ABSTRACT

Title of thesis: CLIMATE AND IDENTITY IN THE CAREER EXPERIENCES OF WOMEN EMPLOYED IN THE CHEMICAL INDUSTRY

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Despite recent gains in the literature on women's career development, scant information is available about women in nontraditional careers, including the sciences and engineering. The purpose of the present study was to utilize a qualitative methodology to investigate the experiences of 22 diverse women employed in the U.S. chemical industry in order to examine the role of workplace climate and demographic identity in their careers. Results of semi-structured interviews presented here suggest that formal and informal company policies impacted upon interviewees' perceptions of climate and that workplace support was a significant factor in managing general career challenges as well as those specific to demographic location. Differential influence of gender, race/ethnicity, sexual orientation, disability, geographic location, and functional area within the company were described by participants. Results also suggest that some participants may engage in identity management strategies as a way of negotiating unfavorable aspects of workplace climate.

CLIMATE AND IDENTITY IN THE CAREER EXPERIENCES OF WOMEN EMPLOYED IN THE CHEMICAL INDUSTRY

by

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CHAPTER 1

Introduction

It is well documented that women experience a host of 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 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, there continues to be a paucity of research on the career experiences of women in nontraditional fields. 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). Few empirical studies have attempted to describe or discuss the experiences of women actually employed in male-dominated fields. The extant literature (much of it anecdotal) on women in male-dominated careers does seem to suggest that the structural and cultural barriers hindering women's participation and advancement in the vocational arena may be particularly onerous for women in nontraditional areas (Phillips & Imhoff, 1997; Yoder & McDonald, 1998).

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, 2001a). For example, while women

composed almost one half of the general workforce in the United States, in 1999, they constituted slightly less than one-fourth (24.7%) of the total S&E workforce (National Science Foundation [NSF], 2003). While 53.5% of the S&E doctorates earned by women in 1999 were in the social and behavioral sciences, only one quarter of these were in the physical sciences (which include astronomy, chemistry, and physics), and 13% were in engineering. Between 1973 and 1996, there was a marked 14% decline in the number of women holding degrees in the physical and environmental sciences (National Science Board, 2000). Because S&E fields tend to be well-compensated and have unemployment rates at half the levels of the overall workforce, the underrepresentation of women in this domain merits significant concern.

Science and engineering fields specifically considered crucial to economic growth in the United States have grown at more than four times the rate of total employment in the past two decades and are projected to grow faster than general employment throughout the next decade (NSF, 2004). Because the numbers of White males, who traditionally have constituted most of the S&E workforce, are decreasing, and because women and minorities represent the greatest increases in workforce participation, it is reasonable to expect that many workers filling these positions will be women, particularly minority women. Therefore, research on the career experiences of women in S&E fields will not only serve to provide much-needed information on the current state of these fields for female employees, but also may provide insights on "best practices" within industry and the academy for enhancing the future participation of women in these fields.

To date, much of the attention to the experiences of women in S&E fields has focused on the experiences of women in the academy, with little information available on the career experiences of women in industrial settings (for an exception, see Catalyst, 1999). Fitzgerald and Betz (1992) suggest direct query of members of groups underrepresented in the vocational literature in order to explicate and expand current vocational theories. Quantitative methodologies may be limited by previously-established constructs and theories in the research literature (Morrow & Smith, 2000) and may fail to capture the richness of individual experience that qualitative methodologies may provide. Qualitative approaches allow the current literature to inform the research on a broad level (Strauss & Corbin, 1998), and have increasingly been used in research on the career development and experiences of women underrepresented in the traditional vocational literature (e.g., Noonan, Gallor, Hensler-McGinnis, Fassinger, Wang, & Goodman, 2002; Gomez, Fassinger, Prosser, Cooke, Mejia, & Luna, 2001; Richie, Fassinger, Linn, Johnson, Prosser & Robinson, 1997).

The present study, embedded in a larger program of research, sought to use a qualitative methodology in order to understand the career choices and experiences of a subset of women with formal S&E training employed in industrial chemistry. The larger study was guided by one overarching research question: What has been the experience of this group of women, all of whom have formal training in science or engineering, in their careers within the chemical industry? More specifically, this project drew from the larger literature on vocational issues pertinent to women, racial/ethnic minorities, people with disabilities, and sexual minorities to explore the facilitative or inhibitive characteristics of

the workplace climate, and the aspects of identity that are most salient for these women in their occupational environments.

A grounded theory approach was utilized in order to generate "key concepts" (Strauss & Corbin, 1998) from the collective experiences of these women in order to add to the current body of knowledge and guide future research in this area. Data were gathered through semi-structured, open-ended interviews with individual women who represent diversity in training, workplace setting, and functional role, as well as demographic variables such as age, race/ethnicity, sexual orientation, disability, and care of minor or elder dependents. It was expected that this diversity would provide a maximally rich data set for analysis and allow for variability in experience to be captured.

CHAPTER 2

Review of the Literature

A review of the literature pertaining to the career experiences of women in male-dominated scientific fields is presented in this chapter. First, the most current statistical information available on the participation of women (including racial/ethnic[1] and sexual minority women, and women with disabilities) will be presented. Following an overview of these patterns of participation, literature on barriers to women's career development will be reviewed. Finally, a discussion of the primary variables of interest, workplace climate and multidimensional identity, will be offered.

Women in Science & Engineering Fields

Within the field of vocational psychology, consideration of the experiences of women and the significance of gender in the workplace has surfaced relatively recently, that is, in the past thirty years or so, (Betz, 1994a); however, scholarly work related to women's career development currently proliferates and has assumed a position of great importance in the larger vocational literature (Swanson & Gore, 2000). Despite the deepening and expanding of knowledge about the vocational experiences of women that this work has provided, certain areas within the broad realm of the career psychology of women continue to be understudied and underrepresented in the literature. For example, we continue to know relatively little about the influences of race and/or ethnicity on the career development and experiences of women of color or of foreign-born women working in this country (Betz, 2001a). Though the literature on the vocational development and experiences of sexual minority (i.e., lesbian, gay, and bisexual)

[1] Though race and ethnicity are separate (social) constructs, they are frequently conflated in the literature and will often be paired throughout this writing.

individuals has increased considerably in the past decade, much of it is conceptual in nature and further empirical work on the experiences of sexual minorities, including sexual minority women, is needed (Swanson & Gore, 2000). Moreover, even within explicit discussion of the host of sociocultural influences (such as race and sexual orientation) on the career experiences of women, consideration of the role of disability often is omitted.

Conceptual and empirical work related to the career experiences of women in nontraditional fields and nontraditional roles (e.g., top management) is also lacking in the current vocational literature. One of the nontraditional vocational arenas for women that has garnered increased scholarly attention in recent years includes careers in the sciences and engineering (S&E) fields. What follows is an overview of the current patterns of participation of women in S&E occupations (including racial/ethnic minority women and women with disabilities), with particular attention to the physical sciences, which include such disciplines as chemistry, physics, and astronomy.

General Occupational Patterns

Science, technology, engineering and mathematics fields are growing rapidly and are facing a potential shortage of skilled workers (National Science and Technology Council [NSTC], 2000). Employment in S&E fields specifically is expected to increase at about three times the rate for all occupations during the 2000-2010 period. Concurrently, current age distributions suggest that many presently employed in S&E fields may be entering the latter stages of their careers and/or approaching retirement (NSF, 2002). Because demographic trends suggest that women and racial/ethnic minority groups account for the largest growth in workforce participation at present and in the future

(NSF, 2003), it would seem reasonable to expect that women, and particularly women of color, will be entering the S&E fields in increasing numbers. However, women and racial/ethnic minorities historically have been and continue to be underrepresented in S&E occupations. For example, while women comprised almost half (48.66%) of the total workforce in 2000, they represented just under one-fourth (24.7%) of the S&E workforce (NSF, 2004). The representation of racial/ethnic minority individuals in S&E fields, with the exception of Asian Americans, is also low: African Americans, Hispanic Americans, and American Indians constituted 24% of the U.S. population in1999, but only 7% of the total workers in S&E fields (NSF, 2002).

Women from these same racial/ethnic minority groups constituted a mere 2% of the overall S&E workforce. People with disabilities made up just 6% of the total S&E workforce in 1999, when by the same definitional standards, 20% of the U.S. population was represented by persons with disabilities (NSF, 2003). While detailed information is not available on the employment rates of women with disabilities in S&E fields, extrapolating from the above figures, it is only reasonable to presume that they are also present in lower than representative numbers in these occupations. Information is not readily available on the participation of sexual minority group members generally, or lesbian and bisexual women specifically, in S&E occupations, making it impossible to ascertain whether sexual minority women are present in these nontraditional fields in representative numbers.

