

ABSTRACT

Title of thesis: MANAGERS, MENTORING, AND MOVING UP:
 THE ROLE OF MENTORING IN WOMEN'S CAREER
 ADVANCEMENT IN THE CHEMICAL INDUSTRY

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The underrepresentation of women in White male-dominated science and technology fields (STEM) has been documented, with special attention on the lack of women's advancement within these fields, including industry (NSF, 2004; Fassinger, 2001; Fassinger, 2002). Mentoring has been shown to be a key variable in the career advancement of both men and women. Lack of mentoring for women also has been demonstrated as a barrier to career advancement (Fassinger & Hensler-McGinnis, 2005). The chemical industry is the largest employer of U.S. scientists and therefore represents an important testing ground for identifying barriers and facilitative factors, such as access to mentoring, that could impact women's career success in this arena (NSB, 2000). Managers represent an untapped mentoring resource for women trained in science and engineering working in industrial chemistry. This study sought to better understand how managers think about mentoring and women's advancement within their field. Specifically, results suggest that managers' experiences with mentoring may have some influence on their perceptions of mentoring more generally, and that their perceptions of gender may be linked to their beliefs about mentoring for women in the workplace.

MANAGEMENT, MENTORING, AND MOVING UP: THE ROLE OF MENTORING
IN WOMEN'S CAREER ADVANCEMENT IN THE CHEMICAL INDUSTRY

By

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CHAPTER 1

INTRODUCTION

The United States has long considered itself a world leader in science and engineering fields (NSF, 2004)¹. Over the past twenty years, the U.S. science and engineering (S&E) workforce has grown exponentially and is projected to grow faster than general employment throughout the next decade (NSF, 2004). Within S&E fields, the chemical industry is the single largest employer of scientists in the U.S. (NSF, 2004). Despite increasing participation of women in chemistry, women continue to be significantly underrepresented, constituting only about 25% of the total S&E workforce (NSF, 2004). Women also are less likely than men to be employed in the industrial sector (NSF, 2002). Moreover, women are not advancing to management positions within industry at the same rate as men. The number of women in management positions within the chemical industry is small: only 12.5% of the 432 directors surveyed in one study were women (Fassinger et al 2006; Tullo, 2003). Overall, women S&E professionals are far less likely than men to hold management, senior management, or corporate officer roles (Catalyst, 1999).

While women are no longer formally or legally barred from entry into educational institutions, attaining advanced degrees, or from most employment, it is well documented that women experience various factors limiting their vocational choices and inhibiting their vocational achievement (e.g., Betz & Fitzgerald, 1987; Fitzgerald & Harmon, 2001). Career barriers that women encounter include occupational discrimination related to hiring, training, wages, and promotion; lack of role models and mentors; role conflict in

¹ Portions of this document regarding women's patterns of participation in science and engineering fields are taken from Ruth E. Fassinger's articles published in 2001, 2002, 2005, 2006, and one currently in press. See *references* (pg. 83).

managing the home-work interface; and self-barriers such as the underestimation of one's professional capabilities (Fassinger, 2002). Though there have been substantive gains in the literature on women's career development in recent years, research on the career experiences of women in nontraditional fields continues to be somewhat limited. Existing research on career nontraditionality for women has tended to focus on general attitudes toward nontraditional careers for women (e.g., Leger, 1997; see also Phillips & Imhoff, 1997) and variables related to nontraditional career aspirations or choice (e.g., Greene & Stitt-Gohdes, 1997; Mau, Domnick, & Ellsworth, 1995). Relatively few empirical studies have attempted to explore barriers hindering women's participation and variables related to women's advancement in the vocational arena, although existing literature (much of it anecdotal) on women in male-dominated careers suggests that the structural and cultural barriers may be particularly onerous for women in nontraditional areas (Phillips & Imhoff, 1997; Yoder & McDonald, 1998), including science and engineering.

In the male-dominated fields of science and engineering (S&E), these barriers are exacerbated by significant underrepresentation of women due to such factors as field segregation and "pipeline" problems (Fassinger, 2001). For example, 37% of the S&E doctorates earned by women in 2004 were in the social and behavioral sciences, and 31% were awarded in chemistry. Again, while women compose almost one half of the general workforce in the U.S., they constitute only 25% of the total S&E workforce (National Science Foundation [NSF], 2004). Moreover, while women and minorities represent the greatest increases in workforce participation, they are not advancing within their fields at rates comparable to White men. A 2006 Catalyst study of the rate of women's advancement into top corporate positions demonstrates clearly that it will take 40 years at

current rates of change for women to reach parity with men. The underrepresentation of women in S&E fields, particularly in advanced positions, begs an examination of women's career experiences in this domain, including barriers and facilitators related to women's advancement.

Little is known about the experiences of science and engineering-trained women working in industry, including factors related to advancement. Extant literature exploring the experiences of S&E trained women has focused mainly on women working within academe. Researchers have had to turn to other fields (such as business, leadership, or academia, generally) to explore issues related to women's success and advancement outside of academe. Within these disciplines, the world of management and advancement has been described as a territory reserved for a few insiders, and as one in which women must be able to prove themselves not only equal to, but better than men in order to enter (Symons, 1986). Research in business sectors has suggested that women managers do not enjoy the presumption of credibility and competence that men do, and that they may need to navigate through a number of tests that male colleagues often bypass (Rhode, 2003).

Another key factor addressed in this literature is the role that securing a mentor can play in advancing careers (Wellington et al, 2001). Project ENHANCE, a pioneering vocational study exploring the experiences of women in the chemical industry, included more than 1,700 participants (Fassinger et al, 2006). Researchers found that women reported mentoring as a key component of professional support and advancement. In addition, more than half of women working in the chemical industry reported never having a mentor, and of those, 83% wished they had one. Perhaps in response to this need, many chemical companies have instituted programs and initiatives to address

women's advancement issues, including formal mentoring programs (Fassinger, Arseneau, Paquin & Walton, 2006). Clearly, mentoring and its relationship with advancement is emerging as a salient issue within the chemical industry for both women and the organizations trying to recruit, hire, and retain them.

As the leaders and decision makers within industrial settings, managers possess an untapped knowledge base related to women's advancement. Both because managers have advanced and are now in the position to establish the criteria for advancement, their perspective on why or how women advance is crucial to explore. Therefore, investigation into managers' perceptions of women's advancement within the chemical industry not only will add to the literature on women working in S&E fields, but also may provide insights on managerial "best practices" within industry for enhancing the future participation and advancement of women in these fields. Furthermore, understanding managers' conceptualizations of the role that mentoring plays in women's advancement will illuminate the issue from a new and valuable perspective, and add to the literature on the role of mentoring in career development.

Pilot data from managers collected as part of the ENHANCE study and analyzed by this researcher revealed that, when asked about women's career advancement, all managers spontaneously discussed the importance of mentoring during their interviews. Although data gathered from these managers were highly informative and intriguing, the ENHANCE study was able only to accommodate interviews with a very small number of managers with very limited focus on mentoring. An expanded and more explicit investigation into managers' perspectives on mentoring and women's advancement, including managers' personal experiences with mentoring, would be illustrative of how

managers view mentoring and if their own experiences play a role in their attitudes regarding mentoring for women. The current study, therefore, utilized qualitative interviews with male managers in the chemical industry, all of whom had experience managing science and engineering-trained women. Data from nine interviews were collected and analyzed using the grounded theory method. Qualitative approaches increasingly have been used in research on the career development and experiences of men and women in the vocational literature (e.g., Arseneau, 2006; Noonan, Gallor, Hensler-McGinnis, Fassinger, Wang, & Goodman, 2002; Gomez, Fassinger, Prosser, Cooke, Mejia, & Luna, 2001; Richie, Fassinger, Linn, Johnson, Prosser & Robinson, 1997).

Overall, then, the purpose of the current study was to examine the mentoring experiences of managers. Further, the current study sought to elucidate how managers' experiences, perceptions, and beliefs about mentoring relate (or do not relate) to their attitudes about and experiences with mentoring women.

CHAPTER 2

LITERATURE REVIEW

A review of the literature pertaining to the career experiences of women in science and engineering, mentoring, and managers is presented in this chapter. First, the importance of science and engineering fields to the U.S. economy is discussed, including patterns of women's participation in these fields, and women's advancement in this domain. Second, mentoring is defined and examined as a variable linked to advancement, including mentoring in science and engineering fields, and a lack of mentoring as a barrier for women's advancement in these fields. Third, managers are explored as a source for mentoring, including their attitudes toward mentoring, women's career advancement, and their previous experiences with mentoring. Last, qualitative approaches are discussed as a valuable tool in the investigation of women's career development and mentoring.

Women in Science and Engineering Fields

Science and engineering (S&E) fields are vital to U.S. economic growth and are increasing rapidly, expected to expand at almost four times the overall growth rate during 1998-2008 (National Science Board [NSB], 2000). U.S. success in these fields depends on its workforce, as the National Science Board identified addressing the supply of scientists, engineers, and science teachers as one of the top 10 priorities of the 21st century (NSB, 2000). Industry employs the overwhelming number of S&E workers, and the chemical manufacturing industry is the single largest employer of science and engineering trained workers in the U.S.

Patterns of Participation of Women in S&E Fields

Since the 1970's, the number of women receiving science and engineering degrees has steadily increased (NSF, 2004). At the end of the 1990's, the graduating classes of chemical engineers were around 30 to 35% female (NSF, 2004). In 2000, women represented 41% of the total population of graduate students enrolled in S&E studies, and 37% of S&E doctoral degrees were awarded to women (NSF, 2004). In 2000, women earned 31% of the total number of doctoral degrees awarded in chemistry (NSF, 2004). While the numbers of women receiving scientific degrees has increased, the number remains small. Moreover, women are still likely to drop out of science and engineering studies at proportionately higher rates than men (NSF, 2004).

Despite notable increases in the number of women obtaining doctorates in S&E fields, (over five-fold in the past 25 years), the persistent underrepresentation of women in these fields is well documented. In 2000, for example, women made up almost half of the overall U.S. labor force but constituted less than one-quarter of scientists and engineers, with minority women representing less than one-fifth of the total number of women in science and engineering and a mere 4% of the overall scientific workforce (NSF, 2004). Moreover, the percentages of women life scientists, physical scientists, social scientists, and engineers remained stagnant from 1993 to 1999 (NSF, 2004). Of those women employed in S&E occupations, only 15% are employed in chemical engineering fields (NSF, 2004).

Women with S&E degrees are less likely to be part of the labor force (that is, either employed or seeking employment) than their male counterparts, and those in the labor force are more likely than men to be unemployed (2% compared with 1.6% in 1999) (NSF, 2004). Employed women with S&E degrees are less likely than men to be

employed in scientific occupations (22% compared with 38%); more likely to be employed part-time (19% compared with 6%); less likely to be employed in the private, for-profit sector (49% compared with 65%); and more likely to be employed in 4-year colleges or universities (21% compared with 12%) (NSF, 2004).

In sum, while more women have been attaining advanced degrees in science and engineering, the number remains relatively small; less than one-quarter of scientists and engineers are women. Of these women, most are employed in academic rather than industrial settings, and only 15% of women currently employed in S&E fields are in chemical engineering. Increasing the number of women in industrial settings, including the chemical industry, appears to be a priority for addressing the demands of creating and maintaining a viable chemical workforce.

Advancement as Success

Career success can be conceptualized in many different ways and may include one or more of the following: job satisfaction, attainment of a desired salary, position, or level of responsibility or authority (Murrell, 2001). Career advancement most commonly refers to achievements made along a career trajectory, and can include a promotion, an increase in responsibility or authority, and/or a salary increase (Heslin, 2005). While career success is not synonymous with career advancement, clearly career advancement constitutes an important measure of career success (Heslin, 2005).

Advancement clearly is an important component of career experience, including women working in science and engineering fields. However, little is known about factors related to the career advancement of this population of women. Women who persist in scientific careers often choose academic rather than industrial settings (NSF, 2004).

Perhaps for this reason, more research has been conducted on the experiences of women scientists working in academic settings and their career trajectories (Valian, 2005).

Data show that while women are now entering the sciences in greater numbers than in past years, disparities between men and women in academic careers still persist (NSF, 2004). Nowhere are these disparities more apparent than at the highest levels of leadership in academic environments (Preston, 2004). Women scientists within academia have not advanced at rates approaching parity with men. Median income is consistently lower for women scientists, including chemists, than their male counterparts across almost all disciplines (NSF, 2004). In 2004, 19% of the 150 assistant professors at the top 25 chemistry departments were women (Chemical & Engineering News, 2004). Women scientists working in academic settings hold less influence, experience fewer leadership opportunities, report slower advancement, and hold fewer faculty and tenured faculty positions than men (Settles et al, 2006).

In a landmark study, Sonnert and Holton (1996) sought to explore the gender gap among men and women scientists within academia, specifically targeting highly achieving men and women. Using both quantitative and qualitative methods, the researchers concluded that, overall, women experienced less desirable career outcomes compared with men, including lower rank achievement. The quantitative segment of the research included a questionnaire administered to 699 scientists (across all fields of study), all of whom had received prestigious postdoctoral fellowships (508 men, 191 women). The qualitative segment included in-depth interviews with 92 men and 108 women scientists (across all fields of study). This group also constituted recipients of prestigious postdoctoral fellowships. Because such a highly achieving group of scientists

is undoubtedly on a path of advancement, and because women have accumulated significant successes to reach the point of receiving such an award, the authors reasoned that if this group of women were to experience barriers to advancement after this point, light would be shed on both the "glass ceiling" hypothesis and the "threshold" hypothesis. The authors describe the "glass ceiling" hypothesis as the notion that there exist real but invisible barriers preventing women from reaching the highest echelons of their field. The "threshold" hypothesis is the idea that after having advanced beyond a certain point, gender no longer matters.

Sonnert and Holton's research supported the "glass ceiling" hypothesis based on gender disparities in career outcomes across all fields, with the exception of biology. In contrast, the authors stated, the field of biology supported the "threshold" hypothesis, because the variance of career outcomes, such as advancement, between men and women was notably smaller. While the study yielded a variety of rich findings, if or how these findings translate to women working in scientific industry remains unclear.

The ADVANCE grant program operated by the National Science Foundation funds research aimed at the recruitment, retention, and advancement of women in academic science. In a study conducted at the University of Michigan, an ADVANCE grant recipient (NSF ADVANCE; Stewart, Stubbs, & Malley, 2002), researchers revealed that female faculty members reported high rates of gender discrimination (41% of female faculty compared to 4% of male faculty) and unwanted sexual attention (20% of female faculty compared to 5% of male faculty). Moreover, women in the study also noted a lack of mentoring and opportunities for advancement. Hierarchical multiple regression analysis (Settles, Cortina, Malley, & Stewart, 2006), went on to demonstrate that women

scientists experiencing increased levels of sexual harassment and gender discrimination also reported poorer job outcomes, including lower salaries and position attainment, than women in more positive climates. Thus, present research suggests that women in academic careers, experience a host of barriers, including a lack of mentoring, and lower levels of advancement.

