and processes; engage with a positive interaction style, including being inclusive and concerned with the participation and experiences of others (although negative style emerged as a reason for perceptions of leader emergence, it generally was not received as favorable and often was associated with dominance and negative influence); and, demonstrate leadership by taking initiative and volunteering for tasks. In addition, individuals should attend to their participation rate. The results of this study, in addition to those of other studies conducted in the same context, suggest that a higher participation rate increases the likelihood of being perceived as a leader; however, the results also suggest that too high of a rate may be detrimental (Miller & Brunner, 2008). Leaders should reflect on how frequently they are commenting compared to other group members, with the goal of being an active and productive participant but avoiding dominating the process and rendering other voices unheard.

Implications of this study with regard to how leaders present themselves physically may elicit resistance from some aspiring leaders. Numerous physical characteristics emerged as reasons for why participants were perceived as *looking* like leaders in this study. Some of those characteristics are unalterable, or at least for some

people undesirably so, such as gender, race, and age. Others are within an individual's control, such as clothing, hair style, and facial expression. The results indicate that people can improve their likelihood of being perceived as looking leader-like if they dress in professional, business-like attire and choose a clean cut, professional-type hair style. For men, growing facial hair may help them appear more leader-like. In terms of facial expression, while some facial features are unalterable (at least without surgical intervention), aspiring leaders should attend to the non-verbal cues they portray through their expressions. It is true in this study that a serious facial expression contributed to perceptions of looking directive or influential, but alternately a smiling expression contributed to perceptions of looking influential. No doubt that it seems that potential for leadership should be based on qualities more relevant than clothing and hair style, and that leaders should expend their energies on what they *do* rather than how they *look*; yet indeed, impressions are broadly formed on a host of factors, including how people craft the controllable aspects of their physical identities (Kunda & Thagard, 1996). It would behoove leaders to keep this reality in mind, however unpalatable it may be, as they construct their physical appearance. Of note in this study is that perceptions of *looking* directive or influential did not affect perceptions of *being* directive or influential; of course, impressions had already been initially formed after hours of highly anonymous interactions.

Although not the primary focus of this study, the results also support the practice of utilizing technologically-innovative approaches to leader preparation. Such approaches can create environments for learning that are not feasible without technological

intervention; for example, the varying degrees of anonymity and shifts in identity accomplished in the Experiential Simulations[®] process. Such environments can help leaders reflect on their own explicit and implicit biases, understand how their perceptions of leadership are constructed, and contemplate how they may be perceived by others. As a result, leaders may be well-prepared to engage successfully in diverse organizations.

Limitations and Strengths of the Study

There are limitations to this study that warrant consideration. First, the data I used were collected from students while they were actively engaging in a course at a single institution of higher education. This situation poses two limitations. One limitation is in terms of the generalizability of the results. Perceptions of leadership may vary between students and people of various ages and education levels functioning in different contexts. Consequently, the results of this study may not generalize to other populations working under different conditions. Further, the sample size was relatively small ($N = 149$). The other limitation is that the participants were graded and received credit for the course in which they were engaging while the data were being collected. Further, they were aware that the instructor would have access to their responses to the question sets and were aware that the course was related in some respect to identity and leadership. This situation could lead to social desirability bias, not only in how participants responded to the questions posed, but in how they participated in the group work in general.

Three limitations exist related to research design. First, I performed a secondary analysis of an existing data set, and as a result I did not have the occasion to design my

own data collection instrument and measures. As such, I formulated my research design around the existing measures, particularly with regard to the conception and measures of leadership. In this study, I used the constructs of directive and influential to operationalize leadership. These constructs relate to leadership as it is enacted in the traditional hierarchical manner whereby a leader has power over followers. What is lacking in this study as a function of research design is a more contemporary conception of leadership in which a leader collaborates and shares power with followers. Another outcome of using an existing data set is that the qualitative data I used were based on written responses to open-ended questions rather than on carefully conducted interviews. This method of qualitative data collection did not allow me to explain questions that may have been unclear to participants or to ask follow-up questions of participants for clarity or detail.

The second limitation with regard to research design relates to the use of modified-persona photographs, although the use of these modified identities was central to the present study and the courses upon which this study is based. Specifically, because participants were portrayed prior to and during the second online session by modified-persona photographs, the visual identity that is shown does not match the actual identity for at least one, if not more, of the identifying characteristics I studied. The complication arises in that, for any given individual, the photograph portrayal was not an accurate representation of who participated in the text-based discussions. This situation may have affected other group members' perceptions, particularly if they suspected misrepresentation was occurring (although only a few participants noted this explicitly).