For women, including women of color, who are employed in S&E careers, the specific features of their employment are measurably different from that of their male counterparts. For example, women are more likely than men to be employed part-time or

in careers outside the field of their highest degree (NSF, 2004). Furthermore, the distribution of women in specific S&E fields and subfields tends to be uneven, with the largest numbers of women concentrated in the social sciences, a field that provides less opportunity for employment in business or industry. Specifically, in 1999, women comprised more than one-half of the social science workforce, but only 23% of the workforce in the physical sciences and 10% of the overall engineering workforce. Women represent a paltry 6% of the workforce in aerospace, electrical, and mechanical engineering (NSF, 2002). This clustering of women in certain fields of occupation has been termed "field segregation" in the vocational literature (Fassinger, 2002), and may be linked to yet a third contextual difference in the S&E careers of women—salary. In 1999, the $50,000 median annual salary for women scientists and engineers was about 22% less than the median salary for men of $64,000 (NSF, 2002). As noted above, the social sciences provide less opportunity for employment in for-profit business or industry, where salaries are likely to be higher, than other S&E fields. The concentration of women in the social sciences therefore contributes to this median salary differential. However, employment in a "hard science" field does not seem to guarantee more equitable salaries for women. The median salary for women in the physical sciences in 1999 was $41,400, approximately 73% of the median salary for men of $56,600 (NSF, 2003). With the exception of African Americans, women working in the physical sciences were paid significantly less than men across racial/ethnic groups; African American men and women in the physical sciences were equally underpaid at a median salary of $43,000. Women were also more likely than men to be working in nonmanagerial positions and

typically had less work experience, two additional factors that likely contribute to the differences in median salary.

While these statistics are of some utility in describing the participation of women in S&E fields broadly, less information is available on the patterns of employment of women in specific subfields, such as chemistry. In 1999, approximately 22% of individuals working in the physical sciences, which include chemistry, were women. Women also constituted about 22% of the total workforce employed in industrial settings within the physical sciences (NSF, 2003).

Educational Foundations

Employment patterns are clearly related to educational background and training. While the present study focuses primarily on the occupational experiences of women presently employed in the chemical industry rather than the academic experiences of those women, it bears noting here that the participants all have formal training in science and/or engineering (i.e., an associate's degree or higher). A brief overview of the educational patterns most relevant to eventual employment in S&E occupations will be presented in this section.

While "standardized" tests are in fact frequently criticized for being biased against girls and racial/ethnic minority group members, national achievement tests are one of the few uniform sources of information we have about educational preparation of children in primary and secondary schools. Results of the National Assessment of Educational Progress in 2000 showed significant sex differences in science achievement among schoolchildren in the U.S. in grades 4 and 8 in favor of boys, but nonsignificant sex differences in grade 12 (all statistics cited in this section are from NSF, 2003).

Racial/ethnic differences in science achievement are also found as early as grade 4, with White students scoring significantly higher on the same achievement test than students of other racial/ethnic groups, with the exception of Asian Americans. Significant differences persist between scores of White students and those of Black or Hispanic students in grades 8 and 12. Additionally, primary and secondary students with disabilities took fewer science and mathematics courses, had lower grades, and had lower achievement scores than students without disabilities.

Women are more likely to attend college than men (currently comprising 56% of all enrolled undergraduates), and the proportion of female college students is expected to increase in the coming years. In 1998, women earned 46% of the overall bachelor's and master's degrees in chemistry. That same year, Black, Hispanic, and American Indian women earned more than half of the bachelor's degrees awarded to members of their respective racial/ethnic group. Women currently account for 30-40% of graduate students in the physical sciences (including chemistry). Smaller percentages of students with disabilities were enrolled in graduate programs in the physical sciences than nondisabled students.

Women earned roughly 30% of the doctoral degrees awarded in chemistry in 1999; of all doctoral degrees awarded to women in S&E fields, 6% were in chemistry. Approximately 9% of doctoral degrees in S&E were awarded to racial/ethnic minority women that same year, and about 1% were awarded to persons with disabilities (disaggregation by sex and field was not available). Notably, of those holding doctorates in the physical sciences, people with disabilities were most likely to indicate dissatisfaction with their chosen field.

Summary

The statistics provided above demonstrate that women are not participating in S&E fields, and particularly the physical sciences, in representative numbers. They also show that women (including women of color and women with disabilities) earn fewer advanced degrees then men and earn lower salaries than their male colleagues. No conclusive statements can be made about the participation of lesbian and bisexual women in the sciences, as data related to sexual orientation have not been collected or disseminated. The persistence of "gendered" disparities in S&E fields suggests that women continue to experience inhibitive factors related to career choice, persistence, and achievement in the physical sciences.

Vocational Barriers for Women

Within the women's career development literature, a host of barriers have been identified which are central to women's vocational experiences and which serve to impede or prohibit the full participation of many women in the workplace; examples include educational discrimination, occupational stereotyping, and low self-efficacy (Betz & Fitzgerald, 1987; Fitzgerald et al., 1995). As documented above, women, including women with disabilities and racial/ethnic minority women, are significantly underrepresented and underpaid in S&E occupations, and as such it seems reasonable to consider the role of these barriers in career experiences within these male-dominated fields. In the few empirical studies that have attempted to document the experiences of women in nontraditional fields, these barriers have been found to be particularly deleterious (Phillips & Imhoff, 1997; Yoder & McDonald, 1998). In one such study, Burlew and Johnson (1992) surveyed 144 African American professional women in

traditional (e.g., teaching, counseling) and nontraditional (e.g., science, law) fields. They found that the women in nontraditional careers were significantly more likely to report barriers to career success such as racism, sexism, and lack of peer support than were women in traditional occupations.

The various career barriers that women encounter often are discussed as belonging to one of two groups: external/structural/contextual barriers, and internal/individual/self barriers (Betz, 1994a; Betz & Fitzgerald, 1997; Fassinger, 2001a, 2002; Sonnert & Holton, 1996). Previous scholarly work has offered this dichotomy as a means of organizing the discussion of these variables, while also acknowledging that the "internal" barriers are perhaps best understood as individual manifestations of societal beliefs and attitudes (Fassinger, 2002). Indeed, Brooks and Forrest (1994) argue that the tendency of researchers to focus on internal traits or behaviors of the individual discounts empirical evidence of the primacy of social context in vocational (and other) domains. Consequently, there is reason to believe that this external-internal organizing structure is at best a false dichotomy and potentially obfuscates a more accurate understanding of the ways in which the vocational barriers confronting women in the vocational arena are rooted in social constructs. For the purposes of this section, those labels will be eschewed and significant barriers in the career experiences of women in S&E fields will be discussed with attention to both "internal" and "external" dimensions.

Educational Discrimination

Pervasive discrimination against girls and women in educational settings, including higher education settings, is well documented (e.g., AAUW, 1995; Association of American Colleges [AAC], 1982). Girls (or women) receive significantly less attention

and encouragement from teachers in the classroom than boys (or men), experience frequent and aggressive harassment, and often are excluded from extracurricular activities and organizations. Furthermore, textbooks and curriculum content and practices frequently marginalize women and girls. Female racial/ethnic minority students are additionally disadvantaged as they are subject to the effects of racism as well as sexism in schools and universities. As noted above, there is a documented gender gap in the sciences beginning in grade school that increases at every level of education. Because many overtly discriminatory practices in the educational setting have been replaced by subtler and perhaps even inadvertent behaviors that estrange or devalue women, the educational environment has alternately been termed a "chilly climate" (AAC, 1982) and a "null environment" (Freeman, 1975, cited in Betz & Fitzgerald, 1987) for women and girls. Negative educational experiences have a deleterious impact upon desired persistence in a particular field of study as well as occupational aspirations and self-efficacy; these issues are discussed in the following section.

Restrictive Gender Role Socialization

Gender role socialization manifests in at least two distinct ways that negatively affect the career experiences of women: occupational stereotyping and compromised self-efficacy. These two factors will be discussed in terms of women's career development in S&E fields, as both are particularly relevant to the experiences of women in this domain.

Compromised self-efficacy. In the twenty years since the concept of self-efficacy was first applied to vocational development, its role in the development of career interests, academic achievement, and vocational performance has been supported in the literature in many studies (Swanson & Gore, 2000). This construct is particularly relevant

to the population of interest in the present study. Hackett & Betz (1981) designed the first measure of occupational self-efficacy based on the hypothesis that the underrepresentation of women in nontraditional fields is due to low self-efficacy beliefs (a hypothesis which has been supported repeatedly). Additionally, much of the self-efficacy research has focused on math and science education and occupations, and the influence of gender and gender-role socialization on self-efficacy has been demonstrated (Betz, 2001b). In one recent study of 111 college students, Lent et al. (2001) demonstrated a significant relationship between low mathematics self-efficacy and sex discrimination, racial discrimination, and discouragement from choosing nontraditional careers. Despite clear evidence that socialization is a major contributor to self-efficacy beliefs, compromised self-efficacy frequently is labeled an "individual" or "internal" barrier. The lamentable tendency of ascribing deficits to the individual rather than a limiting environment paradoxically contributes to the perpetuation of compromised self-efficacy beliefs.