While mentoring and advancement have been identified as important variables in the career success of women scientists in academic settings, researchers are only beginning to consider these variables for women in scientific industry. Nevertheless, documented patterns of participation clearly demonstrate that women are not advancing within the ranks of industry at rates comparable to men. Women trained in science and engineering are less likely than men to advance to the highest levels of their fields (Catalyst, 1999; NSB, 2000). A recent article in Chemical and Engineering News reported that a small but growing number of women are assuming roles as executive officers, however, the number of women serving on executive boards has decreased (Tullo, 2006). Of the 422 directors at the 42 identified U.S. chemical companies in the survey, 11% were women, down from 12.5% in 2005. The number of women in executive positions has increased, but remains nominal: 8.8% in 2006, an increase from 7.8% reported in 2005. Only 10 of the U.S. Fortune 500 and 20 of the U.S. Fortune 1,000 companies have women CEOs, and none of the 41 chemical companies in the Fortune 1,000 is among them (Fortune, 2006). A 2006 Catalyst study examining the rate of women's advancement into top corporate positions demonstrated that it will take 40 years at current rates of change for women to reach parity with men. Clearly, an exploration of

the barriers preventing women's advancement is necessary if rates of advancement are to improve.

In a 2005 study (Catalyst, 2005), Catalyst conducted research on potential gender bias in perceptions of leadership ability. Their results demonstrate that stereotyped gender bias – specifically, the perception that women are nurturing and unable to be strong leaders – is pervasive in U.S. companies despite years of diversity training and education. Clearly, confronting biases which work against women's advancement in the workplace is essential. Additionally, the implementation of structures or processes – for example, mentoring – may serve to improve the situation for women, including women's abilities to advance.

Recently, the experiences of women in the chemical industry have garnered some scholarly attention. Project ENHANCE was a pioneering study examining the experiences of women trained in science and engineering working in the chemical industry. The study focused on quantitative and qualitative data from 1,725 women and 264 managers (men and women) currently employed in the chemical industry. Demographic information was collected and participants responded to measures assessing perceptions of workplace support and company climate, beliefs about advancement, home-work stress and coping, opportunities for mentoring and networking, and current and desired company initiatives aimed at supporting women. In addition to the quantitative analysis, qualitative data were collected and analyzed using the grounded theory method (Strauss & Corbin, 1998).

Regarding advancement, the researchers found that women reported moderately high levels of both confidence and willingness to advance. The majority of women also

reported that securing or maintaining a leadership position is an important career goal for them.

Moreover, confidence was the single best predictor of successful career outcomes, including career advancement. In addition, success and advancement for women were correlated significantly with mentoring. That is, women who indicated the presence of one or more mentors were more likely to report higher levels of advancement. Generally, women and managers tended to agree about the factors necessary for advancement, but differed regarding the perceived importance of mobility and visibility. Also, significant differences between male and female managers arose regarding the advancement of women, with male managers endorsing belief in a more level playing than women managers. Female managers also demonstrated a more positive perception of women's attitudes toward advancement. Regarding mentoring, 91% of managers surveyed believed that most women in their company wanted a mentor, but only 62% believed that women had access to mentors. For managers and women alike, mentoring emerged as a key factor related women's career advancement.

Identifying the variables that may play a role in increasing the participation of women in industrial chemistry, as well as the factors involved in women's career advancement in this domain, is a task well-suited for vocational psychology. Further, mentoring appears to be a promising variable involved in women's career advancement in this domain.

Mentoring

Exploring the variables involved in increasing the participation and success of women working in the chemical industry is a laudable goal for vocational psychology, as

vocational psychology is rooted in understanding the career experiences of workers.

Among the variables linked with career success generally, mentoring has been found to be an important variable related to career success and advancement across a variety of fields and occupations (Fassinger & Hensler-McGinnis, 2005).

Mentoring Defined & Examined

Various definitions and models of mentoring have been posited over the years (Kram, 1985; Burke, McKeen, & McKenna, 1993; Hunt & Michael, 1983) and researchers have adapted and expanded models of mentoring in different domains (Hollingsworth & Fassinger, 2002) and for different populations (Kalbfleish & Keyton, 1995). Kathy Kram (1985) defined mentoring as an interpersonal process in which an experienced colleague (a mentor) provides professional guidance, instruction, and support to a less experienced individual (a "mentee" or protégé). Kram discussed both career-related and psychosocial functions as distinct categories under which mentoring related activities may fall. Career-related functions help mentees develop professional skills related to career advancement, including negotiating a salary increase or promotion. Psychosocial functions refer to the aspects of the relationship that facilitate development of a protégé's sense of competence, including role modeling or counseling.

Research has demonstrated that employees who are mentored experience more positive work outcomes than those who are not mentored, including higher incomes, more advanced positions, stronger job satisfaction, higher self-confidence, and greater creativity across a variety of settings and occupations (Kram, 1983; Scandura, 1992; Fassinger & Hensler-McGinnis, 2005). Scandura (1992) demonstrated that nearly two-

thirds of prominent executives had mentors and that these executives received higher salaries, bonuses, and total compensation than did executives who did not have mentors.

Mentoring relationships occur typically in either a formal or informal context. Formal mentoring relationships are mentorships in which the mentoring dyad was matched by a third party. Informal mentorships occur spontaneously, based often on shared interests or mutual "liking" (Lankau, Riordan, & Thomas, 2005) without intervention from a third party. Much research has been done comparing and contrasting the effectiveness of the two types of relationships.

The data regarding the effectiveness of formal versus informal mentoring relationships are mixed. Some data demonstrate that informal mentoring relationships are strongly and consistently linked with more frequent mentoring (Scandura, 2001) and more positive job outcomes including better compensation, higher levels of psychosocial support, and increased career development (Ragins & Cotton, 1999) than formal mentoring relationships. However, other data have demonstrated that there is little difference that can be attributed solely to whether the relationship is of a formal or informal nature. One study (Chao, Walz, & Gardener, 1992) compared the levels of job satisfaction and organizational socialization of workers who were formally mentored, informally mentored, and those who were not mentored. The authors found no significant differences between individuals *with* a formal mentor and individuals *with no mentor* in terms of their job satisfaction and degree to which they were "socialized" within their organization. In this instance, a formal mentor was no better than no mentor at all.

Interestingly, the authors also found no significant differences between those who were formally mentored and those who were informally mentored. A study by Ragins,

Cotton, and Miller (2000) helped shed light on these findings. The authors examined differences between formal and informal mentoring relationships in the workplace. The authors hypothesized that satisfaction or quality of the mentoring relationship mediated levels of job satisfaction and other outcome variables, regardless of whether the mentorship was formal or informal. The authors posited that levels of mentorship satisfaction can be represented on a continuum, with highly satisfactory relationships on one end, negative or harmful relationships on the other, and marginally satisfying and dissatisfying relationships in the middle. Participants included 1,162 employees (654 women and 550 men; eight did not provide their gender) working in either social work, engineering, or journalism fields. Measures on career and job satisfaction, mentoring relationship satisfaction, and perceived effectiveness of mentoring program were administered to participants via questionnaires.

The study did indeed reveal that the level of mentoring relationship satisfaction experienced by protégés was linked to the level of positive job and career attitudes. Because quality of the relationship accounted for more of the variance than whether the mentorship was formal or informal, these findings suggest that the "formal versus informal" dichotomy may be insufficient to describe the effectiveness of a mentoring relationship, and that satisfaction with the relationship is a better predictor of positive career outcomes for protégés.

In sum, mentoring can be defined as a relationship between a more experienced colleague (mentor) and a less experienced employee (protégé) in which professional development and psychosocial support are provided. While data are mixed regarding the relative effectiveness of informal versus formal mentoring, mentoring has been positively

correlated with positive career outcomes, such as increased advancement opportunities, across an array of fields and occupations. While mentoring has been linked with career success globally, less is known about mentoring for women in traditionally male-dominated fields such as science and engineering.

Mentoring of Women in S&E Fields

Mentoring has been shown to provide key psychosocial and professional development opportunities (Kram, 1983; Fassinger & Hensler-McGinnis, 2005; Scandura, 1992), including increased salary and number of promotions (Dreher & Cox, 1996) for those who are mentored.

The data demonstrate that it can be particularly difficult for women to obtain mentors (Noe, 1988; Fassinger & Hensler-McGinnis, 2005; Lankau, Riordan & Thomas, 2005; McGlowan-Fellows & Thomas, 2005), and it is perhaps for this reason there are few empirical studies examining women and their experiences with mentoring in the workplace (Fassinger & Hensler-McGinnis, 2005), including women working in industrial science. Moreover, research on mentoring as a variable related to career advancement for women, including women in scientific industry, is scarce. An investigation into whether women in this domain are receiving any mentoring, and if so, the role that mentoring might play in their career advancement, is needed.

Researchers from the ENHANCE study (2006) investigated the career experiences and advancement of women scientists and engineers employed in the chemical industry, including experiences with mentoring. The study revealed a strong correlation between mentoring and measures of success and advancement for this population of women. Specifically, women with mentors attained higher salaries and

more advanced positions. Participants also reported more levels of willingness and confidence in their capacity to advance than women without mentors. Because confidence was the best predictor of career success, the presence of a mentor was a significant intermediary variable, fostering confidence and thus facilitating career advancement. Among women who reported having a mentor, those who received the most mentoring also reported feeling the most confident in their abilities to advance. However, more than half (52%) of women reported not having a mentor, and of these, 83% reported wanting a mentor.

Having a mentor has been linked with career advancement across a variety of fields. However, few empirical data exist regarding the potential relationship between women's career advancement and mentoring. While the ENHANCE study (2006) revealed that women working in the chemical industry who are mentored are more likely to advance, 52% of women reported not having a mentor. Therefore, while mentoring may be an important component of career advancement for women, mentors may be more difficult for women to obtain.

Absence of Mentoring: A Barrier for Women

Mentoring can be particularly salient for women's career success and advancement, although it can be exceptionally difficult for women to find mentors (Noe, 1988; Fassinger & Hensler-McGinnis, 2005; Lankau, Riordan & Thomas, 2005; McGlowan-Fellows & Thomas, 2005). A lack of mentoring has been shown to be a key barrier to women's advancement in the workplace. A continued research finding is that women tend to be at a disadvantage relative to men in procuring high quality mentoring, and that women marginalized further by other status variables (race/ethnicity, sexual

orientation, disability) tend to be the least likely to find and form successful mentoring relationships (Fassinger et al, 2006; McGlowan-Fellows & Thomas, 2005; Fassinger & Hensler-McGinnis, 2000). In their paper, for example, McGlowan-Fellows and Thomas (2005) discuss the implications that racism in the workplace continues to have for African-American women in business seeking interpersonal relationships (such as mentorships) and other opportunities in the workplace. Findings from the ENHANCE study also indicated that racial/ethnic minority women, sexual minority women, and women with disabilities reported the highest levels of perceived discrimination and the lowest levels of company support in their workplaces. Additionally, women faculty in S&E academic settings have noted a lack of guidance and fewer mentoring opportunities than male faculty members (Stewart et al, 2002).

A study conducted by Catalyst, a nonprofit research organization dedicated to advancing women in business, found that women scientists face organizational barriers to entry and advancement in industrial settings. These barriers include a lack of female role models, exclusion from "old-boy" networks, unwillingness of men to mentor women, a paucity of women in more advanced positions who can serve as mentors, and stereotypes about women's perceived unsuitability for scientific and technical careers. Moreover, CEOs report that women need line experience to advance significantly, and more men than women obtain line experience. Of the 6,428 total line corporate officer positions, only 9.9% are held by women. Mentoring plays a key role in the acquisition of such experience in business and industrial settings (Catalyst, 2002). In an article in the *Executive Female*, Sheila Wellington states that the single most important factor that allows men to succeed compared with women is that they have found mentors to assist

them with their career advancement. Mentors, she says, are as important to career success as hard work, talent, and intelligence, because of their ability to provide crucial "behind the scenes" information and support regarding how to be successful.

The literature suggests that mentoring can provide employees with key psychosocial support and career advancement opportunities that one may not find elsewhere. The ENHANCE study supported this finding in a sample of women trained in science and engineering employed in the chemical industry. However, over half of the women in the study reported not having a mentor. This finding is also consistent with the literature regarding the organizational barriers to advancement (including a lack of mentors) that women face in traditionally male-dominated fields (Noe, 1993; Wellington, 2001; Fassinger-Hensler-McGinnis, 2005). Organizational problems would suggest that organizational solutions are needed. Therefore, the present study sought to expand on the ENHANCE findings by targeting those in upper management regarding their attitudes toward women's career advancement and their personal experiences with mentoring.

Managers

Managers possess important influence in the workplace regarding the career advancement of their employees. Specifically, managers exercise a sizable amount of power over employees' performance ratings, salary increases, and promotion decisions (Scandura, 1992). Typically, a manager is defined as an individual in an organization with supervisory functions, hiring and firing power, and increased responsibility and authority, such as a director, vice-president, and/or corporate or executive officer. As this definition implies, managers often have advanced through the ranks of a company or

organization, and may be on a continuing path of advancement. Therefore, managers represent both a hurdle and a resource for employees wishing to advance.

Managers as Potential Mentors

Managers have learned how to advance, and are now in the position of deciding who advances. It is reasonable to posit that managers represent one of the most likely and effective groups of individuals who could be tapped as mentors. Traditionally, mentors have been conceptualized as a group of more experienced workers who are assumed to have developed professional expertise in their domain (Kram, 1985). Mentors are also typically older than their mentees/protégés (Hunt & Michael, 1983). While mentors are not necessarily managers (and in some cases are professional peers with their mentees), most possess some increased level of experience, responsibility, authority, or compensation relative to that of their protégé (Kram, 1988). Indeed, the literature suggests that while not every manager is a mentor, a protégé's mentor is commonly his or her manager (Kram, 1988; Catalyst, 2002; Fassinger et al, 2006).

Mentors often mentor those employees who are most like themselves demographically (Fassinger-Hensler McGinnis, 2005; Riordan, Lankau, & Thomas, 2005; Fassinger et al, 2006). This presents a challenge for women working in White male-dominated fields such as the chemical industry wishing to find a mentor. As previously noted, women are underrepresented in scientific industry, and there are few women and minorities in upper management positions. While demographic matching in mentoring relationships has produced some favorable results (Santos & Reigadas, 2002; Scandura, 2001) often such matching is unlikely or impossible in companies where the number of women and minorities in upper management is small or nonexistent, such as

the chemical industry (Tullo, 2002). Moreover, some studies suggest that a mentor's impact on a protégé's career success and advancement is linked to the weight that a mentor's demographic variables (such as race and gender) carry in a given context.

Cox and Dreher (1996) analyzed how the variables of race, gender, and mentoring experiences affect salary outcomes for holders of master of business administration (MBA) degrees. The researchers found that MBAs who established mentoring relationships with White male mentors reported annual compensation advantages over those without mentoring relationships amounting to \$22,454, and over those with mentoring relationships with mentors from other race/gender categories. Additional analysis was conducted contrasting the three conditions of having 1) a White-male mentor, 2) a non-White male mentor, and 3) a female mentor against the condition of having no mentor. Analysis revealed that only the White male mentor category made a significant contribution to the regression model. These findings suggest that within White male-dominated fields, protégés with White male mentors are advantaged in some ways related to career advancement.