For example, during the first online session a participant may have been perceived by others as being a woman based on the text-based communication, but was subsequently represented visually as a man by the modified-persona photograph. In actuality, however, the participant may have been a woman. The resultant limitation is that it was not possible to ascertain the full effect of using the modified-persona photographs.

The third limitation with regard to research design is related to the perceived physical characteristics of the modified-persona photographs. As I explained in the Method section of Chapter 3, the characteristics of each individual portrayed in the photographs were judged and subsequently categorized by three coders, none of whom participated in the study. There is a limitation in categorizing a characteristic based on only three people's perceptions. Perceptions are relative and subjective (e.g., the age of the coder may affect perceptions). It would have been ideal to have the actual participants' perceptions of the physical characteristics of the modified-personas, as for some analyses I related participants' nominations to the perceived physical characteristics of the modified-personas that were determined by the coders. Data of this nature, however, were not included in the existing data set used for this study. In addition, it is not possible to extricate fully the effects of one physical characteristic from another. For example, a Black woman cannot be perceived as only a woman or only a person of color; the characteristics are inextricably linked (hooks, 1989).

Two strengths of this study are that participants' perceptions are at its foundation and that those perceptions were analyzed using both quantitative and qualitative methods. Although critics would argue that perceptions are not objective measures of reality, I

counter that perceptions are important and powerful, as they are the bases upon which multiple realities are constructed. Further, individual perception is arguably an excellent measure of leadership, as leadership has been defined as the social-perceptual process of being perceived by others as a leader (Lord & Maher, 1993). Employing a mixed-methods approach to the analysis of perceptions of leadership allowed me not only to objectively quantify results, but also to explain in more detail the meaning underlying the quantitative findings. Another strength of this study is that the data were derived from real groups working on real tasks, rather than from experimental conditions.

This study also followed three of the five methodological recommendations put forth by Moss and Kent (1996) with regard to research on leader emergence. As I discussed in Chapter 2, Moss and Kent argue that research on leader emergence should allow for groups of different numbers and composition to interact naturally, allow for a lengthy duration of group interaction prior to assessing leader emergence, utilize a gender-neutral task, employ multiple measures of leader emergence, and allow for emergence of multiple leaders. The groups from which the data for this study were collected were formed naturally by way of participants choosing to enroll in a course. Participants were somewhat restrained with regard to interaction, since they were limited to communicating in a synchronous, computer-mediated chat space and were instructed not to reveal identifying information. The groups ranged in size from 5 to 15 participants and were comprised of either all women or a mixture of women and men, by virtue of natural group formation. For the purpose of this study, participants worked together on a task—which was gender-neutral for The School Superintendent course, but feminine-

typed for the Women in Leadership course—over two sessions lasting four to five hours each. They were asked to nominate a leader after each session. This is a relatively long time for interaction prior to assessment of leader emergence compared to many studies that assess leader emergence after only minutes. Although this study employed only one measure of leader emergence (i.e., by peer nomination), participants were not limited to nominating only one group member; therefore, multiple leaders could emerge from one group.

Directions for Future Research

The process and results of this study have brought to light areas in need of further research. The research questions posed in this study should be applied to different populations to determine if they hold true for those other than graduate-level students participating in courses related to the superintendency and women in leadership. It would be useful to study groups working at multiple levels in corporate organizations as well as in non-profit organizations. It also would be interesting, although perhaps logistically difficult, to study groups working at different levels of government. In addition, further research could contribute to the understanding of the development of conceptions of leadership if a comparison could be made between undergraduate students and graduate students. Finally, although this study did include groups comprised exclusively of women, it did not include groups comprised exclusively of men. It would be of interest to apply the research questions to groups of men.

The findings of this study indicate that, in the particular context of this study, time may play a role in perceptions of leader emergence. Walther (1993) has already concluded that impressions are more highly developed over a longer interaction time in groups using asynchronous CMC without restrictions on revealing identifying information. Further research is needed to determine the extent to which interaction time has a similar effect on impression development with groups using synchronous CMC and with groups operating under various levels of anonymity.