Occupational stereotyping. Occupational stereotyping involves persistent beliefs that certain jobs are more appropriate for one gender than the other. Both men and women typically view careers in the sciences as more appropriate for men (Fassinger, 2001a). Valian (1998) argues that this belief predisposes those in S&E fields to view women's performance in the sciences more negatively and men's performance more positively; that women carry a small minus sign, and men a small plus sign. Stereotyping also occurs for specific roles within fields. Within graduate S&E programs, for example, men are more likely to receive funding in the form of research assistantships, while women are more likely to fund their graduate work through teaching assistantships (NAS,

2001). In an interesting extension, women hold graduate teaching assistantships more often than men even in subfields such as the physical sciences where women are least represented (NAS, 2001). In addition to gender stereotyping of S&E occupations, it has been noted that the shortage of role models and mentors for racial/ethnic minority people and for people with disabilities in these fields may be contributing to the continued absence of individuals from those groups in the S&E workforce (NSTC, 2000).

Occupational Discrimination

Occupational discrimination against women includes inequitable policies or practices in hiring, evaluation, promotion, and salary, as well as interpersonal factors such as isolation, negative attitudes and behaviors of coworkers, and sexual harassment. The National Academy of Sciences (2001) report on the gender differences in the careers of doctoral scientists and engineers illuminates inequitable practices in the academic setting. Female scientists holding doctoral degrees were found to be least represented in prestigious Research I institutions, were 14% less likely to be employed in tenure track positions than men with doctorates, and earned roughly 20% less than their male counterparts. The "chilly climate" experienced by many women in educational settings also has been described by women employed in S&E organizations (Betz, 1994b). Tokenism, defined by Fassinger (2002) as "excessive demands and expectations based on being one of only a few women, as well as lack of credibility and widespread dismissal of one's efforts and accomplishments as a woman (p. 26)," and sexual harassment are of significant concern for women in nontraditional occupational settings (e.g., Mansfield, Koch, & Henderson, 1991; Ragins & Scandura, 1995). Fitzgerald and Harmon (2001) report that between 40% and 60% of all employed women will experience some form of

sexually harassing behavior from supervisors or coworkers, and there is some evidence that sexist events occur with greater frequency in male-dominated fields (Yoder & McDonald, 1998).

Multiple Role Overload

In addition to contending with barriers presented in the vocational arena, many women still find themselves disproportionately responsible for managing housework and child or dependent elder care. Despite mounting evidence that multiple roles are beneficial to both women and men, women with doctoral degrees in S&E occupations cite marriage and family as obstacles to their career advancement whereas men do not (National Academy of Sciences, 2001). Barnett and Hyde (2001) note that while multiple roles provide opportunities for success, they also offer opportunities for failure and frustration, particularly in the context of workplace discrimination and sexual harassment. There is some evidence to suggest that women feel more confident about their ability to handle multiple roles if they are employed in traditional rather than nontraditional settings (Phillips & Imhoff, 1997), thereby perhaps further exacerbating patterns of occupational segregation. Management of multiple roles can be particularly challenging for women of color, who may be strongly committed to both work and family roles, and for sexual minority women, for whom even fewer "family friendly" organizational policies (e.g., medical and other benefits for partners) exist (Fassinger, 2002).

Barriers in the Context of Scientific Industry

Only one study could be located which attempted to describe the experiences of women working specifically in scientific industry settings (Catalyst, 1999). In that study, thirty leading women scientists employed in industry were interviewed about their career

experiences, and in their responses, the effects of the barriers (discussed above) were clear. Interviewees reported having received little information about or preparation for careers in industry during their education. Nevertheless, nearly a third of the sample indicated that they chose careers in industry specifically because they did not feel welcomed into academia. Twenty-seven of the thirty respondents said they had to struggle against the perception that science was a male pursuit. Interviewees also cited challenges such as stereotypes about women, differences in communication and work styles, a lack of mentors and role models, isolation, and exclusion from informal networks essential for career advancement.

Summary

Unfortunately, the barriers to women's career development identified in Betz and Fitzgerald's (1987) classic work on women's career development over twenty five years ago still are found to impair the career development and experiences of women working in S&E fields today. Educational discrimination, restrictive gender role socialization, occupational discrimination, and multiple role overload contribute to disproportionately low numbers of women aspiring to or achieving in careers in the physical sciences. The larger project in which the present study is embedded investigated the career experiences of women in the chemical industry in the context of these inhibiting factors.

Factors of Interest in the Present Study

The patterns of participation of women in S&E occupations described above highlight the significance of the many obstacles to women's career development in these domains. The factors of interest in the present study, workplace climate and identity, have previously been included in discussion of the many barriers confronting women in their

vocational development (e.g., Betz, 1994a; Betz & Fitzgerald, 1987). It is argued here that, while both climate and identity often function in a detrimental capacity in the career experiences of women (especially those in nontraditional fields), the possible facilitative aspects of both factors dictate that neither should be unilaterally assigned negative valence. The present study sought to explore the role of climate and relevance of identity in the work experiences of women in the chemical industry, tapping both inhibitory and facilitative aspects of those variables.

Workplace Climate

Workplace (or occupational) climate is a concept frequently discussed in the vocational psychology literature, yet a clear and consistent definition of that concept is not easily found. Often, climate is used to reference the presence or absence of a particular type of discrimination. For example, one recent study defined occupational climate as "organizational characteristics that communicate tolerance of sexual harassment" (Fitzgerald, Drasgow, Hulin, Gelfand, & Magley, 1997, p.579). Other recent discussions of climate have focused exclusively on attitudes and behaviors toward race or sexual orientation (e.g., Reid & Radhakrishnan, 2003; Walso, 1999).

Within the women's career development literature specifically, workplace climate has also been used as an umbrella term to describe the sum of barriers present in an occupational setting. While climate may be a *de facto* barrier to women's career development, this view of climate fails to incorporate the possibility of facilitative factors that may be present in the workplace, and, as such, may inaccurately represent the true nature of the effects of climate for female employees. Furthermore, failing to include possible facilitative aspects of climate ignores positive interventions that companies—or

women themselves—may be initiating (e.g., formal mentoring programs or supportive social networks).

Reichers & Schneider (1990) defined workplace climate as "the shared perceptions of organizational policies, practices, and procedures, both formal and informal" (p. 6). This definition seems particularly appropriate for use with the population of interest in the present study for two reasons. First, the phrase "shared perceptions" acknowledges the extent to which *beliefs* (e.g., occupational stereotyping, compromised self-efficacy) both pervade and create the atmosphere of a workplace. Additionally, this definition of climate recognizes the contributions of both formal factors (e.g., same-sex partner benefits) and informal factors (e.g., sexist jokes) to the experience of being in a particular workplace. For example, a company with policies that are fair to women, people with disabilities, or racial/ethnic or sexual minorities still may be experienced as a hostile workplace environment if informal practices alienate members of any one or more of these groups (e.g., valuing competitive individualistic work styles rather than interdependent, collaborative styles).

As noted previously, educational and occupational environments have been labeled "chilly climates" for women (AAUW, 1984) because of the pervasive, if often informal, discrimination against women and girls that occur within them. Fassinger (2001a) noted that the chilly climate of science discourages women from pursuing and remaining in S&E fields. She cites the valuing of a male model of success in these arenas as being particularly problematic for women. These informal discriminatory practices include the valuing of competitiveness and aggressive self-promotion; an emphasis on quantity of work produced rather than quality; and the exclusion of women from formal

and informal networks. While these qualities of the occupational environment are clearly not legislated by institutional policy, left unchecked, they can have harmful effects for women.

Somewhat different from a chilly climate is the "null environment," in which discriminatory behaviors and attitudes are replaced by a general nonsupportiveness of women that is experienced both actually and psychologically (Betz, 1994b). This lack of support translates into a type of passive discrimination because it fails to address the differing previous experiences of men and women in terms of academic preparation and self-efficacy beliefs (Fassinger, 2001a). A women in an S&E occupation, for example, may be less closely mentored by her supervisor (who is likely male, given the low numbers of women in these fields), simply because the supervisor is more comfortable interacting with other male employees. In a recent study of female academic scientists, participants reported more frequent collaboration as a junior partner with their male colleagues than collaboration as an equal or senior partner (Sonnert & Holton, 1996).