The researchers also correctly predicted that, based on the literature regarding same-group preferences and White male privilege in the majority culture, White MBAs were more likely than non-White MBAs to form mentoring relationships with White-male mentors. Moreover, the study revealed that men with MBAs were more likely than women with MBAs to form mentoring relationships with White male mentors. These findings are consistent with the literature indicating that mentors often choose to mentor those most like themselves.

Given that mentors likely choose protégés who are like themselves, it is unlikely that women and minorities working in scientific industry will find mentors because the overwhelming majority of those in leadership positions within companies are White men. Because demographically dissimilar mentoring relationships have been shown to be effective, and because the majority of managers are White men, managers, regardless of demographic match with mentees, could provide a key source of mentoring, as every potential protégé has a manager/supervisor. However, there are few empirical data regarding how many managers engage in mentoring relationships, as well as managers' beliefs and attitudes about mentoring and its importance related to career advancement. The ENHANCE study demonstrated that of the 52% of women in the chemical industry who did not have mentors, 83% reported that they wanted a mentor. While 76% of managers in the ENHANCE study reported that they believe mentoring is an important resource for women in their companies, it is unclear whether or not they are personally meeting this need, or have benefited themselves from having a mentor.

In sum, managers represent a key source of information regarding career advancement. While there are demonstrated advantages for protégés who have White male mentors, including increased career advancement, mentors often find protégés who are like themselves. Therefore, finding mentors for women working in White male-dominated fields such as business and industry is difficult. Managers could therefore fill the gap for women seeking effective mentoring regarding how to advance in their careers. Additional information is needed from the perspectives of managers regarding their personal experiences with mentoring and how likely they are to fill this mentoring gap for women.

Managers' Previous Experiences with Mentoring

As previously noted, mentoring has been associated with a variety of positive outcomes for those mentored, including increased job satisfaction, salary, and advancement opportunities (Kram, 1983; Scandura, 1992; Fassinger & Hensler-McGinnis, 2005). Scandura (1992) found that nearly two-thirds of prominent executives (managers) had mentors and that these executives received higher salaries, bonuses, and total compensation than did executives who did not have mentors.

While there exists a body of research examining the mentoring relationship from the protégé's perspective, fewer focus on the experience of the mentor, including if and how managers decide to become mentors. Ragins and Scandura (1999) conducted a study to determine how potential mentors weigh the costs and benefits of entering into a mentoring relationship. The sample consisted of 275 executives. The researchers found that individuals lacking mentoring experience anticipated greater costs and fewer benefits than those with experience of mentoring as either mentor or protégé. Willingness to mentor was also greater for those with mentoring experience than for those without experience. The researchers also found that, for those with experience with mentoring, those who had only been mentors before (and never considered themselves to have been protégés at any time) rated the benefits lower than those who had been either protégés or both protégés and mentors. These data suggest that there is a connection between personal experiences with mentoring and whether a manager will mentor others, which may outweigh other variables such as actual time and commitment involved.

Prior research has demonstrated that women are less likely to be mentors than men. This finding has been largely attributed to the general shortage of women in higher

ranking positions within their field (Fassinger & Hensler-McGinnis, 2005). Ragins and Cotton (1993) examined gender and its relationships to willingness to mentor others in the workplace. Questionnaires were sent to 880 employees (229 women and 281 men) of three research and development companies. Participants were White (93%), married (81%), and employed full-time (94%), with 70% holding at least a bachelor's degree. The median age of participants was 41. More than 82% of respondents had no experience as a mentor, and men were twice as likely as women to report having experience as a mentor. Two instruments were developed by the researchers for the purpose of the study. The first scale was aimed at measuring participants' intentions to mentor, while the second scale measured perceptions of drawbacks to mentoring.

Contrary to their first hypothesis, the authors found no differences between men and women in their willingness to mentor, despite the finding that women saw more potential drawbacks and negative aspects to assuming a mentoring role than men in the study. The authors also found that prior experience in a mentoring relationship (either as mentor, protégé, or both) is related to an individual's willingness to enter a mentoring relationship in the future. This study also suggests that those individuals who have been mentored are more likely to mentor others in the future. The authors encouraged the use of qualitative data in order to flesh out the underlying dynamics of mentoring relationships, including personal factors involved in decisions to mentor and attitudes or beliefs in the efficacy of mentoring. Understanding how managers think about mentoring may be the first step in understanding the structural variables involved in prohibiting or promoting women's career advancement.

The lack of women advancing to management positions appears to be a structural problem, as it has been well established that women face a multitude of career barriers to advancement in science and engineering fields, including lack of mentoring and role models (e.g., Betz & Fitzgerald, 1987; Fitzgerald & Harmon, 2001; Fassinger, 2002). Structural problems require structural solutions; therefore an examination of the attitudes and experiences of those in management positions (as opposed to the women experiencing the barriers) seems to be appropriate. Attracting and retaining women in the chemical industry has been outlined as one of the industry's top priorities, therefore it is in companies' best interests to foster the development and advancement of their women employees (American Chemistry Council, 2006). Mentoring has been shown to be a key variable involved in this process. Further, managers are the individuals who currently and will in the future take on the bulk of mentoring women and minorities in chemical companies. Therefore, it makes sense to explore the attitudes and experiences of managers regarding mentoring and women's advancement.

While all six of the managers interviewed as part of the ENHANCE study spontaneously discussed the importance of either formal or informal mentoring and its effect on women's career advancement, managers were not questioned directly regarding mentoring, nor were they asked about their personal experiences with mentoring. Asking a larger group of managers more focused questions regarding mentoring for women, and their own experiences with mentoring might offer a richer, more complete analysis of managers' views on mentoring and career advancement for women.

Managers and Effective Mentoring Programs

While there exists an extensive body of literature regarding formal and informal mentoring practices, unimpeachable evidence has yet to be revealed supporting one form over the other. However, formal programs continue to increase in popularity in both the public and private sector as companies see a need to develop the changing workforce (Fassinger & Hensler-McGinnis, 2005). A more recent trend includes the development of "facilitated" mentoring, whereby organizations establish expectations, training, structures and supports for mentoring, but allow mentors and protégés to select each other (Ragins & Cotton, 1999). Almost no empirical evidence exists that examines the effectiveness of formal mentoring programs for women in industrial science, including the chemical industry. The ENHANCE study revealed that, out of all initiatives currently existing within companies aimed at helping women, mentoring programs were the second most commonly cited initiative by women. Additionally, a desire for mentoring programs was rated second highest in terms of initiatives most desired by women employees. Among managers surveyed, mentoring was among the three most cited initiatives that managers perceived women to want within their companies. Clearly, women want mentoring, and it is occurring, either formally or informally, at noticeable rates. Managers, who may possess both mentoring experience and decision-making power, can offer an important perspective as to what their companies can do to create, implement, and improve existing mentoring programs.

Qualitative Approaches for Understanding Women's Career Development & Mentoring

In the limited body of empirical work related to women's career development in nontraditional fields, including S&E fields, quantitative methods predominate (e.g., Betz & Hackett, 1983; Brown, Eisenberg & Sawilowsky, 1997; Lent et al., 2001; Mau et al.,

1995). In the mentoring literature, researchers have employed mainly quantitative methodologies as well. Two notable exceptions to this are Kathy Kram's pivotal program of research on mentoring (1983, 1985, 1988) and Gerhard Sonnert and Gerald Holton's (1996) study of women in the academic sciences. Qualitative approaches are believed to capture the complex phenomena of an individual's everyday life with particular attention to contextual influences "in ways that traditional research cannot or will not do" (Morrow & Smith, 2000, p. 224). These approaches may be particularly useful in describing the experiences of understudied populations where preexisting theory and/or measures may be inadequate or inaccurate.

Additionally, researchers involved in Project ENHANCE have demonstrated the utility of the grounded theory (Strauss & Corbin, 1998) approach to qualitative research for exploring and explicating the vocational development of a previously untapped, diverse sample of women and managers. Thus, for the purposes of the current study, a grounded theory method of analysis was utilized in the pursuit of articulating a theoretical framework related to the attitudes and experiences of managers in the chemical industry.

Summary and Statement of the Problem

Science and engineering are key fields for U.S. growth and the chemical industry is the largest employer of scientists (NSF, 2004). While women's participation in chemistry-related fields, both in academic and industrial settings, has increased over the past several decades, women continue to be significantly underrepresented in these areas. Women continue to be underrepresented in industry, particularly in leadership roles (NSF, 2004; Fassinger, 2001). According to one study, it will take nearly four decades for

women to advance into top corporate positions in numbers comparable to men (Catalyst, 2006; Fassinger, 2001).

Literature focusing on S&E trained women working in academia exists, but little is known about the experiences of women chemists working in industry, including factors related to advancement. Mentoring as a variable has been included in literature exploring workplace support and career outcomes (e.g., Harris, Moritzen, Robitschek, Imhoff, & Lynch, 2001; Hill, Bahniuk, Dobos, & Rouner, 1989), and has been discussed in the context of women's career outcomes (Fassinger, 2004). Project ENHANCE, a large study of 1,725 women working within the chemical industry found that women reported mentoring as a key component of professional support and advancement (Fassinger et al, 2006). Specifically, researchers found that more than 83% of women responded that they wanted or wished they had a mentor, and 91% of managers responded that they perceived women as wanting a mentor. In addition, many chemical companies have instituted programs and initiatives to address women's advancement issues, including formal mentoring programs (Fassinger et al, 2006). Clearly, mentoring is emerging as a salient issue within the chemical industry for both women and management. Both because managers have themselves advanced and are now in the position to establish the criteria for advancement, their perspective on why or how women advance is crucial to explore. Therefore, this study sought to understand managers' perceptions of the role mentoring plays in women's career advancement within the chemical industry.

Research Questions

Research Question 1: How do managers in the chemical industry conceptualize the role that mentoring plays in women's career success or advancement?

The literature on mentoring has shown that mentoring relationships can provide workers with key psychosocial support and career advancement opportunities. The results of Project ENAHNCE found that 91% of managers perceived that women working within their companies wanted a mentor (2006). Clearly, the issue of mentoring is considered by managers to be a salient one for women working within the chemical industry. The present study explored how managers conceptualize the role that mentoring plays in women's advancement, including the following: 1) how important or unimportant they themselves perceive mentoring to be to women's career advancement and why; 2) how they explain or understand women's perceived desire for mentors; and 3) what the evidence is that they use to assume the importance of mentoring to women.

Research Question 2: To what extent have managers been involved personally in mentoring relationships, as either mentor and/or mentee?

Managers themselves have advanced, and may be on a continuing path of advancement. Therefore, their perceptions of the role that mentoring has played or failed to play in their own advancement may be illustrative of their current attitudes and experiences with mentoring others. Also, managers' direct experiences as mentors to other employees, in either a formal or informal capacity, could illuminate effective or ineffective mentoring practices.

Research Question 3: Do managers' personal experiences with mentoring play a role in how they view its importance/unimportance with regard to women's career advancement?

What is the relationship between personal experiences with (or without) mentoring and the importance managers place (or do not place) on it regarding women's

career advancement? We know very little about what evidence managers are using to base their views on the importance or unimportance of mentoring, as well as how managers decide to mentor women. An exploration of personal experiences with mentoring could prove informative.

Additionally, while there is some empirical evidence discussing the relationship between being mentored and becoming a mentor to others (Ragins & Cotton, 1993; Ragins, Cotton, & Miller, 2000) important gaps exist in the literature, especially regarding mentoring opportunities and experiences for science and engineering-trained women working in industry. Therefore, an exploration of managers' personal experiences with mentoring, as both mentee and mentor would add to the mentoring literature.

Research Question 4: What structural supports do managers think could be put into place to make formal mentoring more viable and effective?

Most literature on mentoring in the workplace includes at least a nod to (if not a longer explication of) the potential and existing differences between mentoring relationships occurring within formal versus informal contexts. In formal mentorships, the company "matches" a manager with a subordinate employee, as opposed to an informal mentoring relationship which is characterized by a more organic relationship developed around shared professional interests or personal "liking" (Lankau et al, 2001). Anecdotal evidence suggests that formal mentoring programs are becoming ubiquitous in a variety of workplace settings. Often, formal mentoring programs offer women and minorities access to mentors they otherwise might not get, especially in fields where management is dominated by White men (Fassinger, 2004). However, the quality of such relationships often has been called into question, and the data are mixed. Clearly, further

exploration of formal mentoring relationships is needed. Both because of the access they can provide and the logistical needs they satisfy (e.g., it is difficult to implement "informal" mentoring programs), formal mentoring programs will continue to exist.

Managers, who may possess both mentoring experience and decision-making power, can offer an important perspective as to what their companies can do to establish and improve effective formal mentoring programs.

CHAPTER 3

METHOD

Research Design

The present study focused on qualitative, structured interviews with male managers who have experience managing science and engineering-trained women in the chemical industry. The data were analyzed as they were collected for emergent themes and relationships using the grounded theory method (Strauss & Corbin, 1998).

Participants

Participants included male managers employed in the chemical industry, currently employed in director level or higher ranked positions, with experience managing science and engineering-trained women. Participants were solicited with the help of several male and female contacts within the chemical industry. Because this population was difficult to access, utilizing the help of industry contacts has proven vital in related research (Fassinger et al, 2006). Twenty-two contacts were identified through their participation in the ENHANCE study, a large multi-level quantitative and qualitative project investigating the career development and experiences of women in the chemical industry. These contacts were reached via email (see appendix C) and asked to identify five managers who were likely to represent a spectrum of attitudes toward mentoring and/or women's advancement. The contacts were asked to send a recruitment email (provided by this researcher) informing potential recruits 1) of an opportunity to participate in a research study, and 2) that participation would involve a 30 minute telephone interview, and 3) that (unless they object) their contact information will be

forwarded to this researcher, who will contact potential recruits either by phone or email to determine whether or not they are interested in participating.

An initial sample of 33 male participants was generated. The final sample of participants was selected based on how quickly they responded to a request for an interview. The final nine participants were White males ranging in age from 53 to 63, with a modal age of 55. Participants were either currently employed or recently employed in Fortune 1000 chemical companies. Of the nine participants, eight chemical companies were represented. Participants held a variety of managerial positions and titles such as vice-president, director, principal, co-director, and research fellow. All participants had experience being a mentor to at least one other individual and all reported having had mentors.

Measures

The instrument used in this proposed study was an interview protocol (see Appendix A for protocol). The interview protocol was based on the responses of six pilot interviews with managers in industrial chemistry. The interview protocol was developed by this researcher, this researcher's advisor who is an expert on women's vocational development, a consultant within the chemical industry, an advanced counseling psychology doctoral student versed in research on this population, and two undergraduate research assistants. The interviews were structured, while allowing the interviewer flexibility to ask interviewees for clarification of response. The interview protocol included questions on personal experiences with mentoring, views about the importance of mentoring for women's career advancement, and potential structural supports that companies can implement to create effective mentoring programs. No definition of

mentoring was offered by the interviewer in an effort to avoid constraining interviewee responses and to allow for maximum inclusion of experiences. Some participants inquired as to how they should "define" mentoring, and the interviewer responded that she would "leave it up to" the participant to define and asked the participant to include details about whether he was discussing a specific kind of mentoring (e.g. formal versus informal mentoring, coaching, advocating, etc.) if he felt it was central to the interviewer's understanding of his experience.