There were indications in the findings of this study that women may have been more comfortable interacting with a typically masculine style, and more accepted when doing so, under conditions of anonymity than they would be otherwise. Indeed, it was surprising that in all cases—overall and by course type—more women were perceived as men than were men as women. The qualitative responses with regard to perceptions of being directive or influential also alluded to the occurrence that women may have pushed on widely accepted gender roles. Future research on the extent to which women felt comfortable with, and were accepted as, bending the gender roles associated with leadership style in a computer-mediated context under various conditions of anonymity and in groups of different gender compositions could extend the current literature. Future studies also may attend to gender role ratings, but this information was not available for the sample used in this study. This line of research is particularly important given that high levels of task contributions from women typically are resisted, yet task contributions have been shown to predict leader emergence (Carli & Eagly, 1999; Hawkins, 1995); women tend to participate at a lower rate than men, and participation rate has been shown

to predict leader emergence (Carli & Bukatko, 2000; Mullen et al., 1989); and, masculine types have been found to be significantly more likely than feminine types to emerge as leaders (Kent & Moss, 1994; Moss & Kent, 1996).

Further research on leadership style in virtual group decision-making would be fruitful. Qualitative responses indicated that participants valued a pluralistic and inclusive approach compared to a dominant and autocratic approach. The intricacies of the relationship between leadership style and perceptions of directivity and influence (positive and negative) were not explored in this study. Much research has been performed on this relationship in face-to-face contexts, but the research is not nearly as extensive in CMC contexts. Given the increasing use of CMC for virtual group work and decision-making in and between organizations, a more detailed understanding of the relationship between leadership style and perceptions of leader emergence in this context is essential.

Finally, the data and research design for this study were such that I could not attend to the differences in perceptions in relation to the physical qualities of the perceivers—at least for the quantitative analyses. In face-to-face settings, rater sex has been shown to predict perceptions of other group members' levels of leadership, influence, and social power; specifically, females gave higher ratings than did males in all cases (Lord, Phillips, & Rush, 1980). Further, rater race has been shown to influence subjective performance ratings in various settings (Kraiger & Ford, 1985; Sackett & DuBois, 1991). Future research could address the differences in perceptions of leader emergence in a CMC context between, for example, respondents of different gender,

race/ethnicity, and age. This line of research is of particular interest with regard to gender, given that research in face-to-face contexts concludes that men are less influenced by women than are women by men, and that men resist influence from women more than do women (Carli, 2001; Carli & Bukatko, 2000). Specifically, an extension of the current study could entail qualitative analysis of the reasons given for nominations by gender of the nominator. For example, such an extension could investigate differences by gender of the nominator in the qualities reported to contribute to perceptions of being or looking directive or influential. Groups of various gender compositions also could be studied in relation to the aforementioned directions.

This study lays a foundation for future research on gender, identity, and leadership in a computer-mediated context. The findings of the study indicate that how individuals participate in a group process affects perceptions of those individuals as being leaders, and that certain physical characteristics affect perceptions of looking leader-like. The findings also indicate, however, that physical characteristics and perceptions of looking leader-like do not affect perceptions of being a leader. Additional research in the areas that I described earlier will help to explain further how the facets of gender, identity, and leadership affect leader emergence in a computer-mediated context.

Appendix A: Human Subjects Authorization

The IRB: Human Subjects Committee determined that the referenced study is exempt from review under federal guidelines 45 CFR Part 46.101(b) category #4 EXISTING DATA; RECORDS REVIEW; PATHOLOGICAL SPECIMENS.

Study Number: 0805E34363

Principal Investigator: S. Lynn Shollen

Title(s):
Perceptions of Gender and Leadership Emergence in Computer-mediated
Decision-making

This e-mail confirmation is your official University of Minnesota RSPP notification of exemption from full committee review. You will not receive a hard copy or letter.

This secure electronic notification between password protected authentications has been deemed by the University of Minnesota to constitute a legal signature.

The study number above is assigned to your research. That number and the title of your study must be used in all communication with the IRB office.

If you requested a waiver of HIPAA Authorization and received this e-mail, the waiver was granted. Please note that under a waiver of the HIPAA Authorization, the HIPAA regulation [164.528] states that the subject has the right to request and receive an accounting of Disclosures of PHI made by the covered entity in the six years prior to the date on which the accounting is requested.

If you are accessing a limited Data Set and received this email, receipt of the Data Use Agreement is acknowledged.

This exemption is valid for five years from the date of this correspondence and will be filed inactive at that time. You will receive a notification prior to inactivation. If this research will extend beyond five years, you must submit a new application to the IRB before the study's expiration date.

Upon receipt of this email, you may begin your research. If you have questions, please call the IRB office at (612) 626-5654.

You may go to the View Completed section of eResearch Central at <http://eresearch.umn.edu/> to view further details on your study. The IRB wishes you success with this research.

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