Because climate is often discussed in the women's vocational literature in terms of problematic aspects, it was difficult in conceptualizing this project to speculate on what facilitative factors might be identified by the sample of interest. However, it was expected that one example of a facilitative factor contributing positively to workplace climate would be the presence of mentors (male or female) invested in assisting women in their career development. The literature demonstrating a variety of benefits associated with mentorship for women and other minorities in the workplace is so vast that formal mentoring programs have been established in some organizations (Russell, 1994), though these have been found to be of questionable utility and success (Blake-Beard, 2001).

Unilaterally negative definitions of workplace climate deny the possibility of agency for those in unfriendly environments. Efforts to utilize a broader (and perhaps more conceptually accurate) definition of climate for the purposes of this study should not be understood as suggesting that the environments in which women in the chemical industry work are not problematic. The present study sought to understand how women employed in industrial chemistry *experience* their workplaces. As such, it was in keeping with the objectives of the present study to allow for both positive and negative aspects of the work environment (where both existed) to be heard.

Multidimensional Identity

Identity is a construct that frequently has been incorporated into career development theory. Blustein and Noumair (1996), in an overview of the existing identity constructs in career psychology, note that there are diverse and divergent definitions and applications of identity in the vocational arena. The authors observe that traditional definitions of identity in career development have borrowed heavily from psychoanalytic concepts of the self as "relatively enduring aspects of an individual's intrapsychic organization" (p. 433). More recently, definitions of identity have expanded to include specific attention to the importance of social context, informed in large part by the emergence of significant and influential literatures on racial identity and sexual minority identity. Following a brief overview of the relevance of demographic identity to vocational psychology, potential utility of a multidimensional identity construct for understanding the career experiences of women in nontraditional fields will be presented.

Racial/ethnic identity in career development. The significance of race and ethnicity in vocational psychology is well established (Bowman, 1995; Fouad, 1995;

Gysbsers, Heppner & Johnston, 1998). Racism and ethnic discrimination affects educational opportunities, hiring, salaries, and advancement, in a fashion similar to that of sexist discrimination; tokenism often results in isolation, loneliness and heightened visibility for racial/ethnic minority individuals, with double tokenism for minority women (Betz, 1994a). While it cannot be ascertained from the patterns of participation described earlier in this chapter the extent to which racism is a barrier in the career experiences of racial/ethnic minority women in S&E fields, based on their severe underrepresentation it was certainly reasonable to assume that both racism and tokenism could be of relevance to this population.

Racial and ethnic minority women remain largely invisible in the vocational literature (Fassinger, 2001b). The literature that does exist speaks of "double jeopardy" for women of color in the workplace who must navigate both racial and gender discrimination, and as such are disadvantaged in comparison to their White female colleagues (Betz & Fitzgerald, 1987). There is evidence to suggest that racial/ethnic minority individuals are more likely to enter "culturally traditional" careers, where role models are already present (Bowman, 1995). The paucity of racial/ethnic minority women (with the possible exception of Asian American women) currently employed in S&E fields is thereby one of the factors that may keep women of color from choosing employment in these fields in the future. Gomez et al. (2001), in their study of 20 highly achieving Latinas, found that cultural identity was a significant factor in the career development of the women interviewed. This was particularly related to occupational choice, as those women who were more strongly Hispanic-identified tended to choose employment within the Hispanic community.

Racial/ethnic identity models (e.g., Atkinson, Morten, & Sue, 1993; Helms, 1995) have supported a movement away from strict intrapersonal explanations of behavior by highlighting the inarguable significance of interpersonal experiences occurring in an oppressive social context. While empirical extensions of racial/ethnic identity models to career development are recent and fairly limited (e.g., Helms & Piper, 1994; Leong & Chou, 1994), the utility of racial/ethnic identity constructs in creating much-needed culturally appropriate models of vocational development has been suggested (Osipow & Littlejohn, 1995; Bingham & Ward, 1994).

Sexual minority identity in career development. Identity development models for sexual minority individuals have attempted to explicate processes of self-awareness and self-disclosure in a social context of violence, stigma and invisibility (see Cass, 1984; Horowitz & Newcomb, 2001; McCarn & Fassinger, 1996; Troiden, 1989). Though attention to career issues for lesbian, gay, and bisexual (LGB) individuals is fairly recent, sexual minority vocational development models already have begun to emerge and be empirically tested (Swanson & Gore, 2000). Much of this work has focused narrowly on the occurrence or fear of heterosexist events in the workplace (Croteau, 1996). Though discrimination against sexual minority employees is pervasive—one quarter to two thirds of respondents in recent studies reported discrimination (Croteau, Anderson, DiStefano, & Kampa-Kokesch, 2000)—broader descriptions of vocational experiences of LGB people are more difficult to find. Chung's (2001) conceptualization of workplace discrimination against sexual minority individuals posits three dimensions along which such discriminatory practices or events can be located: formal vs. informal, potential vs. encountered, and real vs. perceived. He further suggests that coping styles for dealing

with workplace discrimination are linked to the relative positioning of the heterosexist event along these continua.

In a recent review of vocational research on sexual minority individuals, the distinctive process of "identity management" for LGB people in the workplace was highlighted (Croteau, Anderson, DiStefano, & Kampa-Kokesch, 2000). Identity management may be understood as a reaction to heteronormative workplace climates, and is generally described as degree of disclosure of sexual orientation, ranging from "totally closeted" to "explicitly out" (Anderson, Croteau, & Chung, 2001). Chung (2001) suggests that identity management is better conceptualized as an active strategy for coping with workplace discrimination which differentiates lack of disclosure into "acting" (making people believe that one is heterosexual by engaging in heterosexual relationships), "passing" (altering language or behavior so that one may be perceived as heterosexual) and "covering" (censoring information that would allow one to be perceived as a sexual minority). Research has found great variation in the level of disclosure of sexual identity by LGB individuals (evidenced both within and between studies), with higher levels of disclosure related to greater frequency of discriminatory experiences (Croteau, Anderson, DiStefano, & Kampa-Kokesch, 2000).

Lesbian women have been found to endorse nontraditional career preferences more frequently than sexual majority women (Fassinger, 1995). This means that lesbian women may be found in greater than representative numbers in S&E fields. It could be speculated that being a sexual minority woman in a male-dominated field could present problems of "double jeopardy" similar to those experienced by women of color. Alternatively, it has been suggested that the career development of lesbians could be

advantaged by an increased ability to reject gender-stereotypic interests and behaviors (e.g., Fassinger, 1995); in this way, a sexual minority identity for women in S&E occupations could potentially offer some protection against certain of the barriers common to women's career development generally (e.g., compromised self-efficacy).

Disability in career development. The barriers confronting people with disabilities in their vocational development are many and varied. Lack of access and/or accommodation (despite the Americans with Disabilities Act of 1990), limited early vocational experiences, and negative self-concept related to work have been cited in the vocational literature related to people with disabilities (Kosciulek, 1998). Unfortunately, less is known about the actual career experiences of people with disabilities, and in fact a majority of people with disabilities between the ages of 16 and 64 in this country are not employed.

Employed women with disabilities earn even less (roughly 73%) than their nondisabled female colleagues, whose lower salaries relative to those of men has been clearly established (Jans & Stoddard, 1999, cited in Noonan et al., 2004). Gill (1997) notes that interpersonal impediments to the career development of women with disabilities (such as being viewed as incompetent or helpless) can, if internalized, result in lower self-efficacy that further hinders vocational growth. Even if not internalized, these attributions would seem likely to result in problematic occupational (or perhaps in this case, anti-occupational) stereotyping.

In Noonan et al.'s (2004) recent qualitative study on highly achieving women with physical and sensory disabilities, the significance of this aspect of identity and its interconnectedness with other identity statuses in relation to career development was

made clear. From interviews conducted with 17 women with disabilities (diverse in age, race/ethnicity, and occupation) an emerging theory of vocational development was articulated. The model associated with this theory is organized a core category labeled "Dynamic Self," which includes identity constructs, personality characteristics, and a strong belief in oneself. Most women interviewed spoke to the significance of their disability identity, and many also identified gender and racial/ethnic identities as important in their career development. Moreover, the interconnectedness of these identity statuses was highlighted by many women, by whom "developing an integrated view of self was described as crucial...and often was accomplished in spite of opposing external messages" (p.72).

The Noonan et al. study demonstrates the significance of identity (or identities) in the career experiences of this sample of women with disabilities. One limitation of the study is that all of the women in the sample were selected expressly because they were "highly achieving," and as such, their experiences may be quite different from those of other women with disabilities. Additional empirical work on the role of disability in women's career experiences is greatly needed.