Research questions and associated interview questions are listed. Each interview question was designed to answer a corresponding research question, however, it should be noted that data elicited from multiple interview questions were used in order to adequately address each research question. In the interest of brevity, the interview questions eliciting the most information related to an associated research question are listed below.

Research Question 1: How do managers in the chemical industry conceptualize the role that mentoring plays in women's career success or advancement? The present study sought to explore how managers conceptualize the role that mentoring plays in women's advancement, including the following: 1) how important or unimportant they themselves perceive mentoring to be to women's career advancement and why; 2) how they explain or understand women's perceived desire for mentors; and 3) what the evidence is that they use to assume the importance of mentoring to women.

1. Do you think mentoring is important to women's career advancement in your company? If yes, why/how? If no, why not?

2. Can a woman get ahead in your company without having a mentor? If yes, how?
If no, why not?
3. Do you think women want mentors in your company, and if so, why? If not, why not?
4. Can we talk about groups of minority women, such as racial/ethnic minority women, sexual minority women and women with disabilities? Are some of the issues [list them] you have been discussing the same for [racial/ethnic minority/sexual minority] women [with disabilities]? Are they more or less important for these women?

Research Question 2: To what extent have managers been involved personally in mentoring relationships, as either mentor and/or protégé?

1. I'd like to ask about your own experiences of being mentored. Have you ever been mentored? If so, think about the most important mentoring relationship you had. I'd like to ask you a few questions about it. Can you tell me a little about that mentoring relationship? How was it helpful? What did that person do? What is/was it about that person that made you consider him/her a mentor?
2. Given your own experiences with having or not having mentors, what's your own definition of mentoring/your idea of mentoring? What should mentoring look like? Why is it important? Why should people have mentors?
3. What, if anything, do you do as a mentor to others?

Research Question 3: Do managers' personal experiences with mentoring play a role in how they view its importance/unimportance with regard to women's career advancement?

1. Given your own experiences with having or not having mentors, what's your own definition of mentoring/your idea of mentoring? What should mentoring look like? Why is it important? Why should people have mentors?
2. Should mentoring look different or the same for men and women? Do you mentor men and women differently?
4. Can we talk about groups of minority women, such as racial/ethnic minority women, sexual minority women and women with disabilities? Are some of the issues [list them] you have been discussing the same for [racial/ethnic minority/sexual minority] women [with disabilities]? Are they more or less important?

Research Question 4: What structural supports could companies put into place to make formal mentoring more viable and effective?

1. Does your company have initiatives in place that foster mentoring? Do you think these efforts work? If not, why not? If yes, what makes them effective? How do you know they work? What kind of evaluation are you doing? Who monitors it?
2. It has been suggested that management likes mentoring in theory, but not in practice. What do you think?

Procedure

Participants were contacted by email requesting demographic information (see Appendix D). Participants then were contacted by email to invite them to participate in the study and to schedule the 30-minute interview. Nine individuals were interviewed. Interviews were conducted via telephone both for convenience and because this strategy was used successfully in the ENHANCE study, upon which the current study was based

(Fassinger, et al, 2006). All interviews were conducted by this researcher to ensure consistency in that all interviewees were exposed to the same interviewer and protocol. Length of interviews ranged from 34 to 50 minutes, with the average length being approximately 43 minutes. Each interview was digitally audio taped and subsequently transcribed by this researcher and two undergraduate research assistants. The transcripts were then exchanged and reviewed for both accuracy and inclusion of important nonverbal responses (e.g., laughter, tone of voice, long pauses) by this researcher and the assistants. A copy of the final transcript of the interview was offered to each participant to review. All interviewees declined this offer.

Analysis

The interviews were analyzed according to grounded theory methodology utilizing a research team of three women, including this researcher. Researchers identified as two White women (one Jewish Orthodox) and one South Asian woman, ages 29, 20, and 19 years old respectively. Team members were interested in gaining experience in social scientific research experience related to women and were recruited from an Honors Humanities course. Training of the research team included discussions of team members' personal experiences with mentoring, readings related to qualitative research and women employed in the sciences, and workshops on grounded theory facilitated by senior members of the research team.

Team member biases, particularly regarding women's advancement, were varied among group members and were explicitly discussed throughout the research process. One team member identifies her political beliefs as liberal, and identifies as a third-wave, multicultural feminist. She expressed her belief that despite societal changes aimed at

egalitarianism, women continue to experience internal and external barriers (such as the absence of the presumption of credibility that men enjoy) to advancement in many aspects of public and private life. A second team member identifies as a socially liberal feminist who believes that gender discrimination is more apparent in day to day interactions than it is on a macro or systemic level. A third team member identifies as a feminist in the sense that she thinks that traits traditionally associated with women are considered less positive or desirable than those associated with men, and feminism represents an avenue for addressing this problem. Further, she believes that biological sex differences play a role in shaping men and women's divergent experiences, and considers herself a difference feminist. As a unit, the attitudes of the research team can best be conceptualized as being similar enough to have a shared language around women, work, and feminism, while retaining significant differences in experiences and viewpoints.

As with all research, the prism through which each researcher views the world impacts her interpretation of the phenomena under study and, in qualitative research, can influence the direction of coding and categorization. Team members were encouraged by the primary researcher to reflect upon their biases, openly discuss differences of opinion, and come to consensus about data interpretation when possible. Further, power imbalances within the team were addressed (graduate student working with undergraduates, e.g.) and attempts at fostering an egalitarian environment were made and continuously assessed (informal check-ins, prompting quieter members to contribute, e.g.).

In the grounded theory method, analysis proceeds through the following stages: coding of collected data into concepts; generation of larger categories and then “key”

categories from these concepts; description of categories according to their properties and dimensions; and finally, articulation of a theoretical framework in which these categories and the relationships among them are described (Strauss & Corbin, 1998).

In the first stage of analysis, concepts are labeled through the process of open coding (Strauss & Corbin, 1998), in which transcripts are broken down into small, distinct parts, such as a word, a phrase, or a sentence or group of sentences. Concept labels are kept as close to the interviewee's own words as possible. Each research team member generated her own list of concepts from the first interview. These first lists were compared by this researcher to determine whether any significant differences existed and feedback was given to research team members. Subsequent lists of concepts were discussed by all team members at weekly meetings. "My mentor helped me learn" is an example of a concept generated from the first interview. This concept was generated from the statement: "He [my mentor] was receptive to helping me learn." After subsequent interviews, this concept was expanded to "traits of a good mentor" so that it would be reflective of other similar interviewee responses.

In the second stage of analysis, concepts generated from the coding of all transcripts were assembled into categories, or labels, that encompassed several concepts by the research team. As changes were made to the emerging list of categories, each member of the research team would revisit preceding transcripts to ensure that the current list of categories still "fit" already coded transcriptions. Any necessary adjustments were discussed by the team (e.g. a newly created category now fit a passage better and should be recoded; categories had been collapsed and needed to be renumbered, etc.).

When coding was complete, each researcher took ownership of three interviewees' transcripts and did a final check against the current list of master categories for accuracy. The goal at this stage of analysis was to identify the extent to which categories are saturated. Saturation is defined by Strauss and Corbin (1998) as “the point in category development at which no new properties, dimensions, or relationships emerge.” Created categories should be reflective of the concepts discussed by many participants rather than merely a few. In instances where categories were found not to be reflective of the discussion of several interviewees, those categories were re-examined and “collapsed” into broader categories that reflect the concepts put forth by multiple participants.

The final list of “key” categories was used in the next level of analysis. Thirteen key categories were identified and their properties and dimensions were generated and analyzed by this researcher and the two research assistants. Each key category was analyzed to determine its unique properties and dimensions. For example, within the key category "Effects and Benefits of Mentoring on Career," three properties were revealed: 1) the role of mentoring in career success, 2) the perceived likelihood of success without mentors, and 3) the perceived domain of mentoring helpfulness. Because participants often switched back and forth between discussing their own personal experiences with their perceptions of the experiences of others (i.e. women), parallel properties were sometimes established to capture thematically similar yet fundamentally different ideas. To further illustrate this example, the property "role of mentoring in career success" was dimensionalized on two continua: the first, indicated the level of importance mentoring played in *his own* career, and the second captured his perceptions of how important it is

for *others* to receive mentoring (e.g. new employees; women; minorities). Each participant's responses then were plotted on the created continua to represent his position in relation to each anchor and to other participants. Again, each research team member checked other team members' work to ensure accuracy during this stage of analysis.

In a few instances, dimensions were inappropriate. For example, the key category "Traits of a Good Mentor" elicited several properties; however these properties did not lend themselves to dimensionalization on a continuum. In these instances, participants' responses were synthesized thematically and are presented in list form in this document.

At the final stage of analysis, in order to articulate the theoretical relationships among all of the categories that had been created through the analysis process, key categories were grouped into four constructs developed by this researcher and audited by each member of the research team (Gomez & Fassinger, 1998). These constructs captured and organized all of the data from the analysis into an emergent, or tentative, theory.

At each stage of analysis, one or more auditors was solicited to review and check the veracity and accuracy of the analyses. Auditors included this researcher, two research assistants, this researcher's advisor, and an advanced counseling psychology doctoral student with experience in grounded theory and research on this population.

In the grounded theory method, as in qualitative research in general, there are standards applied to judge the quality—or trustworthiness—of the research (analogous to validity and reliability in quantitative methodologies). The qualities identified by Lincoln & Guba (1985) that establish trustworthiness are credibility, transferability, dependability, and confirmability. *Credibility* is evidenced by the researcher's attempts to establish a collaborative relationship with the participants in order to present the most

accurate description of their experiences. Each interviewee in the proposed study was offered an opportunity to make corrections or add comments to the transcript of his interview in an effort to ensure that credibility was achieved. *Transferability* refers to the likelihood that someone other than the researcher, if presented with the same evidence, would draw conclusions that are reasonably similar to those offered by the researcher. Having team members (faculty advisor, industry consultant, graduate and undergraduate students) verify one another's work throughout the process of analysis increases the transferability of these conclusions. *Dependability* relates to efforts on the part of the researcher to account for variability in the phenomenon of interest, while *confirmability* refers to the possibility that the findings of one study could be replicated in another. Both dependability and confirmability are increased through the use of outside auditors who examined the emerging categories at various points in the analysis. Thus, the most important overall requirement to establish the trustworthiness of the data -- that the data were subjected to multiple rounds of auditing at all points throughout analysis -- was met in this study.

CHAPTER 4

RESULTS

Overview

The purpose of the current study was to articulate a tentative theory about a group of male managers' mentoring experiences, how those experiences relate to their perceptions of mentoring in general, how those perceptions specifically play out in the gender arena, and how that operates in a company context. As detailed in chapter 3, semi-structured interviews were conducted asking managers about their experiences with and attitudes toward mentoring, including mentoring for women. Analysis of the interview transcripts revealed thirteen key categories capturing the participants' experiences and perceptions. These key categories were further grouped into four constructs (Gomez & Fassinger, 1996) that are discussed below as a tentative theory of management perceptions of mentoring.

Overview of Emergent Theory

The emergent grounded theory (illustrated in Figure 1) reflects experiences and perceptions of this particular group of White male managers working in the chemical industry related to mentoring and mentoring for women. Specifically, this theoretical model represents how managers' personal mentoring experiences may be linked to their attitudes about mentoring generally (e.g. their thoughts about formal vs. informal mentoring, personal philosophies of mentoring). This may have some influence on their attitudes and perceptions about gender and mentoring for women in the workplace (how they view gender operating in the workplace generally; their exposure to and their

perceptions of women in the workplace, including groups of minority women, etc.) which, in turn, may have some impact on the overall company climate (including organizational policy and workplace atmosphere) toward mentoring and women (since managers are in positions of relative power in their organizations). Company climate is a "critical intervention point" that may be linked with manager attitudes about gender (policies that support mentoring for women; a valuing of a diverse workforce; open vs. hostile climates for diverse women, etc.) and may relate to manager attitudes about mentoring (what is good mentoring; which types of mentoring are most effective/worthwhile, etc.). Lastly, the company level creates opportunities that may play a role in shaping manager beliefs and perceptions about mentoring and women, and may provide future opportunities for managers to engage in mentoring.

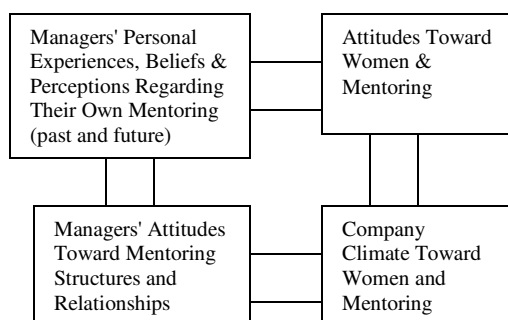


Figure 1.

Thirteen key categories were identified and grouped into four constructs: 1) Manager's Mentoring Experiences, Perceptions, and Beliefs, 2) Mentoring Structures and Relationships, 3) Women and Mentoring, and 4) Company Climate. Constructs and their respective key categories are represented in figure 2. The thirteenth key category, "Process Comments" refers to observations made about the interview process (by both participants and the researcher). While this category is not highlighted on its own in this

document, relevant findings from this category are folded back into discussions of other key categories and constructs where appropriate.

CONSTRUCT	KEY CATEGORIES
Managers' Mentoring Experiences, Perceptions, and Beliefs	Personal experiences with mentoring; Characteristics of the mentoring relationship; Effects and benefits of mentoring on career
Mentoring Structures and Relationships	Formal and informal mentoring; Formation of a mentoring relationship; Ideas about mentoring
Women and Mentoring	Manager perceptions of gender; Manager perceptions of gender and mentoring; Manager perceptions of women in the workplace; Manager perceptions of groups of minority women
Company Climate	Workplace atmosphere; Organizational policy and action

Figure 2.

Consistent with other qualitative research, a "translation" system was derived in order to facilitate communication of the results of the study. Based on a sample of nine managers, the terms "most" and "typical" refer to the majority of participants (five of nine) whereas the terms "almost all" refer to seven or eight managers. "Many" or "a few" are indicative of the response of three or four managers, and the terms "some" or a "couple" indicate two managers.

Additionally, it should be noted that there was a range in the levels of interviewee openness during the interview process. For instance, all managers gave relatively predictable, socially desirable responses at the beginning of their interviews (i.e. thinks mentoring is "great;" "mentoring is valuable for everyone," etc.). However, as the interview progressed, some managers appeared to become more willing to respond in more detail and depth (and in some cases, less socially desirable ways), while some managers maintained a more superficial, general response style. Given the context of the interview (older male participants being interviewed by a young woman about their

experiences and perceptions of working with women) this variability in response style is not surprising. However, this finding provides an important qualification that helps the researcher (and the reader) interpret the results of the present study.

Construct: Managers' Personal Mentoring

Experiences, Perceptions, and Beliefs

Managers discussed an array of personal experiences, perceptions, and beliefs regarding mentoring. It often was difficult to tease apart managers' personal experiences *with* mentoring from their perceptions and beliefs *about* mentoring. In many cases they seemed to flow into and mutually inform one another. For example, in the following statement, a participant describes what could be viewed as both his experience and his beliefs about mentoring:

"Thinking back, whether it's in my own career or for others, you're really starting from scratch. You're starting with no information, and any information you can get from other people is useful in finding your home in an organization. It doesn't matter whether it's in grad school or whether it's in the chemical industry or other places. It's useful. But it's also a matter of finding the kind of relationship where you communicate well with the person who is providing you that information. And I realize what I'm telling you is just standard cannon, but I agree with it."