Multidimensional identity in career development. That gender is significant in vocational development is inarguable, and "gendered" vocational development models exist (Fitzgerald, Fassinger & Betz, 1995). Race/ethnicity, sexual orientation, and disability are demographic variables that have been shown to affect career experiences, but either have not been integrated into existing vocational development models or have formed the basis of career development models that are as yet unsupported. Despite recent calls in the vocational literature for synthesis of the various theories (Betz, 2001;

Bingham & Ward, 1994; Savickas, 2001), explorations of individual demographic identities in the workplace remain largely disconnected from one another. Blustein (1994, cited in Blustein & Noumair, 1996) discussed the utility of an "embedded identity" construct as a means of accenting the significance of the social context in which the individual is located. For the purposes of this present study, the term "multidimensional identity" is used in presentation and discussion of results to highlight the focus on a variety of identity statuses and how these aspects of participants' selves might fit (or not) in their vocational environments.

Qualitative Approaches for Understanding Women's Career Experiences

In the small 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). The majority of the existing research focuses on high school- and college-aged women and explores issues related to educational achievement and career aspirations in the sciences, rather than career experiences of women actually employed in S&E occupations, particularly outside of academe. Self-efficacy and other social cognitive variables are most frequently examined, with little empirical information available on other factors that may influence the career development of women in this domain.

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.

In the vocational psychology literature, one notable program of qualitative research seeks to examine the career development of highly achieving African American, Latina, and White women, as well as women with disabilities (Gomez et al., 2001; Noonan et al., 2004; Richie et al., 1997). While these studies offer rich information on the career development and experiences of a demographically diverse group of women, qualitative studies examining the unique vocational experiences of women who work specifically in nontraditional fields are few and far between. Rarer still is qualitative work focused on the experiences of women in S&E occupations. One notable exception is the Project Access study conducted by Sonnert and Holton (1996), which examined the careers paths of male and female academic scientists who had been previously awarded prestigious postdoctoral fellowships. In this study, quantitative data were augmented by a qualitative approach in which responses to 699 structured questionnaires were obtained and 200 follow-up interviews were conducted. While great variation was found within gender groups, the authors concluded that career outcomes of women in the sample were clearly less desirable than those of their male colleagues. The average academic status of women in the physical sciences (including chemistry) was found to be almost one full rank below that of the men. Nearly 73% of the women interviewed reported that they had experienced discrimination in their careers. Women also reported significantly lower estimation of their own abilities and ambition than did the men.

The sample of women scientists in the Project Access study was unique in that the women all held doctoral degrees, had each received highly competitive fellowships, and were all employed in academe. Based on the academic and occupational trends discussed earlier, it is clear that these women represent not only a very small proportion of the

overall S&E workforce, but also a small proportion of women employed in S&E careers. The present study seeks to broaden the knowledge of the experiences of women in S&E occupations by including women with varying levels of academic training working in an industrial rather than an academic setting.

The recent program of study initiated by Fassinger and colleagues (Gomez et al., 2001; Noonan et al., 2004; Richie et al., 1997) on the career experiences of highly achieving women has demonstrated the utility of the grounded theory (Strauss & Corbin, 1998) approach to qualitative research for exploring and explicating the vocational development of demographically diverse samples of women. For the purposes of the present study, a grounded theory method of analysis was utilized in the pursuit of greater understanding of the career experiences of a diverse group of women employed in the chemical industry.

Summary and Statement of Problem

Within the literature on women's vocational development, there is little empirical work focusing on the experiences of women working specifically in nontraditional fields. In the body of literature pertaining to women's experiences relative to S&E fields, much of the focus has been on academic experiences and career aspirations, with few studies attempting to describe the experiences of women actually employed in S&E fields. Of these, the vast majority addresses the careers of women in academe. Only one study was located that discusses careers of women in scientific industry settings, and in that study the sample was limited to particularly high-achieving women. Furthermore, demographic diversity typically has not been captured in the empirical work on women in S&E fields. The present study sought to broaden the current literature by adding to it the experiences

of a diverse group of women currently employed in the chemical industry. The project in which the present study is embedded drew from the extensive scholarly work on barriers confronting women in their career development, while the specific factors of interest in the current study were workplace climate and identity.

Research Questions

Because of the exploratory quality of the present study, research questions rather than hypotheses guided the investigation. The research questions for the larger project in which the present study is embedded were informed by the literature on women's career development, particularly women in nontraditional fields such as science and engineering. The research questions for the present study, in particular, were drawn from variables (i.e., workplace climate and multidimensional identity) discussed in the preceding review of the literature.

The overarching question of the project in which the present study is embedded was: what has been the experience of this particular sample of women in the chemical industry? More specifically, the larger project endeavored to address the research questions listed below. Numbers in brackets refer to the questions from the interview protocol that correspond to that particular research question.

1) What kinds of career development experiences, including educational experiences, do these women report? [2]

2) What barriers and/or facilitative factors have these women experienced in their careers? [3]

3) How has the absence or presence of women in their field influenced the career development of these women? [3]

4) If relevant, how has the absence or presence of other demographic minorities (i.e., people with disabilities, sexual minority group members, people of color) influenced the career development of these women? [3]

5) What issues do these women face related to the home-work intersection? [3]

6) What do these women experience in terms of workplace climate in their current positions and how are these perceptions linked, if at all, to company policies and practices? [4]

7) What individuals and/or groups provide social support for these women in their professional lives and what specifically do these individuals and/or groups provide? [5]

8) With what identities do these women choose to label themselves and how are these identities "managed" in the workplace? [6]

9) How satisfied are these women with their current positions and what aspirations do they have regarding their careers? [7]

10) What do these women express in terms of self-efficacy about their careers and what have been the influences on their self-efficacy? [8]

11) What recommendations do these women have for improving the experiences and/or enhancing the participation of women in the chemical industry? [9]

For the purposes of this study, questions 6 and 8 were the primary focus. Research question 6 inquired about the participants' perceptions of the climate in their current workplaces. The associated question from the interview protocol is, "How does it feel to go to your current workplace every day, and what contributes to those feelings?" Research question 8 inquired about the identities of these women in their current workplaces. To address this research question, participants were asked to respond to the

following: “How would you describe yourself in terms of *roles* or *labels*? Of those labels, which are important to you, if any, in how you think about or describe yourself? Of the identities that are important to you, which ones do you or are you able to bring with you into the workplace? Which ones do you not bring with you?”

CHAPTER 3

Methods

Participants

This study is embedded in a larger multi-level quantitative and qualitative project investigating the career development and experiences of women in the chemical industry. As part of that project, internet-based surveys were completed by 1725 women with formal training in science and/or engineering working at all levels in the chemical industry. Of these women, 1388 (82.5%) identified as White/Caucasian; 104 (6.2%) identified as Asian/Asian American; 88 (5.2%) identified as Black/African American; 59 (3.5%) identified as Hispanic/Latina; and 1% or less identified as Arab/Middle Eastern American, American Indian/Native American, Multiracial, or other. The vast majority (93.4%) of the women in the sample indicated that they were U.S. citizens. The age range of the sample was 21-65 years. All participants had completed a postsecondary degree: 17 (1.0%) held Associate's degrees, 922 (54.7%) held Bachelor's degrees, 299 (17.8%) held Master's degrees, 168 (10.0%) held MBAs, 219 (13.0%) held Ph.D.s, 40 (2.4%) held post-doctoral degrees, and 21 (1.2%) identified their postsecondary educational achievement as "other." Participants also included 25 women (1.5%) who reported a documented disability, and 51 women (3.1%) who identified as sexual minorities. Three hundred seventy respondents (32.0%) indicated having no dependent children at home, 306 (26.4%) had 1 dependent child, 370 (32.0%) had 2 dependent children, and 112 (9.7%) had 3 or more dependent children living at home. Participants were employed in a variety of functional areas within the chemical industry, including technology (47.1%); manufacturing (19.2%); environmental, health and safety (8.6%); general management

(6.1%); sales (3.3%); marketing (2.7%); purchasing (1.3%); organizational development (1.0%); legal (0.7%); finance (0.6%); human resources (0.5%); government relations (0.2%); and other (8.6%).

Upon completion of the original web-based survey, all respondents were invited to consider participating in follow-up interviews. Interested individuals submitted identifying information for that purpose separate from their survey responses. Over 500 women expressed a willingness to be interviewed. Ultimately, 26 final interviews were conducted following 11 pilot interviews, but due to technological problems with four of the final interviews, 22 were included in data analysis.

Table 1 presents a summary of the demographics of the participants used in the present study. As can be seen in Table 1, the 22 participants included in the final sample ranged in age from 22 to 48 years. Interviewees were racially/ethnically diverse, and almost one half of the sample was comprised of women of color. The sample included 12 White women (54.5%), 4 Asian/Asian American women (18.2%), 2 Black/African American women (9.1%), 1 Latina (4.5%), 1 Middle Eastern woman (4.5%), and 2 biracial women who both identified as Native American and White (9.1%). Three of the participants (13.6%) held citizenship in countries other than the United States. Three women (13.6%) self-identified as sexual minorities, of whom 2 identified as lesbian and 1 as bisexual. Two interviewees (9.1%) disclosed a documented disability. Fourteen (63.6%) of the women have children, and two (9.1%) indicated that they live with or are responsible for the care of dependent elders.