In an effort to preserve this organic overlap between how participants narrated their experiences, perceptions, and beliefs, they have been grouped together as one broad construct.

Additionally, while it may seem obvious and redundant to differentiate between "experiences" and "perceptions," the author's intent is to remind the reader that many of the questions asked participants specifically about their perceptions of the experiences of others, such as women and groups of minority women. Therefore, an important distinction must be made between how one might interpret a participant's explication of

his own personal experiences in contrast with his perceptions of the experiences of others. For example, one manager explains his perception of why there are so few women engineers:

"...the reason why [there's] so few females engineers, are, is because we didn't have good mentoring by high school teachers to tell them that they could have a good career being an engineer!"

While this may be true for some women (and the literature would certainly support the theory that a lack of STEM role models for young women functions as a barrier to entry into STEM fields) the statement carries (and should carry) a different meaning than if the participant was expounding on his own lived experiences.

Personal Experiences - Being a Mentee

When asked, all participants reported that they believed mentoring was important for career success. All stated that they had been mentored by at least one person, informally as opposed to formally, and in most cases had engaged in more than one mentoring relationship as a mentee at various stages in their career. One manager's response captures this sentiment:

"From my perspective, if you want to move ahead in the company people just don't seem to get it that there is tremendous competition for very few spots. So if your career goals include advancement to increased future responsibility there [is] very huge competition for very few spots ...So, there are all these dynamics that are making it harder and harder if your career aspirations include [advancement]. And the people who get those positions... are going to step up and learn how to develop mentoring relationships... I have achieved a certain level of success in my career and I can definitely look back and say there were people who were very, very important to me, helping me along."

All participants except one only reported positive experiences associated with being a mentee.

The exception to this is captured in the following description of his own experience being mentored, mainly by his direct supervisors:

"[The] mentoring [I received] was too sporadic - it was really hit or miss. Some people were really good at it [but] the people who were not very good mentors to me [was because] it wasn't in their nature, personality, or they had no understanding that mentoring behavior was expected of them or could be helpful to others."

When asked, all participants stated that their own experiences being mentored have shaped the way they think about mentoring and how they mentor others. Further, most participants indicated that their experiences being mentored positively relate to their desire and rationale for mentoring others through comments such as "I feel a responsibility to help others the way I was helped" and "all of these [mentoring] relationships have shaped the way I feel about mentoring, and I think I have grown a bit in my ability to mentor others."

Personal Experiences - Being a mentor

All participants reported having experiences being a mentor. Most managers only reported engaging in informal mentoring relationships, while a couple of managers reported having had both informal and formally assigned mentees. Participants discussed a range of items related to their experiences as a mentor, including what types of activities they engage in as a mentor to others.

Mentoring relationship: Responsibilities and traits of a good mentor

All participants had clear ideas about the type of attributes and behaviors they felt a "good mentor" should possess and perform (see figure 3). Each participant listed traits and/or behaviors that at least one of his mentors demonstrated. Additionally, these lists comprise traits and behaviors each manager reported engaging in as a mentor to others.

Taken together, these findings indicate that it was typical for a participant to comment that the things he found helpful about his mentor are the things he does or tries to do/embody as a mentor to others.

While less talked about, most managers also expressed ideas about the types of attributes and behaviors characteristic of those whom they feel should *not* mentor. These included individuals who lack the commitment to the process of mentoring or to the individual mentee; managers who micromanage or tell a mentee what to do; managers who are not role models; managers with whom you would have to be guarded; managers who are too focused on their own careers and do not see developing other people as an important use of their time.

TRAITS AND BEHAVIORS OF A "GOOD" MENTOR

<p>Meets Interpersonal Needs of Mentee Provides a hand to grab in times of need is a friend can be confided in about work and non-work related things helps mentee achieve vision is not judgmental is readily accessible to listen and discuss functions like a parent accepts mentee as an equal develops personal relationship with mentee allows freedom for the mentee to act</p> <p>Helps Mentee Achieve Tasks is specific in giving feedback has meetings once a month is committed to the process helps ready you for increased responsibilities sets a framework for the relationship directs mentee to others who could be helpful resources gives mentee credit for accomplishments advocates on behalf of mentee to upper management holds up a mirror and allows mentee to see themselves from many different perspectives creates opportunities for mentee's growth and success is aware of mentee's career interests</p>	<p>Has Expertise has a thoughtful approach to research have demonstrated their own career progression and worthiness to mentor has more experiences has training to be a mentor; provides coaching/guidance introduces various tools for success gives advice often outside the normal bounds of the job, including issues about the organization's structure and culture</p> <p>Embodies Positive Qualities possesses qualities that the mentee wants/admires possess qualities such as integrity, honesty is hard working has strong drive is assertive</p> <p>Understands/Inspires People has emotional intelligence inspires people to rise to a higher level makes others feel their contributions are valued provides a vision of how a career could look communicates the importance of the human element believes people are our greatest resource</p>
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Figure 3.

Mentoring Relationship: Traits and/or characteristics of a good mentee

Most managers spontaneously discussed their ideas regarding the traits they would look for in a mentee or who they viewed as someone who could benefit from mentoring. These included: vigorous people likely to succeed; newer employees; ineffective communicators; those identified as "up and comers" or "high potential;" employees not identified as high potential but who would still benefit from mentoring; someone who is both earnest and has native ability; someone who is driven to get advice and guidance; someone who is open-minded and will learn from people around him/her; minority women and others who are in an environment where nobody looks like them; and isolated individuals.

Regarding these last two categories, a rare anecdote was shared about mentoring a woman of color in the workplace. This manager recounted a situation he believed was "ripe for mentoring" in which an African-American woman had become completely isolated in her work environment:

"I have a woman in particular in mind who just, this is exactly what happened to her [she became isolated]. She [had] been there 6 or 8 months, she can't figure out why everything doesn't work because in school everything always did. No longer the smartest kid on the block, doesn't seem to fit in. She went from eating in the cafeteria to eating in her office to eating in her vehicle. And you know, we established an intervention, we snagged her from her car and [took] her to lunch and try to reintegrate her back into the company and help her understand what science is all about. And because you may have a degree in science but you don't necessarily know what science is all about until you start doing independent research...this situation was completely ripe for mentoring."

While many managers discussed the problem of women and minorities "not having anyone who looks like them" and becoming isolated in their workplace, only a couple of

managers wondered whether this isolation was a systemic failure on the part of their companies. The remaining participants tended to attribute this to individual variables on the part of the isolated worker.

Effects and benefits of mentoring

All participants were eager to discuss the role mentoring has played in their own career progression and development. In terms of their own assessment of the role mentoring has played in their career success, all participants indicated a range of responses, from *important* to *very important*. One participant who viewed his mentoring experiences as very important stated,

"I have been in the chemical industry and manager for 25 years. Most people look at me and say that I have attained a high level of success, and I can go back early in my career and see points in time when I was coached and guided to folks that I didn't report to, but were very, very important for me. Folks who sponsored me and made sure that I had the opportunity. And there were days where I wasn't mentored, and didn't see the learning opportunity...and I made some mistakes."

Another participant who discussed the importance of mentoring on his career stated,
 "I think it [mentoring] is very important and very useful. I have benefited from it and I benefit now by getting improved performance and through the development of people who I'm able to mentor."

Specifically, managers viewed the historical effects and benefits of having a mentor on their careers in terms of the following themes: mentoring had helped him build technical skill sets; created opportunities for growth; helped him learn importance of networking and how to do it; gave him career guidance/advice; gave him advice about specific tasks/how to approach problems; recognized his talent; helped get him recognition; served as an example/role model; gave him information about company; facilitated ongoing discussions; improved his performance.

Managers also spontaneously expressed clear ideas about how having a mentor can benefit others. These included: developing a mentee's interpersonal and communication skills, learning to tailor things to a specific audience, avoid career pitfalls, help women advance, help newer employees learn from more senior employees, transition from academic to industrial settings, transition into any new situation, navigate company politics/culture, and build relationships. While there is extensive overlap between how managers feel they benefited from being mentored and how they imagine others might benefit, managers did not report benefiting from improving their own interpersonal and communication skills -- something widely described as something key that a mentor could build in others.

A few managers also discussed the benefits reaped by the company from their own experiences of being mentored including: improved employee performance, helping him to become a mentor to others in the future, and grooming newer employees to take the place of outgoing workers (often mentors).

Construct: Mentoring Structures and Relationships

This construct relates to participants' spontaneous discussions of the existence of different mentoring structures (i.e. formal and informal mentoring), different mentoring roles (i.e. mentor, coach, sponsor, advocate) how a mentoring relationship is formed, and managers' ideas about mentoring.

Formal and informal mentoring

While all participants were informally (as opposed to formally) mentored, most participants discussed and differentiated between informal and formal mentoring relationships; the latter loosely defined as when a third party becomes involved in the

matching of a mentor with a mentee. There was notable variability among participants' experiences with and attitudes towards formal and informal mentoring. A few managers endorsed the effectiveness of both informal and formal mentoring. One manager stated, "formal is about equal to informal. However, it is more rigid, and less natural." Another manager stated, "formal mentoring has worked for me [in the role of mentor], but I'm not sure about for other people - the commitment needs to be there for the success of mentoring."

A few managers endorsed the effectiveness of informal relationships, while being critical of formal mentoring relationships. One manager responded,

"In my formal mentoring experiences, we meet far less frequently than I did with my informal mentees. Overall I found them to be unsuccessful... [for example] it does not continue when people change location whereas informal does."

Another participant critical of formal programs stated, "it is not productive to force managers to become mentors." One manager who mentors both formally and informally cited unique advantages to both. While referencing formal mentoring, he offered this example:

"I was traveling [to] a conference over in Asia two weeks ago I was in Japan...and I invited him [my formal mentee] to spend a day with me, which he wouldn't normally have any reason to do ... and I think that was very helpful. But I was able to do that formally because as a formal mentor I could pay for him to go to Japan."

Switching to the topic of informal mentoring, he goes on to say:

"Informally, it is nothing so overt. People are literally...'Do you have an hour to talk to me?' that kind of thing, so we can just chat. We'll do that. Or someone will drop in, or I'll drop into their office or cubicle and say 'hey, got some time? What's going on?' It is less structured for informal mentoring, but I think that the quality of the advice or feedback—[which] is probably the outcome of the mentoring session—is about the same. There is very little difference between formal and informal [mentoring] it is more the mechanics of it."

One manager, though critical of formal mentoring relationships, expressed his unwillingness to get rid of the concept altogether: "Formal mentoring programs have not been very successful, but you need them to create mentoring relationships." Another manager highlighted a similar downside inherent to informal mentoring: "Informal mentoring has the drawback that if people want to find a mentor, they might not be able to!" Interestingly, another manager expressed his view that informal mentoring was very ineffective (despite being informally mentored), and he viewed formal mentoring as more effective:

"Companies could benefit by formalizing mentoring so people don't slip through the cracks. It should be part of people's job descriptions. Uniformity helps in mentoring."

In sum, managers spontaneously discussed a range of attitudes toward different mentoring structures largely based on their own experiences. Managers' support for formal mentoring programs appeared to hinge on their ability to develop relationships where workers might otherwise not have access to mentoring.

Formation of a mentoring relationship

How does a mentoring relationship develop? All managers, to varying degrees, commented on how their relationships with at least one of their mentors had formed. Synthesis of these data reveal that nearly all managers found their mentors through informal channels, though many mentors were participants' direct or indirect supervisors. The circumstances given included the following themes: fate/happenstance; naturally developed; it was a peer-type relationship; following in mentor's footsteps; beginning job mentor had held; my mentor approached me; informally mentored by direct supervisor; never formally assigned/mentored; watched my senior and principal investigator;

coached and guided by folks I didn't report to; he was my boss for a time, but not while he was mentoring me. One manager described being "identified" as someone with potential and was therefore "assigned" to someone who mentored him, although this was well before formal mentoring programs existed. It should also be noted that many managers commented that they "didn't know" they were being mentored at the time or that they "didn't call it mentoring back then" but that upon reflection, it indeed was a mentoring relationship.

There was some variability regarding managers' attributions for why a mentoring relationship had formed. Many managers attributed the formation of the relationship to external factors such as age, position, and timing. A couple of managers attributed the formation of the relationship to self variables including extremes in performance - one struggling to adapt and one doing exceptionally well, and how this caught the attention of senior employees who would later become their respective mentors. Finally, one manager attributed the formation of his mentoring relationship to both self and external variables: "It just kind of happened - I developed a mentor/mentee relationship with my direct supervisor."

A similar mix of responses was found for managers who spontaneously discussed how mentoring relationships formed between themselves and mentees. Many managers stated that they are or have been formally designated as mentors in their companies and "assigned" to mentees. Other participants noted that they have a reputation for being receptive to informal mentoring and that potential mentees seek them out. There was also considerable overlap between these groups, as most had engaged in both formal and informal mentoring. Managers also expressed attitudes regarding who managers choose

to mentor and why. One manager described a viewpoint typical of the sample. He perceived that people naturally "gravitate" toward other people based on subtle, "personality" traits:

"... It may be that finding a mentor that is more like you may make the relationship better, earlier. Which is not to say that you couldn't have the relationship across ethnic or gender lines, but it may be that you are more receptive to information that comes from someone who looks more like you.... There are people who are different in their personalities... I think you gravitate toward people who have certain personality traits. I was going to say, who are more like you, but it's not necessarily who are more like you.... Perhaps it's a matter of being able to relate to what a person has to say to you and understand, and that is not textbook learning. It is from an experience with which you have some empathy."

Ideas about mentoring

As each participant discussed mentoring, an underlying "personal philosophy" about mentoring began to emerge. Interesting similarities and differences between participants surfaced. For example, all managers discussed mentoring as a professional (or "business") relationship and most discussed it in terms of both a personal and a professional relationship. When responding to the question, "what should mentoring look like?" managers used a variety of descriptors including "parenting," "coaching," "friendship," "mutual collaboration," "something that management should not force," and "something that should be more formal."

Lastly, it would be misrepresentative to state that managers endorsed the idea of mentoring in an any abstract sense. Rather, whether or not participants viewed mentoring as beneficial was inextricably tied to what was taking place in the mentoring relationship, including the level of commitment on the part of the mentor to the process and to the relationship, whether the mentor possessed certain traits, and to a lesser extent, whether the mentee possessed certain traits. In each case, a participant viewed mentoring as

valuable if and only if it contained the ingredients necessary for good mentoring, as defined by each manager. For example, as one manager put his philosophy succinctly, "It all depends on the individual. The process [of mentoring] is not the problem. The individuals [unqualified mentors] are the problem."

Construct: Women and Mentoring

Managers expressed a range of attitudes and perceptions regarding gender, gender and mentoring, and women in the workplace, including groups of minority women. These findings are outlined and summarized below.

Manager perceptions of gender

When questioned about mentoring and advancement for men and for women, nearly all participants emphasized the "sameness" of men and women in the workplace and the salience of individual differences over gender differences. In many instances, participants objected to or corrected the interviewer's use of gender-specific questions such as, "Can a woman get ahead in your company without a mentor?" "Should managers mentor men and women differently?" "Should male and female managers mentor differently?" For example, two manager responses below:

"Well, that shouldn't be the question. The question should be 'can anyone get ahead without a mentor?' And the answer is yes."

"I don't think this is gender based. I think it is easier for anyone if you have a decent mentor... I don't think that it's useful to be specific to women... I think that, in general, if you have the right kind of mentoring relationship that is helpful for you."

When probed further for specific details, however, a slightly more nuanced picture emerged. Nearly all managers who emphasized the view that gender differences either did not exist or did not play a role in the workplace later discussed elements where

he perceived gender differences as existing. One example of this includes a manager who insisted individual differences outweighed gender differences. Later in the interview he described what he perceived to be the "unique challenges" women face in the workplace. Another manager gave an example of when he might give different advice about self-presentation to a woman than he would to a man, despite earlier statements that mentoring for men and women should be no different.

Analysis of all gender-related commentary for each participant revealed a spectrum of perceptions of gender within the sample. On one end of this spectrum, a few managers emphasized gender differences as being very salient in the workplace, despite their belief that individual differences and/or similarities between men and women also were salient. On the other end of the spectrum, one manager "refuse[d] to make the distinction" between women's and men's experiences in the workplace stating that "there is no difference between men and women in my company. Men and women can benefit from the same mentoring...we do not discriminate." Most managers could not think why mentoring might be any different for men and women. As one manager put it, "I can't think why we would mentor men and women any differently. That just seems silly."

Manager perceptions of gender and mentoring

Some managers felt women should be mentored the same as men and that the only differences would be predicated on individual, not gender, differences. Some managers fell towards the other end of the spectrum, citing evidence from their own experiences as mentors when they felt they had mentored men and women differently. Most managers fell somewhere in the middle, stating that mentoring should be "tailored to the individual" and that gender might factor into that equation sometimes. Differences

that were discussed in terms of how one might mentor women differently included the type and delivery of feedback, behaviors, and/or topics discussed. For example, one manager stated a nuanced yet stereotypic belief that men want answers and women want to be listened to:

"It's not terribly effective [laughs] if you try to mentor them [men and women] in the same way. I have mentored both men and women. I [sigh], they're just really different. Men, often are looking for immediate solutions, you know, it's a 'what did I do wrong? How can I fix it? How can I get out there today, this very moment?' They tend to be just far more tactical and they don't listen a lot. Women, on the other hand, I find need to be heard. They need someone that will listen. They're not looking for tactical solutions, they're not looking for any kind of an immediate response, they simply need to be listened to. And often in the mentoring relationships I've had with women, that's kind of like 'step one.' And it could be the next day, or two days, or even a week later when we'll meet again and talk about my perceptions."

Manager perceptions of women in the workplace

When asked whether they thought women wanted mentors in their company, managers perceived women as having a desire for mentors. Most managers perceived women as having a strong desire for mentors, while some perceived women as having a moderate desire for mentors. There was some notable variability in terms of the evidence managers used to base this particular view on and the confidence with which they held these perceptions. One manager stated that he has "seen women benefiting from mentoring" in his company and has been told by many women in his company that this is the case. Another manager less sure of whether women want mentors stated that he is currently mentoring a woman who seems "eager for advice" and that based on her, he thinks women want mentoring. A different manager stated that, "there are some people

who seem to want it [mentoring] and some who do not. There are men and women in both of those groups."

Further analysis of managers' responses related to women's desire for and access to mentoring revealed that some managers perceive that access does not meet the current demand for mentoring, while a couple of managers felt that access does meet the demand. The rest of the sample did not comment on this directly, although the topic did arise regarding groups of minority women.

Most of the participants interviewed spontaneously referenced the lack of women either currently in the field or specifically within their company. Interestingly, the couple of participants who worked in the same company did not comment on the lack of women in their field/company. One wonders if this is due to a more gender-balanced workforce or a company climate that fosters an emphasis on "gender neutral" or "gender-blind" policies and attitudes.

While participants were not directly asked whether they believed women faced unique challenges in the workplace, many participants spontaneously discussed whether they perceived this to be the case. Several managers expressed their opinion that women face unique challenges (e.g. isolation; hostile company climate; leaving work for children) while others emphasized women's challenges as being the same as men's. A couple of participants fell in between these poles, and emphasized sameness while acknowledging differences they thought might exist (e.g. might be difficult to enter a field where no one looks like you; it might be harder to advance as a woman). One manager indicated that he perceives women currently to be at an advantage to men:

"Women have a leg up in my company because they are trying to recruit women into senior management positions."

Groups of minority women: Racial/ethnic minority women, sexual minority women, and women with disabilities

Managers were asked a series of questions aimed at understanding both their experiences with and perceptions of the mentoring and advancement experiences of groups of minority women, including racial/ethnic minority women, sexual minority women, and women with disabilities. Questions also were aimed at gleaning whether the particular issues regarding mentoring and advancement that each manager had discussed during the interview applied to these groups of women and whether they perceived them to be more or less important for these groups of women.

Analysis of managers' responses given during this portion of the interview can be grouped according to an overall thematic triad: "I don't know," "there aren't any," and "people are people." For example, when managers were asked about their perceptions of the experiences of women with disabilities in the workplace, several participants responded that they had "no experience with that," many responded that there "weren't any" women with disabilities in their company, or that "people are people" (i.e. disabled women have the same issues and needs as other groups of women or men). Also noteworthy, of the few managers who posited what the work lives were like for women with disabilities, they interpreted "disability" to mean physical disabilities which they "could see" and listed potential physical barriers in the workplace.

Nearly half of participants stated that they did not know ("wouldn't have a clue;" "I have no experience with that") about whether sexual minority women faced some of

the same challenges or needs in the workplace regarding mentoring. Nearly all of the remaining responses can be characterized as passively discriminatory "my company has a 'don't ask, don't tell' attitude" to the actively discriminatory attitudes of one manager, "I hope it *is* difficult for them [LBT women and gay men] to find mentors." Several managers posited that sexual minority women would not have issues any different from other women. A couple of managers stated that sexual minority women (and men) stayed "below the radar" due to inhospitable company climates:

"I have talked to a number of lesbians and gay men [in my company], and they are like, 'you know there is no reason for me to be out in the organization. NONE. There's nothing [good that] can happen for me to be out in the organization. So, while I have issues, I am not going to step forward and be visible for my sexual preference in the organization... there is no benefit to me, so I am not willing to be out in the organization and therefore, even if I had some issues that I'd like mentoring around that, I am not going to let you know that I am here.' So, they are pretty much invisible in the company."

Analysis of this key category from a process perspective revealed that many participants who had been verbose and articulate until this point in the interview became flustered, confused, gave one word answers, and had to have the questions repeated for them.

Construct: Company Climate

This construct consists of categories related to manager perceptions of workplace atmosphere, including perceptions of company "openness" to diversity, (in)visibility of minorities, and organizational policy and action related to women and mentoring.

Manager perceptions of workplace atmosphere

Analysis of interviews revealed trends regarding managers' perceptions of their workplace atmospheres in terms of diversity, women, and receptiveness to mentoring.

Several managers stated beliefs that their company is "open" to diversity, while one manager stated that his company had "very little openness to women" because it was "European." Another manager commented that "LGBT people in my company say they have no reason to be 'out'" because they risk isolating themselves in a hostile company climate, but asserted his company is still "somewhat open" to diversity. Another manager commented that he had never witnessed discrimination in his many decades of work within the chemical industry. He went on to share a personal anecdote illustrating a variety of inherent contradictions:

"Well, I hope it IS difficult for them [LBT women] to find mentors...First of all, I take the position socially that it is unacceptable behavior. That's socially. Now, for business performance, I worked very closely with someone that had the same sex--uh...that elected to be in a same-sex situation. I think that business-wise, we do pretty well, but, for sure, that he was up and coming in an organization and you know, I just have to say, I didn't want to be the mentor to an individual like that. I just, you know, I can take care of the business thing, but the mentoring gets personal, the mentoring is a real relationship, a friendly relationship. And I would have to say, I wouldn't want it. I mean, I'd be very uncomfortable because I just know that that is not an acceptable social uh, situation. So I don't want to hear about tolerance and all of that because that's just not the way that God made men and women...I can only imagine that it is more difficult for them. That aspects of their lives are more difficult."

This example provides brutal honesty and insight into the personal, "real relationship" aspects of a mentorship and the potential barriers to mentoring bias and prejudice can create.

A number of managers commented on the "invisibility" of diversity within their workplace environments. One manager highlighted his perception that certain groups ("we have Asian, African-American, Hispanic, and women's networks at my company") are more visible than other groups ("sexual minorities are invisible"). Another manager commented that his company has "a don't ask, don't tell attitude" regarding sexual

minorities. Some managers commented that they could not answer questions about women with disabilities because they either did not exist at their company or they did not know if they existed in their workplace.

Most managers expressed their perceptions regarding the current make-up of their workforce, either specifically within their company or within the industry generally. These comments included perceptions ranging from thoughts about their workforce as somewhat homogenous (in age, gender, race, sexual orientation, ability status; e.g. "...[the workforce is made up of] old bald White guys like me...") to perceptions that they were moving toward diversity or were diverse ("we're trying to hire more women" and "we're a global company").

A few managers commented on "appropriate conduct" or "using language that makes people uncomfortable" as considerations for men who are mentoring women in the workplace. The following manager had this to say about how the issue of sexual harassment has colored his approach to mentoring women:

"I mean, personally, having been in a company where there have been sexual harassment cases, you always want to make sure that things are conducted in a way that-- in terms of mentoring women, ok? I'd probably say I spent some time making sure that any time I had meetings, any contact [with women] was totally business. Because I didn't want [there] ever to be any other implications of any kind. So I think that for a man and a woman, I mean, the man has to take extra precautions to make sure that there isn't anything ever said or done or looked at or offended that would send anyone to charge you with that--to be that."

Organizational policy and action

Managers were asked whether their company had policies in place that fostered mentoring and women's advancement. Several managers were unsure, a couple of

managers cited the existence of women's networking groups, and some cited general mentoring programs that they imagined women might be benefiting from.

Managers also were asked to comment on whether they believed these programs were effective. Most managers expressed a belief in the "need for improvement" regarding the effectiveness of mentoring in general in their companies. Themes expressed included a lack of awareness about an established mentoring programs, a lack of a formal evaluation processes to gauge program effectiveness, uncertainty as to who is benefiting from program, a lack of sufficient training for mentors, and an overall work environment that fails to reward "teams" and collaborative work. A couple of managers from the same company commented that they perceive their company's mentoring to be successful: one based on anecdotal evidence from participants ("I know of one woman [out of 10] who has been in the program and she has benefited"), and the other based on comparison to what he perceives is happening in other companies.

In sum, results suggest that managers' experiences with mentoring influence their perceptions of mentoring more generally, and that their perceptions of gender influence their beliefs about mentoring for women in the workplace.

Summary

In this chapter, results of nine semi-structured interviews with male managers in the chemical industry were presented and a tentative theoretical model for understanding the data was articulated. Thirteen key categories were revealed through data analysis and were further grouped into four constructs: Managers' Mentoring Experiences, Perceptions and Beliefs, Mentoring Structures and Relationships, Gender and Mentoring, and Company Climate. These constructs are interrelated and demonstrate how managers'

experiences with mentoring influence their perceptions of mentoring, how these perceptions play out in the gender arena, and what that looks like in a company context.

CHAPTER 5

DISCUSSION

The purpose of the current study was to gain a richer understanding of the personal experiences managers have had with mentoring and how they think about mentoring for women. As discussed in Chapter 4, analysis of interview transcripts revealed an emergent theory of how managers' experiences and perceptions of mentoring relate to managers' more general perceptions of mentoring structures and relationships, how these perceptions interact with beliefs about gender, and how all of this operates in a company context.

The results suggest the following regarding this sample of male managers in the chemical industry: (a) managers have all had experiences being mentored and found it valuable; (b) managers' experiences being mentored may play a role in shaping both the ways in which they think about mentoring and how they mentor others; (c) managers have a range of attitudes toward and experiences with women, including groups of minority women in the workplace; these attitudes may have some influence on how they mentor others and whom they choose to mentor; (d) managers steered away from discussing women in the workplace as being necessarily any different from men; rather, they emphasized both the salience of individual differences and the "sameness" of men and women; (e) managers have clear ideas about mentoring best practices at the level of the individual mentor/mentee relationship. It also should be noted that results should be interpreted with the understanding that defensiveness, bias toward the interviewer (a young woman), a lack of language to articulate issues pertaining to gender, and socially

desirable responding must be considered as contextual factors affecting the responses of this sample of managers.

Discussion of Emerging Theory in Relation to Research

Questions and Existing Literature

The emerging theory can be viewed as a sieve through which one can understand the data and addresses the guiding research questions in the present study. This section discusses the emerging theory in relation to the existing literature on mentoring and women's career development, organized around this study's original research questions:

- (1) How do managers in the chemical industry conceptualize the role that mentoring plays in women's career success or advancement? Specifically, a) how important or unimportant do they perceive mentoring to be to women's career advancement and why; b) how do they explain or understand women's perceived desire for mentors; and c) what is the evidence that they use to assume the importance of mentoring to women?
- (2) To what extent have managers been involved personally in mentoring relationships, as either mentor and/or mentee?
- (3) Do managers' personal experiences with mentoring play a role in how they view its importance/unimportance with regard to women's career advancement?
- (4) What structural supports could companies put into place to make formal mentoring more viable and effective?

How Do Managers Conceptualize the Role Mentoring

Plays in Women's Career Success?

The majority of managers in the present study emphasized individual differences over gender differences, and the "sameness" of men and women in the workplace. As

noted above, many managers objected to being asked questions specifically about women. One interpretation of these data is that managers do not think about gender or that they no longer think gender matters in the workplace. However, it seems more likely that how managers think about women in the workplace is reflective of how they view (consciously or nonconsciously) gender more broadly. This explanation is consistent with literature suggesting that gender is a primary (if not *the* primary) "organizer of social and interpersonal experience" (Fassinger & Arseneau, 2007). In other words, how managers view gender seemed to affect the way they responded to inquiries regarding women in the workplace.

While all managers discussed the benefits of mentoring on career "for everyone," only a few managers noted mentoring as a potential strategy for reducing the gender gap and advancing women into leadership positions in their field and/or company. This is interesting given that most managers specifically referenced the lack of women in their field and/or in their company and initiatives they knew of aimed at increasing this number. For these managers, not linking mentoring as a career advancement strategy that might have specific applicability for women has notable implications. Both because having a mentor has been identified with greater success and advancement outcomes for women, and the finding that women experience barriers to finding mentors (Noe, 1988; Fassinger & Hensler-McGinnis, 2005; Lankau, Riordan & Thomas, 2005; McGlowan-Fellows & Thomas, 2005), this lack of awareness on the part of managers underscores a significant barrier for companies trying to implement strategies to promote the advancement of women. Further, literature on diverse women's career experiences demonstrates that women who are marginalized by other status variables (e.g.

race/ethnicity, sexual orientation, and disability) tend to be the least likely to find and form successful mentoring relationships (Fassinger & Hensler-McGinnis, 2000; McGlowan-Fellows & Thomas, 2005). Based on the low numbers of women currently holding upper level positions in chemical companies (Tullo, 2001), White male managers are the likely mentors for everyone, including women. If managers do not identify mentoring as a career advancement strategy to increase the number of women in leadership positions in their companies, this may present a continued barrier for women and for companies.