Table 1: Summary of Participants

	Number	Percent

Race/Ethnicity		
Asian/Asian American	4	18.2
Black/African American	2	9.1
Latina/Hispanic	1	4.5
Middle Eastern	1	4.5
White/Caucasian	12	54.5
Biracial	2	9.1
Age		
22-30	3	13.6
31-40	11	50.0
41-48	8	36.4
Sexual Orientation		
Bisexual	1	4.5
Heterosexual	18	81.8
Lesbian	2	9.1
Documented Disability		
Yes	2	9.1
No	18	81.8
Number of Dependent Children		
0	8	36.4
1	5	22.7
2	6	13.6
3	2	9.1
4	1	4.5
Highest Degree		
PhD	3	13.6
MS/MA	5	22.7
MBA	2	9.1
BS/BS	12	54.5
Functional Area		
Environmental Compliance	1	4.5
Finance	1	4.5
Management	1	4.5
Manufacturing	5	22.7
Marketing	1	4.5
Organizational Development	2	9.1
Purchasing	1	4.5
Six Sigma	1	4.5
Technology	9	40.9

Functional Role		
Individual Contributer	9	40.9
Project/Team Leader	8	36.4
Supervisor	3	13.6
Other	2	9.1

The final participants also varied in educational and occupational attributes. All participants had completed a postsecondary degree: 12 (54.5%) of the women held Bachelor's degrees in science or engineering, 5 (22.7%) had Master's degrees in science or engineering, 2 (9.1%) had Master's degrees in business administration in addition to undergraduate degrees in science or engineering, and 3 (13.6%) had earned PhDs. The women represented a variety of functional areas within their companies: 9 (40.9%) were employed in technology, 5 (22.7%) were in manufacturing, 2 (9.1%) worked in organizational development, 1 (4.5%) was employed as a Six Sigma expert, and 1 each worked in finance, marketing, environmental compliance, general management, and purchasing. Additionally, the women were occupied in differing roles within their companies. Nine interviewees (40.9%) were individual contributors, eight (36.4%) were team leaders, three (13.6%) were supervisors, and two (9.1%) listed their job roles as "other."

Instrument

The instrument used in the present study was a semi-structured interview protocol (see Appendix F) developed by a team researching the career development and experiences of women in the chemical industry. This research team consists of 11 women: nine graduate students in psychology, one faculty member in counseling psychology, and one consultant with experience in the chemical industry. Of the researchers, one is Latina, one is South Asian American, and nine are White; five women

identify as sexual minorities; and one woman has a documented disability. Team members range in age from 24 to 54 years.

The interview protocol included questions on career path (current position, expectations of advancement, barriers and facilitative factors), relationships impacting upon career path, workplace climate, and negotiation of multiple personal and professional roles. Interview questions were designed to be open-ended and absent of psychological jargon to avoid imposing researcher bias on participants (Gomez et al., 2001; Richie et al., 1997). To aid the interviewers in ensuring that the content areas of the research questions would be addressed, additional prompts were created for some of the questions in the interview protocol. Pilot interviews were conducted for the express purpose of refining the interview protocol.

Procedures

Recruitment of Participants

The 1725 participants in the quantitative study of women in the chemical industry were employed in 25 Fortune 1000 chemical companies based in the United States. Fifteen of these companies formally assisted in the recruitment of participants. These were selected by the research team to represent diversity both in type and in size of chemical company. Research team members made contact with these companies requesting that an e-mail inviting women's participation be distributed through the company listserv. When a company agreed to assist in participant recruitment, research team members sent a copy of the call for participants and the link to the survey's website to a designated company contact. Based on the information provided by survey respondents who volunteered to be interviewed in the follow-up study, it appears that

some snowball sampling also occurred, as some of these volunteers reported employment in companies other than those by which we were formally assisted in the recruitment of participants.

Upon completion of the initial web-based survey, all respondents were invited to consider participation in follow-up interviews, and were given the option of separately re-submitting some demographic information along with additional identifying information for that purpose (i.e., name, e-mail address, phone number, race/ethnicity, citizenship, age, degree, company, and position). The 555 individuals who indicated a willingness to participate in these interviews were diverse in demographic location as well as in the positions and the companies in which they were employed. The researchers then contacted all of these volunteers by e-mail and requested supplementary demographic information that would further aid in sample selection; in this way, researchers also were able to ascertain which of the volunteers had maintained an interest in participating. The additional information requested included functional area and role, disability status, number and ages of children, sexual orientation (and, for sexual minorities, level of disclosure of sexual orientation at work), and whether the respondent lived with or was responsible for the care of a dependent elder. Two hundred sixty women responded to this request for additional information.

From this pool of 260 volunteers, 31 participants were selected as a preferred sample for the final interviews. These participants were collectively representative of the sample from the quantitative study in characteristics such as age, education, and professional function. Women from racial/ethnic and sexual minority groups and women with disabilities were selected in larger than representative numbers in order to ensure

diversity in the final sample, and because of the established significance of these factors in women's career development (Fassinger, 2002). This type of criterion-based sampling pursues maximum variation among participants despite the potential for over-sampling, and appears to ensure a sufficiently rich and inclusive (or in grounded theory terminology, "saturated") data set (Fassinger, 2005). Once this preferred participant roster was identified, an additional group of women were chosen to serve as pilot interview participants according to the same criteria (i.e., representative of the original sample in terms of career-related variables, and over-representative of demographic diversity). Sixteen women were contacted for participation in the pilot interviews via telephone and/or e-mail (see Appendix C); of these, 11 agreed to serve as participants and were interviewed. To ensure maximal similarity between pilot interviews and final interviews, these participants were not informed of the preliminary nature of the interviews.

Upon completion of the pilot interviews and refinement of the instrument and procedures, the 31 women originally targeted for recruitment as participants were contacted via telephone and/or e-mail in a method similar to that of pilot participants. Any woman who declined participation in the study or who did not respond to researchers' attempts to contact her was replaced in the sample, where possible, by another woman from the pool of volunteers who matched her on as many of the original occupational and demographic variables as possible.

Pilot Interviews

In order to hone both the interview protocol and the procedures, pilot interviews were conducted. The pilot interviews also served as an opportunity for the researchers to

become acclimated to the interview process and to increase their facility in working with the protocol.

Before beginning the pilot interviews, each interviewing team member (six of the graduate student team members) was trained in the interview procedure and practiced with the protocol until she felt prepared to interview a pilot participant. Training was conducted by two members of the research team with extensive interviewing experience, including the faculty advisor. Pilot interviewees were selected from the group of women who had demonstrated interest in participating in this portion of the project but were not selected as part of the final sample, as described above. Each pilot participant was randomly assigned to an interviewer, who contacted the participant by telephone or e-mail requesting that an interview of up to 90 minutes in length be scheduled. Each interviewing team member was required to conduct at least one pilot interview by phone over the course of two months; a total of 11 pilot interviews were conducted. All pilot interviews were audiotaped. A field notes form (see Appendix E) was completed by the interviewer immediately following each interview, documenting the length of the interview, general themes that emerged, comments on the rapport between interviewer and participant, and any other relevant information (e.g., interruptions, technical difficulties). The audiotape of at least one pilot interview per team member was reviewed by one or more team members for feedback on the interviewer's style and to build consistency among interviewers (e.g., in use of prompts and follow-up questions).

Feedback from pilot interviewees as well as the interviewers' own perceptions were used to inform subsequent modifications of the interview protocol and procedures. For example, in terms of changes made to the instrument, questions found to be

ambiguous were clarified, further prompts were developed to facilitate the gathering of additional information in certain areas, and the order of questions was changed to create a smoother, more logical flow. Additionally, modifications were made to the introduction given by the interviewers at the outset in order to underscore the confidential nature of the interview and assure participants that specific information would not be released publicly or to their employers. Some changes were made to the initial procedure as well; for example, the contact e-mail/telephone script was modified to suggest that participants be in a quiet and private location when possible to increase the likelihood that audiotapes would be of reasonable clarity and able to be transcribed, and that participants could speak freely. It was also determined in the course of piloting that cellular telephones and speaker (or hands-free) telephones were not reliably audible, and we requested that these not be used in final interviews.

Final Interviews

Final interviews were conducted by the same members of the research team who completed pilot interviews. All interviews were conducted via telephone. The selected participants were contacted by e-mail and/or telephone to inform them of their potential inclusion in the study, and then a 90-minute appointment was scheduled for the interview. Interviews ranged from 35 to 90 minutes, with an average length of 58 minutes, and were audiotaped for later transcription and analysis. The interviewing team members conducted from one to six interviews each; this researcher conducted five of the interviews in the final sample. Field notes were completed by interviewers at the conclusion of each interview; these notes indicate what transpired, general impressions of the interview, themes, and any specific information that could have bearing on the

inclusion or analysis of the interview (e.g., interview was not properly recorded or was interrupted).

Interviews were transcribed by paid transcribers, one of whom was a member of the research team. The transcripts of each interview were checked for accuracy by the original interviewer and corrections were made where necessary. In a few cases, technological problems rendered some portion of the final interview inaudible (e.g., a word or phrase, a single sentence). These interviews were retained and analyzed as part of the final sample, as it was determined that the lost content was minimal or negligible, or that it occurred during the interviewer's speaking turn. Four interviews were determined to be unusable due to more severe technological problems (e.g., several minutes of inaudible tape or a tape in which only the interviewer was consistently audible). Regrettably, these interviews were with women who in some cases reflected our efforts in criterion-based over-sampling; 2 lesbians, 1 Asian woman, and 1 woman with a disability were among those whose interviews were unusable. We were unsuccessful in our attempts to interview other women who met these criteria from our volunteer pool, in some cases because none of the remaining volunteers met that requirement.

Each interviewee was sent a follow-up e-mail within a few days after the interview (see Appendix D) in which she was thanked for her participation in the study, requested to contact the research team if she wished to add additional information or ask any questions, and encouraged to visit the website of the study in which this project is embedded to view emerging results as well as resources for women working in the chemical industry.

Analysis

The interviews were analyzed according to a modified grounded theory methodology. 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 theory in which these categories and the relationships among them are described (Strauss & Corbin, 1998). For the purposes of the present study, articulation of a formal theory was not possible due to the use of a partial data set; thus, the grounded theory method was modified to terminate with articulation, propertizing, and dimensionalizing of the "key" categories.

Open Coding

In the first stage of grounded theory analysis, concepts are labeled through the process of open coding (Strauss & Corbin, 1998), in which transcripts are broken down into small, discrete parts, such as a word, a phrase, or a sentence or group of sentences. Concept labels utilize language close to the interviewee's own words, rather than academic or psychological constructs, where possible. In the present study, a single transcript was selected to be coded by each research team member individually. Each researcher generated a unique list of concepts associated with the shared transcript. An example of a concept identified in the first coded transcript is "economic downturn" which is drawn from the following statement by the interviewee: "I guess later the nosedive in the economy in the computer technology area really affected [my career path] overall." The individual concept lists were reviewed and discussed by the research team collectively with the goal of assembling a single list of concepts that most accurately

reflected the experience of the interviewee as described in that transcript. Any disagreements in this process were decided by consensus, and a unified initial concept list was generated. This balance of individual analysis and group consensus-building served as part of the process of "auditing" (Strauss & Corbin, 1998), or procedures designed to serve as a means of controlling for bias of the individual researchers. Next, research team members were divided into pairs, and one additional transcript was assigned to each pair. Concept lists were created by the pairs for each of these transcripts as well. The collected concept lists were used to form the basis of a category list that would be used for the remainder of the coding process.

Team members reviewed the lists of concepts generated from the first-pass coding of the initial group of transcripts and created categories, which are labels that encompass several related concepts. For example, "support from mother" and "support from father" might be concepts that could be collapsed into a single category, "support from family of origin." Analysis proceeded according to an iterative process wherein the coding of subsequent transcripts was informed by the existing category list, and the existing category list was expanded and refined through the merging of the additional information contained in each transcript. Some of the categories that were identified early in this process remained relevant and unaltered throughout the coding process because they applied to several of the participants' experiences. For example, "influence of work-related travel" was a concept identified early in coding that was retained as a category because of its applicability to and presence in many of the transcripts. Other categories were modified so that they would translate to additional interviewees' experiences while still capturing the original idea. For example, the category initially labeled "support from

family of origin" was modified to "non-work related support" to reflect a subsequent interviewee's discussion of the career-related support she receives from her friends.

Each of the remaining 21 transcripts was assigned to two researchers who coded the full transcript individually and then attempted to come to agreement on a final coding of the shared transcript, with disagreements or concerns brought before the full team for discussion and decision by consensus. Any and all changes, additions, and deletions to the category list were tracked along with the rationale for each so that team discussions and decisions could be revisited throughout the open coding process if necessary. An overarching goal at this stage of analysis was for the team to identify the extent to which the categories were saturated. Saturation is defined by Strauss and Corbin (1998) as "the point in category development at which no new properties, dimensions, or relationships emerge (p. 143)." In order for categories to be considered saturated, they should reflect concepts discussed by many participants rather than merely a few. In instances where the categories created by the researchers were found not to be reflective of the experiences of several interviewees, those categories were re-examined and re-organized into broader categories that reflected the concepts put forth by multiple participants. After the coding of roughly one half of the transcripts, it was observed that no additional alterations to the category list were required. This served to suggest that the categories were appropriately labeled, being neither too specific to be useful nor so general as to lose the richness of the data. It also suggested to the researchers that an appropriate number of participants had been interviewed, as new themes were not being identified. The final master category list which was generated through open coding consisted of 56 unique categories (see Appendix H).

Axial Coding

The second stage of analysis in grounded theory is axial coding, in which relationships between categories are identified and explicated. In this stage of data analysis, the categories generated from the coding of all transcripts were assembled into key categories, or groupings that encompass several categories. Each team member reviewed the master list of categories independently and created groupings of categories organized around a larger construct. These preliminary lists of key categories were then reviewed and discussed by the team as a whole, with disagreement decided by consensus. A master list of key category labels was created and checked to ensure that all previously generated concepts were reflected in the list of categories. It was determined that in some cases, there was sufficient rationale for a category to be placed in more than one key category, and in others, that one category comprised a key category in and of itself. The 56 categories were collapsed into a final list of 14 key categories (see Appendix I). An example of a key category is "Support," which is comprised of categories such as "management support," "coworker support," and "mentors and role models."

The last phase of analysis utilized in this modified version of the grounded theory methodology involved the definition of properties and dimensions associated with each of the 14 key categories. Properties are defined as characteristics or attributes of a category, while dimensions describe a continuum or range for the aspects of that category (Strauss & Corbin, 1998). A qualitative data management software program, N*VIVO, was employed for this portion of the data analysis. N*VIVO allows electronic versions of interview transcripts to be entered and coded in the program. The software can be utilized to create reports for each concept code, wherein sections of each transcript that were

coded as reflecting a particular concept are listed, along with an "address" indicating where the passage was taken from (e.g., transcript number, page number, paragraph and line). N*VIVO was designed specifically for use in qualitative research and particularly for use in grounded theory-driven studies.

A report for each key category was prepared by this researcher using N*VIVO and each was distributed to one member of the research team for initial propertizing and dimensionalizing. These properties and dimensions were then brought before the team for auditing and potential revision. For the key category "experiences with workplace others," and example of a property that emerged within that category was "supervisor evaluation of interviewee" The dimensions associated with that property were described as ranging from "negative" to "positive." For the purposes of the present study, the two key categories related to the research questions of interest (i.e., workplace climate and identity) were analyzed (i.e., propertized and dimensionalized) by this researcher, with other team members serving as auditors.

Because grounded theory analysis is predicated on the assumption that a whole, working theory will eventually be articulated, the splitting of the data set into discrete pieces for the purposes of analysis is not typically problematic. However, it was recognized by this researcher and the research team that many key categories contained information that was best understood in the context of other key categories. Therefore, it became clear that each of the key categories needed to be assessed for those aspects which would add to the clarity, completeness, and richness of the results presented here. To this end, each of the 22 transcripts as well as the properties and dimensions of the other 12 categories were reviewed by this researcher and relevant aspects were joined to

the data already contained in the "identity" and "workplace climate" key categories. Categories, properties, and dimensions associated with identity and workplace climate in the present study were subsequently articulated. These were initially audited by the faculty member of the research team. An advanced graduate student not associated with the research team served as a final outside auditor.

Trustworthiness of the Study

In the grounded theory method as in qualitative research in general, there are standards applied to judge the quality—or trustworthiness—of the research. The qualities identified by Lincoln & Guba (1985) that establish trustworthiness are transferability, credibility, dependability, and confirmability. These qualities are frequently and imperfectly described as analogous to validity and reliability in quantitative methodologies. It is tempting but questionable to assess qualitative studies by standards associated with the dominant (in counseling psychology research) quantitative paradigm. Fassinger (2005) notes, for example, that questions about the generalizability of qualitative research are steeped in the positivist assumptions of quantitative research; Morrow (2005) cautions strongly against evaluating qualitative research by quantitative standards.