Managers' perceptions of women's desire for mentoring

Most managers perceived women as wanting mentors in their company. This is consistent with findings from the ENHANCE study revealing that managers ranked mentoring programs very highly in terms of initiatives they believed were most desired by women in their companies (Fassinger, et al, 2007). Managers in the current study used a variety of evidence to support this perception, such as anecdotal evidence from women in the participant's company and personal experiences mentoring women. Often, no elaboration was offered regarding this perception. Further, many managers also noted that they perceived women wanted (or did not want) mentors at rates similar to male employees.

While all of the managers in the current sample had experiences mentoring others, fewer reported experiences mentoring women. Of those who had mentored women, responses suggest that the ratio of men greatly outnumbered the ratio of women that a manager had mentored. Of the managers who reported some experience mentoring women, many reported that the overwhelming number of individuals whom they had

mentored were men. This is consistent with literature documenting the tendency of mentors to gravitate towards others that are demographically similar to themselves (Kram, 1985; Lankau et al, 2005) and the documented difficulty experienced by women trying to locate mentors, particularly in science and engineering fields (Fassinger & Hensler-McGinnis, 2005). One notable exception to this in the current study was one manager who stated that he had decided to mentor "about 90% women and people of color" based on his perception that these employees would not otherwise have access to mentors.

In sum, this sample of managers emphasized the "sameness" of men and women, perceived women as wanting mentors while deemphasizing mentoring as having specific applicability for women, and typically mentored men rather than women.

To What Extent Have Managers Been Involved Personally in Mentoring, as Either
Mentor and/or Mentee?

Results from the current study regarding the extent to which managers have been involved in mentoring relationships are largely consistent with existing literature on mentoring in the workplace. For instance, managers generally had many overlapping ideas about what mentoring was, reported having had mentors at different stages in their careers, had experiences being mentors to others, and reported mentoring as valuable to their careers.

Kathy Kram's definition of "mentor" (a colleague with more experience who guides or shares expertise with someone with less experience) is consistent with definitions given by participants in the current study. A more nuanced definition shared by several managers included comments regarding the "collaborative" nature of the

relationship and mentioned situations in which two people may have comparable levels of experience but expertise in different areas, and thus mentor each other.

As outlined by Kram (1985), mentoring functions can be grouped according to *career-related* and *psychosocial* aspects of the relationship. Career-related functions help mentees develop professional skills related to career advancement, such as how to garner recognition or achieve one's long term career goals. Psychosocial functions refer to the aspects of the relationship that facilitate development of a protégé's sense of competence, such as role modeling or advice-giving. While managers in the current sample discussed both career-related and psychosocial mentoring functions, there was considerably less mentioned regarding personal/emotional support. In the ENHANCE study, while the gender of the mentor did not appear to influence the type, frequency, and adequacy of the mentoring relationship according to women mentees, differences surfaced with women who experienced more advice on "managing work and personal life" from female mentors than male mentors. Consistent with this finding, none of the managers in the current sample discussed either receiving mentoring in this area or providing this type of guidance to mentees. This also is consistent with the mentoring literature demonstrating gender differences in terms of what types of support male and female mentors give their mentees. Men have been shown to provide more task-oriented advice and support and women tend to provide task-oriented and personal/emotional support (Fassinger & Hensler-McGinnis, 2005).

Existing literature also has demonstrated that employees who are mentored experience more positive work outcomes than those who are not mentored, including higher self-confidence, stronger job satisfaction, higher incomes, and more advanced

positions across a variety of jobs and settings (Kram, 1983; Scandura, 1992; Fassinger & Hensler-McGinnis, 2005). One study indicated that nearly two-thirds of prominent executives had mentors and that these executives received higher salaries, bonuses, and total compensation than did executives who did not have mentors (Scandura, 1992). While the present study did not assess actual outcome variables such as these, all participants reported being mentored and that they viewed these experiences as valuable in numerous ways.

Consistent with the findings of Ragins and Cotton (1993) all participants in the current study reported that their experiences in a mentoring relationship had some influence on the way they think about mentoring and the way in which they mentor others. Further, prior experience in a mentoring relationship (either as mentor, protégé, or both) seemed to be related to managers' past and current willingness to enter a mentoring relationship in the future. Moreover, the experiences of the present sample of managers lend additional support to Ragins & Cotton's hypothesis that individuals who have been mentored are more likely to mentor others in the future, as all of the current managers became mentors to others.

Do Managers' Personal Experiences with Mentoring Play a Role in How They View Its

Importance with Regard to Women's Career Advancement?

The data provide some insights into this research question, if somewhat less clearly than the preceding research questions. The current sample of managers, all of whom had experiences with mentoring as both mentor and mentee, viewed the benefits of mentoring as *valuable* to *very valuable* in terms of their own career advancement and the career advancement of others. Most managers also noted that this was not necessarily

specific to women as most managers emphasized the "sameness" of men and women and "individual differences" regarding the value of mentoring. However, the data suggest that managers who recounted specific experiences mentoring women were often the same managers who noted mentoring as a specific strategy for advancing women in their companies. This may suggest that, for the few managers who shared personal experiences mentoring women, these experiences have played a role in shaping their beliefs about the importance of mentoring upon the careers of women. The data also suggest that the majority of managers who did not share and perhaps did not have (or had fewer) experiences mentoring women similarly may have been influenced by this lack of experience, and therefore believe that mentoring is no more or less important for women than for "anyone else." However, while an important variable, it seems unlikely that the extent to which managers have mentored women is the only factor involved in shaping attitudes about the importance of mentoring for women. Further exploration of how the vast array of personal experiences of managers, including the extent to which managers have mentored women, their attitudes about gender and women more generally, and other experiences with diversity, is needed.

"Finding someone who looks like you"

Current literature on workplace diversity and vocational development has demonstrated that it is routinely more difficult for women, racial/ethnic minorities, sexual minorities, and persons with disabilities to find mentors (Fassinger, in press; Fassinger & Gallor, 2006; Fassinger & Hensler-McGinnis, 2005). Because mentors often choose to mentor those employees who are most like themselves demographically, it is difficult for women to find mentors in White male dominated fields (Fassinger, in press; Fassinger-

Hensler McGinnis, 2005; Riordan, Lankau, & Thomas, 2005; Cox & Dreher, 1996) and particularly difficult for groups of minority women in science and engineering (Fassinger et al, 2006).

While demographic matching in mentoring relationships has produced some favorable results (Santos & Reigadas, 2002; Scandura, 2001), often such matching is unlikely or impossible in companies where the number of women and minorities in upper management is small or nonexistent, such as the chemical industry (Tullo, 2002). While some managers expressed their view that finding mentors might be difficult in a company where "no one looks like you," others assumed that potential mentors for particular groups of women (i.e. African-American women) would be other members of that group. For example, when asked whether racial and ethnic minority women are likely to have difficulty accessing mentors in their company, a few respondents assumed the question was asking about whether these women would be likely to find other racial and ethnic minority women as mentors. This finding, along with other data, demonstrates the compounded difficulty of finding mentors for women who occupy multiple marginalized identities (Fassinger, in press), in multiple ways.

First, it underscores the challenges women (particularly minority women) face when attempting to locate mentors who "match" themselves demographically in White male dominated fields such as the chemical industry. Second, White male managers assuming that it is the role of minority women to mentor other minority women, are likely to overlook a potential mentoring opportunity they could fulfill. As evidenced in the ENHANCE study, women receiving mentoring from male mentors reported similar levels of satisfaction as those with female mentors. Therefore, while demographic

matching has produced some favorable results, the success of a mentoring relationship clearly does not depend on it. Further, unless White male managers fill the gap by becoming mentors to women, including groups of minority women, a significant barrier to mentoring will persist.

What Structural Supports Do Managers Think Could Be Put Into Place to Make Formal Mentoring More Viable and Effective?

Because formal mentoring programs are now ubiquitous where they once were nonexistent, this research question sought to examine what thoughts, if any, managers had about formal mentoring and how it could be improved. However, managers' responses indicate that conceptualizing formal versus informal mentoring as dichotomous entities may be misguided. This finding is consistent with existing data that have demonstrated that success of a mentoring relationship cannot be solely attributed to whether the relationship is of a formal or informal nature (Chao et al, 1992) and is more likely attributable the quality of and satisfaction with the relationship (Ragins et al, 2000). Therefore, the following includes a discussion of general findings related to what, according to managers, a) makes mentoring successful, b) what programs/initiatives are currently in place in their companies, c) whether they feel these are effective, and d) what, if any, formal evaluations their companies are doing in order to monitor program effectiveness.

While managers in the current sample offered many ideas at the level of the individual in terms of how and why mentoring is effective, they offered fewer ideas at the level of organizational implementation. For example, consistent with other literature regarding the success of mentoring relationships, certain qualities and behaviors of

mentors, mutual liking and/or respect, and a commitment to the mentoring relationship from both parties (particularly mentors) seem to be the features of a "good" or effective mentoring relationship according to managers in the present study. However, no empirical evidence exists examining the effectiveness of formal mentoring programs for women in chemical companies. Results of the current study further indicate that if companies are doing formal evaluations of existing mentoring programs, this sample of managers was not aware of the practice. Moreover, in many cases, managers affirmatively stated that there was no formal evaluation process to determine the effectiveness of mentoring programs. Combining manager perceptions about what works at the individual level with further exploration of mentoring on a macro level is needed in order to create, implement, and improve existing mentoring programs and practices for women.

Summary

The discussion of the relationship between the emerging theory and the literature on mentoring and women's career experiences suggest that the results of the current investigation are reflective of existing literature. Specifically, current findings support existing literature regarding beliefs about mentoring effectiveness, perceptions of women's desire for mentors, and the salience of "looking like" mentors/mentees in the workplace.

Limitations and Strengths of the Study

This section discusses the limitations and strengths of the present study, with limitations discussed first, followed by the strengths of the study. First, the study is limited by its reliance on self-report from managers and therefore is subject to the

limitations inherent to this method including participant bias, inaccuracy of memory, inaccuracy of self-perception, and perceived social desirability of response. Specifically, the context of the interview (older men being interviewed by a younger woman, about women) likely influenced participant responses. Therefore, it is likely that the data reflect an amalgam of *actual* thoughts and feelings of participants, participant perceptions of what the interviewer *wanted to hear*, and the thoughts and feelings participants *wanted to share*.

Second, while the participants had no prior knowledge that this was a study specifically about mentoring, it is possible that study participants had awareness that the present study related to women employed in the chemical industry through communication with ENHANCE study contacts. Therefore, there may be unique characteristics about a group of managers who self-select to participate in a study about women working in the chemical industry. Further, prior knowledge of the ENHANCE study may have affected interviewee responses to questions regarding women's advancement and mentoring.

Third, the homogeneity of the sample, including age, while largely reflective of the demographics of managers in the chemical industry as a whole, may have produced a cohort effect. For example, formal mentoring programs did not exist for this group of managers earlier in their careers. It is possible that younger executives, for example, would report different experiences and levels of exposure to mentoring. Further, an all White male sample restricts the present study from illuminating the lived experiences of women, including racial and ethnic minority women. Given the divergent career experiences of women and racial and ethnic minorities in White male-dominated fields

such as the chemical industry, it is reasonable to expect significant differences (as well as overlap) in a study sample containing diverse identities. Finally, the qualitative methodology used to produce the emerging theory can be conceived of as both a limitation and a strength. As with all qualitative research, a limitation of the current study is the lack of generalizability. The emerging theory is best viewed as a tentative sieve through which to view and understand the present data gleaned from this particular sample of managers. Future research might include quantitative methodology in order to test relationships among the key categories and constructs identified here in diverse samples of managers.

Lastly, researcher biases also place limits on the interpretation of the present study. While attempts were made to assess specific biases of research team members (e.g. a tendency to view the world through a constructivist, multicultural feminist lens) a researcher's framework for understanding, interpreting, and making meaning of the world around her impacts both the research questions she asks and the ways in which she seeks to answer them. Further, while certain biases were ascertained, assessed, and "checked" in many ways throughout this research study, many if not most human biases are outside of awareness, and it is therefore impossible to account for what is unknowable.

Despite numerous limitations, there also were strengths of the present study. These strengths include: (a) the methodology was specifically modified to elicit and capture the experiences and perceptions of managers working in the chemical industry, thus increasing the trustworthiness of the emergent theory; b) the study utilized multiple researchers from divergent philosophical viewpoints in order to address bias and increase trustworthiness; (c) the emergent model takes managers' personal experiences with

mentoring into account, as well as their beliefs and perceptions about women and mentoring; (d) the findings articulated in the emergent model provoke interesting questions for future research, including what types of interventions might be effective for building a pool of qualified mentors, thus increasing women's access to mentoring.

Implications for Research and Practice

Research

The findings of the current study enrich our understanding of the topic of mentoring and provide a baseline for understanding the experiences and perceptions of managers regarding mentoring and women's advancement. Further, the development of a tentative theoretical framework allows for continued exploration of how personal experiences with mentoring shape mentoring behaviors and attitudes and the effect this has on creating mentoring opportunities for women. For example, path analysis could be useful in testing whether each of the constructs identified in this study are related to one another and in the predicted direction, and whether the key categories (indicators) are indeed associated with these constructs.

Future research also could explore and test relationships among beliefs about mentoring and mentoring behaviors. For example, what are the facilitative beliefs about mentoring that foster relationships with women? And conversely, what beliefs about mentoring and/or women hinder relationship building (such as mentoring relationships) in the workplace? Moreover, what is the impact that "gender-neutral" or "gender-blind" policies have on whether male managers choose to mentor women? Such a comprehensive investigation into the types of gender-related beliefs of managers and how these beliefs impact their mentoring attitudes and behaviors could provide useful

information for developing strategies to recruit men into mentoring relationships with women.

Next, systematic investigation into what types of mentoring are occurring, at what frequency, with whom, and whether this mentoring is effective are needed. Instruments designed to capture the landscape of mentoring activities and participants, as well as the value added to companies in which mentoring is occurring are necessary. Instruments designed for this purpose also could be extended to other science and engineering fields, such as biomedicine, where mentoring is emerging as a variable of increasing interest, particularly for women.

Lastly, qualitative inquiry into the mentoring experiences of women managers in the chemical industry would be highly informative. Learning more about women's experiences in this domain and how they might converge and/or diverge from men's experiences could inform further interventions useful for promoting the advancement of women in science and engineering. Data from such an investigation also could be utilized to develop instruments designed to capture women's experiences with mentoring and advancement on a larger scale. Instruments such as these also could be extended into other professional fields of interest. For example, biology has emerged as one scientific arena where women's patterns of participation appear more similar to men's than in other STEM fields (NSF, 2004). Measuring mentoring behaviors and attitudes across disciplines and/or settings could reveal interesting within and between group differences and/or similarities.

Practice

It is difficult to address gender disparity in the workplace without first acknowledging gender. As evidenced in the current study, there was some degree of struggle on the part of male managers regarding if and how to acknowledge existing gender differences in the workplace without revealing sexist attitudes and/or stigmatizing women. The current study creates a language with which managers can integrate an understanding of gender into their rich, and highly developed philosophies of mentoring. Further, a nuanced understanding of how to acknowledge the salience of gender in terms of how it shapes our experiences without reifying and reinforcing essentialist or sexist ideas about needs, performance, or capabilities, could be extremely helpful. Specifically, managers could benefit from moving beyond credos such as "people are people" and "women are completely different from men" toward a more nuanced understanding of identity in the workplace.

For example, in the literature on multicultural counseling, human beings are conceptualized as being like all people (universal level), like some people (group level) and like no one else (individual level) (Sue, 2002). It would seem that the belief that men and women are exactly the same is as potentially harmful to fostering positive mentoring relationships with women (and men) as the belief that women (or specific groups of women) are fundamentally different from men. Moreover, in an expanding, global marketplace, innovation and creativity are the hallmarks of a thriving, diverse workforce (Fassinger, in press). The diversity of ideas and experiences inherent to a diverse workforce (including gender diversity) are valuable assets in the current economy. Communicating about what diversity is and how to maximize its value in the workplace are skills managers need in order to be competitive in a global economy.

Further, many individuals now collaborate with managers on leadership and team building, such as executive coaches, human resource directors, and other executives. Collaborators could more adroitly accomplish the goals of clients and/or organizations through the use of this created, shared language and communicating a nuanced understanding of the role that gender, as well as individual differences, play in shaping the relative (dis)advantages in the career experiences of diverse women and men.

Advocacy

Attracting and retaining women in the chemical industry has been outlined as one of the industry's top priorities. Therefore, it is in companies' best interests to advocate for the development and advancement of their women employees (American Chemistry Council, 2006). The present study has implications for advocacy in several areas. Managers clearly possess a great deal of wisdom related to mentoring. Organizations can tap this knowledge base and use it to develop rhetoric (e.g. "mentors are special people that inspire others to their highest potential") designed to entice people to become mentors and be utilized to recruit managers into mentoring roles. Companies also can establish policies that foster open company climates and abolish ones that do not. For example "don't ask don't tell policies" are not "neutral;" rather, they create hostile work environments (Fassinger & Arseneau, 2006).

Further, organizations can orient managers to the barriers facing women, including a lack of good mentors, in the workplace. Through interventions aimed at educating managers about the tendency for managers to chose to mentor others like themselves, the difficulties women face in finding mentors, the need for White male managers to step up and take the lead regarding women's advancement and the creation

of a diverse workforce, the value of a diverse workforce in achieving company objectives, and valuing and rewarding these behaviors, organizations can influence mentoring behaviors in the workplace, thus influencing advancement patterns of women.

Further, diversity training may have a role to play in addressing erroneous beliefs and stereotypes about groups of women evidenced in the present study and in others. In a 2005 study, Catalyst conducted research on potential gender bias in perceptions of leadership ability. Their results demonstrate that stereotyped gender bias – specifically, the perception that women are nurturing and unable to be strong leaders – is pervasive in U.S. companies. Male managers in the ENHANCE study endorsed a belief in a more level playing field than women managers, and demonstrated a more negative perception of women's attitudes toward advancement. Biases about women, sexual minorities, racial and ethnic minority women, and women with disabilities held by managers were evidenced throughout the current study. Clearly, confronting biases which work against women's advancement in the workplace is essential.

A recent study (Karev, A., cited in the *Washington Post*, 1/20/08) examined the effectiveness of diversity training in companies. Findings gathered from hundreds of companies revealed that mandatory training of managers implemented to avoid company liability or discrimination lawsuits was followed by a decrease of women and minorities in management. Diversity training that was optional and connected to company goals and objectives, however, was followed by an increase in managerial women and minorities. These results suggest that diversity training (including gender diversity) needs to have manager buy-in and be connected to company goals in order to be effective at fostering a climate in which women can advance.

It also has been proposed that even in the face of improving workplace practices, disadvantages for women persist because of “micro-inequities,” the slight favoring of men in the workplace, which over time lead to “cumulative disadvantage” (Fassinger, 2001). As the need for scientists and engineers continues to grow in industrial settings, the barriers to advancement women experience in these settings will likely garner more attention from policymakers. Studies such as this one which examine the experiences with and attitudes toward women of those in management will inform policies geared toward addressing these micro-inequalities, including the subtle discriminatory practices of the "null environment," the "chilly climate," and a lack of access to mentors (Fassinger, 2001).

Lastly, findings from the current study also clearly demonstrate that mentoring does not just "happen." Rather, mentees are programmatically identified and sought out, mentors informally seek mentees, mentees seek mentors, people build reputations as being receptive to mentoring, have open-door policies to mentoring, are trained, and are often formally matched. Managers believing that it is equally likely that all employees, regardless of gender, race/ethnicity, sexual orientation, or (dis)ability could find a mentor based solely on his or her "own good abilities" are naïve. Mentoring begins with a mentor and a mentee finding one another. Therefore, managers identified as mentors might begin by identifying those coworkers whom it is likely will have a more difficult time finding a mentor. Companies can create opportunities and experiences for managers that increase awareness and empathy while emphasizing what can be gained from expanding one's network through mentoring.

Conclusion

In conclusion, the present study sought to explore managers' experiences with mentoring and their attitudes regarding mentoring for women in the chemical industry. Findings from the current study indicate that the current sample of managers have all had experiences being mentored and found it valuable, and that their experiences being mentored may be linked with both the ways in which they think about mentoring and how they mentor others. Additionally, managers have a range of attitudes toward and experiences with women, including groups of minority women in the workplace, and that these attitudes may have some influence on how they mentor others and whom they choose to mentor. An overarching theme was managers' tendency to emphasize both the salience of individual differences and the "sameness" of men and women, despite the documented divergent career experiences of women.

Finding a "good" mentor is a crucial advancement strategy for women in the workplace, and White male managers represent a potential resource for women seeking mentoring in the chemical industry. The current study provides a language with which managers can communicate about their own experiences with mentoring, integrate an understanding of how gender functions in the workplace, and facilitates new connections for managers playing a role in shaping the experiences of others. Mentoring continues to be a dynamic, meaningful, and empowering tool for change vital to shaping the landscape of tomorrow's workforce.

Appendix A

Interview Protocol

(Informed Consent and Introduction): I'd like to thank you very much for giving me this opportunity to interview you. I will be taping this interview for the purposes of data analysis only, and the only people who will hear this tape will be members of the research team (myself, Dr. Ruth Fassinger the Principal Investigator of Project ENHANCE, and three student research assistants). As I indicated to you in my email, everything you say on this tape will be kept confidential and your responses will not be tied to you as an individual in any way, nor will your responses be shared with your employer. I will disconnect all identifying information from the interview, including obscuring any specific information (e.g. name, positions) you share with me about your company. Whatever I write about this will be aggregated across all interviewees, so that no identifying information whatsoever will be revealed.

We are doing a follow-up study to Project ENHANCE on mentoring in the chemical industry. In the ENHANCE study, mentoring came up as a very important issue. We decided we wanted to know more about what managers think about mentoring. I'm going to ask you about your own experiences with mentoring, what your thoughts are on mentoring for men and women, and questions related to what is currently happening in your company regarding mentoring. As we work our way through the interview, I will follow up general questions with more specific questions.

1. (Warmup) I'm interested in talking with you about mentoring in industrial chemistry. I'm going to ask you some specific questions about your own experiences as well as what is happening in your company. To start, I'd like to find out if you have any thoughts about mentoring, generally. Do you think mentoring is important for career success? If so, how and why? Do you think attitudes about mentoring have changed over time? If so, how?
2. I'd like to ask about your own experiences of being mentored. Have you ever been mentored? If so, think about the most important mentoring relationship you had - I'd like to ask you a few questions about it. Can you tell me a little about that mentoring relationship? How was it helpful? What did your mentor do? What is /was it about that person that made you consider him or her a mentor?
3. Given your own experiences with having or not having mentors, what is your own definition of mentoring/your idea of mentoring? Did this experience shape the way you think about mentoring? What should mentoring look like? Why is it important? Why should people have mentors?
4. Do you mentor others? What do you do as a mentor to others?
5. I'd like to ask you some questions about mentoring for men and women. Do you think men and women should be mentored in the same way? Why/how? In your own mentoring of others, do you mentor men and women differently? What is the ratio of men to women that you have mentored?

6. Should male/female managers mentor? Should male/female managers mentor differently?
7. Do you think mentoring is important to women's career advancement in your company in particular? If yes, why/how? If no, why not? For example, can a woman get ahead in your company without having a mentor? If yes, how? If no, why not?
8. Do you think women want mentors in your company, and if so, why? If not, why not?
9. Does your company have initiatives in place that foster mentoring? Do you think these efforts work? If not, why not? If yes, what makes them effective? How do you know they work? What kind of evaluation are you doing? Who monitors it?
10. Can we talk about groups of minority women? Do you think the issues you have been discussing are the same issues for racial/ethnic minority women? Do you think these issues are more or less important for these women? Do you think these are the same issues for sexual minority (lesbian, bisexual, or transgender) women? Are they more/less important for sexual minority women? Do you think these are the same issues for women with disabilities? Do you think they are more/less important for women with disabilities?
11. It was suggested by several in the Project ENHANCE Study that management likes mentoring in theory, but not in practice. What do you think? How do you think your company is faring on some of these issues compared to others in the industry?
12. Do you have any other comments about mentoring or women's advancement?

Appendix B

Field Notes Form

Date:

Interviewer:

Participant Name:

Length of Interview:

Noteworthy Information

Rapport:

Appendix C

Dear _____ ,

Enclosed please find a copy of It's Elemental: Enhancing Career Success for Women in the Chemical Industry, the report on the findings of Project ENHANCE. We are writing to thank you very much for your help with the ENHANCE study with hopes that you will help us again.

As you may remember, the ENHANCE study at the University of Maryland examined the experiences of women trained in science and engineering working in industrial chemistry. Your support and participation in this project were invaluable, and we are extremely appreciative of your time and help. We hope that you might assist us again by helping us contact other managers to participate in a brief follow-up study on mentoring.

We are looking for managers (at the director level or higher) who have experience managing science and engineering trained women to participate in a 20-30 minute phone interview. We are particularly interested in talking with managers who represent a wide range of attitudes towards mentoring and its importance for career advancement.

We would be most grateful if you could identify **4-5 managers who might represent a range of attitudes toward mentoring and its importance for career advancement** and **please contact them via email** with the following information::

1. They have an opportunity to participate in a research study;
2. Participation includes a 20-30-minute phone interview;
3. Their contact information (work phone and email) will be given to us (the researchers), who will be contacting them to determine if they are interested in participating;
4. Should they not want their contact information shared, please email you immediately to let you know.

We have attached a template for this solicitation email message, which you may adapt to your situation. Thank you for your help with this follow-up survey. It would be most helpful if you could please let us know the names and contact information for the managers you have identified by _____ (date to be determined). Do not hesitate to call or email with any questions you may have. I can be reached at (202) 422-2108 or at jpaquin@umd.edu. If you wish to contact the Project ENHANCE Principal Investigator, please contact Dr. Ruth Fassinger at (301) 405-2873 or at rfassing@umd.edu. Thank you very much for your invaluable time and assistance.

Sincerely,

Jill D. Paquin
ENHANCE Project Follow-Up Coordinator

Doctoral Student
Department of Counseling and Personnel Services
University of Maryland

Dr. Ruth E. Fassinger
ENHANCE Project Principal Investigator
Professor and Interim Chair,
Department of Counseling and Personnel Services
University of Maryland

Appendix D

Solicitation Demographic Questionnaire

Dear _____,

My name is Jill Paquin and I am a doctoral student and the Follow-Up Coordinator for Project ENHANCE at the University of Maryland. _____ suggested that I invite you to participate in a follow-up study about mentoring in the chemical industry, and has already contacted you about the study. Participation involves a 20-30 minute phone interview to be scheduled at your convenience.

If you are interested in participating, please fill out the following information and email back to me at jpaquin@umd.edu. Thank you in advance for your help and participation. Do not hesitate to call or email with any questions you may have. I can be reached at (202) 422-2108 or at jpaquin@umd.edu. If you wish to contact the Project ENHANCE Principal Investigator, please contact Dr. Ruth Fassinger at (301) 405-2873 or rfassing@umd.edu.

Name: _____

Phone: _____

Email: _____

Company: _____

Job Title/Position: _____

Gender: _____

Age: _____

Race/Ethnicity: _____

Appendix E

Master Category List

1. Perceptions of self - assessment of self
2. Responsibility for the mentoring relationship - mutual
3. Responsibility for the mentoring relationship - mentor
4. Responsibility for the mentoring relationship - mentee
5. Discusses Gender - grounded in own experiences
6. Discusses Gender - perceptions of gender
7. Discusses Gender - others' perceptions
8. Perceptions of Disabled Women and Mentoring
9. Perceptions of Female Sexual Orientation and Mentoring
10. Willingness to speak for others - "I don't know"
11. Willingness to speak for others - Freely Speculates
12. Willingness to speak for others - definitively responds
13. Willingness to speak for others - speculates w/ caveat
14. Traits of a good mentor
15. There are different mentoring structures (includes making a comparison)
16. Process comments/reactions [i.e. asks questions, doesn't answer question]
17. Observations about company policy
18. Significance of having early experiences with mentoring
19. Workplace Climate
20. Perceptions of others' experiences finding mentors who "look like" them
21. Reflections/experiences on Being a Mentor
22. Individual Differences vs. Gender Differences
23. Outside his domain of knowledge/experiences
24. Perceptions of 'Women's Needs' in Relation to 'Anybody's' Needs
25. Benefits/usefulness of mentoring
26. What good mentoring is
27. What is mentoring/ What mentoring is NOT
28. Changes of mentoring over time
29. Ability to get ahead without mentors
30. Perceptions of racial/ethnic minorities
31. Difficulties faced by mentors while mentoring
32. Tells a story/anecdote
33. Perception of 'mentoring lip-service' in managers
34. Stigma about having a mentor/being mentored
35. What makes (formal) mentoring programs successful
36. What makes (formal) mentoring programs unsuccessful
37. Qualities/attributes that make you a good candidate to be mentored
38. Formation of informal mentoring relationship
39. My experiences being mentored
40. Mentoring can be damaging
41. Gender combination of dyad matters
42. Cites statistics

43. Comments on presence of women in field/company
44. Mentoring can close gender gap
45. Perception of women's access/desire/awareness for mentors
46. Barriers to finding mentors
47. (Companies) measuring/evaluating the value of mentoring
48. References lack of racial/ethnic minority women
49. Life after recruitment/getting hired for women
50. Perceptions of (in)visible/hidden diversity in workplace
51. Mentoring men and women differently
52. Challenges faced by women in the workplace
53. Own experiences shaped way he thinks about mentoring
54. Perceptions of how company faring compared to others
55. Mentoring according to career stage/situation of mentee
56. Perceptions of what makes informal mentoring relationships successful
57. Perceptions of what makes informal mentoring relationships unsuccessful
58. Comments on own specific job or role in company
59. Who should/shouldn't you mentor/be mentored by based on position in company
60. Philosophy/ideology of mentoring
61. Screening and training managers to mentor
62. Who should NOT mentor
63. Exhibits overt prejudice
64. Limits of mentoring

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