Transferability in qualitative research 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. This concept also suggests that conclusions drawn from the study of one sample should "transfer" to another, similar population. Morrow (2005) notes that transferability in qualitative studies is parallel to the concept of generalizability in quantitative research. Yet, it is essential to the execution

and interpretation of qualitative research to note that the goal is not to derive findings from a sample which may be extrapolated to a larger population of interest, as is a hallmark of quantitative research methods. Rather, in qualitative studies, the goal is to present adequate information about the process of conducting the research project in order that assessments may be made about how likely it is that the results will transfer to another sample in another setting at another time. Consistent with the intrinsic values of qualitative methodologies, care has been taken to present the findings of this study in a manner which does not overstate their "generalizability."

In the present study, significant auditing of individual and group work occurred throughout data analysis in order to increase transferability. Specifically, transcripts were distributed randomly and coding partners were assigned on a rotating basis to encourage flexibility in the coding process. All team members were required to verify one another's work throughout the process of analysis. Moreover, five members of the research team did not conduct interviews, and two of the researchers (the faculty advisor and the consultant) did not participate in the coding of transcripts, allowing those individuals to serve as more reliable auditors at various points in analysis. Finally, verification by an outside auditor in the final stages of analysis in this study suggested that the posited results were reasonably concluded. The diversity of the research team (demographically, experientially, and philosophically) further aided in offsetting individual bias that could limit transferability.

Morrow (2005) suggests that c*redibility* may be best understood as the internal consistency of a qualitative study. This may be 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. In this study, each interviewer was a graduate student in counseling psychology with at least two years of experience in working with clients in the context of assessment, clinical interviewing, or psychotherapy. Several interviewers also had previous experience in conducting qualitative interviews for other research projects. Interviewers were able to draw from their clinical and/or research skills in order to build rapport with participants and communicate their interest in understanding some portion of the interviewee's experience. In a few cases, participants in the study made explicit reference to the collaborative relationship that was established in the interview via expressions of appreciation of or gratitude to the interviewer, or by acknowledging that the interview had been personally useful in some way. (The perceived impact of the interview on participants will be revisited in greater detail in the discussion of results.) Additionally, interviewees were encouraged to contact the interviewing team member with any questions or other thoughts that emerged, further reinforcing the desire on the part of team members that interviewees be actively involved in the study.

Dependability relates to efforts on the part of the researcher to make explicit and repeatable the processes and techniques utilized in a given study (Morrow, 2005). The detailed account of the sampling, interviewing and analysis conducted in the present study is offered to demonstrate the dependability of this project. Extensive minutes were taken at every meeting of the research team, wherein all decisions made related to the methods employed in the study were carefully itemized and described. These minutes as well as a review of e-mail correspondence among team members were utilized in the preparation of this document.

According to Morrow (2005), *confirmability* "is based on the perspective that the integrity of the findings lies in the data (p. 252)." Efforts were made by the researchers in this study to offset prior beliefs or expectations in the articulation of the research questions, and indeed, many of us were naive to the literature in this area at the outset of the project. It was mutually agreed by the researchers that the explication of some portion of the lived experience of the participants was of primary importance, and there was much attention to individual variation and negative cases in group discussion. Many of the auditing processes described above as increasing dependability also add to the confirmability of the study. The grounded theory approach is, by definition, one that prizes the data collected, in that it seeks to present results that are "grounded" in the experience of the participants. While themes discussed by several interviewees will be offered in the discussion of results, exceptional and atypical perspectives (including those which directly contradict this researchers own biases) are included as well. The analysis process requires continual re-review of the original transcript data, and presentation of results will involve numerous quotations so that the ideas offered are supported by the interviewees' own words.

CHAPTER 4

Results

Overview

This chapter presents the results of 22 interviews with women trained in science or engineering working in the chemical industry. Analysis of the interview transcripts revealed 14 key categories, or broad domains, which characterized the participants' career experiences as described to the researchers. Two of these domain areas, Workplace Climate and Identity, are the focus of the present study and associated results will be discussed in detail. These results will be presented according to the categories, properties, and dimensions which were situated within the two key categories. The categories (and properties subsumed within them) are: Company Contributions to Climate (policies and procedures, company atmosphere); Workplace Support (networks, mentors, supervisors, and support to others); Demographic Differences (gender, race/ethnicity, sexual identity, disability, geographic influences, and influence of functional area); Identity Management (content, process); and Trends (patterns of participation, attitudinal changes).

As in the grounded theory studies on highly achieving women by Gomez et al. (1996), Richie et al. (1997), and Noonan et al. (2004), a system has been devised to facilitate the representation of results in this section. Based on the sample of 22 participants, the words "most," "usual," "typical," and "general" (and their derivatives) reflects a response characteristic of the majority of this sample (15 or more participants); the words "some," "several," "not uncommon" and "a number of" suggests a response endorsed by 7-14 participants; and the words "a few" (and what else?) indicate a response pertaining to 6 or fewer participants. Additionally, more specific wording will be used

where helpful or necessary (e.g., "all," "all of the sexual minority women," "three participants").

It should be noted that questions in the interview protocol were formulated to solicit descriptions of personal experiences from the interviewees rather than observations on or speculations about of the experiences of others. Additionally, the introductory remarks offered by the researchers at the start of each interview included the following: "I am hoping to learn a little about *your* experiences rather than the experiences of people working in your company or in positions like yours generally." This emphasis on personal experience was added in response to observations made in the pilot study that a few of the women tended at points to speak broadly about the careers of scientific women rather than their own career paths, and that one pilot interviewee who occupied a high-level position within her organization seemed occasionally to be speaking on behalf of her company rather than from a personal perspective. While all of this information was viewed as useful data (and indeed, was deliberately sought out in other portions of the larger project in which this study is positioned), it was determined by the researchers that the primary focus of the final interviews was to strive to capture some of the richness of the individual career trajectories of the participants, consistent with the strengths of the qualitative methodology. Consequently, the results presented here reflect the beliefs, feelings, and events articulated as personally relevant by the interviewees. Situations outside the realm of the interviewees' experience were rarely discussed; for example, it was uncommon for women without disabilities to speak about people with disabilities in the workplace. Because this study purposefully engages with individual differences, infrequent responses to demographically-driven experiences have

been retained. Clearly, omitting or discussing these results as atypical would serve to further marginalize those participants who are least represented in the population of S&E-trained women working in the chemical industry. Finally, the reader is reminded that a lack of response in a key category or specific property is not the same as an endorsement of a negative or neutral position on a dimension. In other words, if an individual participant did not report changes in hiring practices occurring in her company over time (key category: Trends, property: patterns of participation), that lack of response is not considered equivalent to that of a participant who explicitly reported that no change has occurred.

Interaction of Climate and Identity

The present study was guided by two primary research questions, which sought to explore the experiences of the women in this sample related to the climate of their current workplaces as well as the ways in which they manage personally significant identities while at work. These questions were informed by discrete yet overlapping bodies of literature detailing the significance of both climate and identity factors in women's career experiences. Results of the study suggest that, for the women in this sample, these two constructs are difficult to disentangle. According to the stories presented in the interviews, aspects of the workplace climate (whether positive or negative) were often activated—or deactivated—by some aspect of the participant's identity (e.g., gender, sexual orientation). In turn, ways in which the women spoke about their demographically-driven career experiences, as well as their connections to or alienation from significant facets of their identity while at work, suggested that the ways in which they conceptualize themselves in their workplaces is typically linked to features of the

organizational climate. The interaction between climate and identity as it shaped the properties and dimensions of the categories will be discussed throughout this chapter, but may be illustrated here by way of a brief example. An interviewee spoke about one of the ways she experiences racism within her company:

> What I've noticed being an African American woman, is that with racism they turn they cards. Around me, a person who, you know, would be stupid enough to tell a racist joke, would tell a joke about someone who isn't Black and think I would think it's funny. And when they figure out I don't think it's funny, then they usually stop talking. ...And they have no idea it's totally offensive. About anybody. And somehow they think that's completely permissible around me, because I'm not of that minority. I mean, it's like they're talking about me, if anyone does that, so I'm equally as affected.... I don't want any of that around me [28]."[2]

This example highlights the interplay between the interviewee's identity and her workplace climate. Though she is a woman of color, coworkers "include" her in the racially negative climate of her workplace when they perceive her not to be indicted by their behavior. Her reaction to this situation was not only to be offended, but to feel as affected as she might if the comment were more overtly directed at her. This one event could be easily construed as reflective of either identity or climate, but is perhaps best understood as a reflection of both of these constructs. Similar overlaps between the two variables of interest are common to the results presented in this chapter.

Company Contributions to Climate

In discussing the climate of their workplaces, all but one of the participants described features of the company that contribute in large or small ways to that climate.

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[2] Bracketed numbers refer to the interviewee's transcript number, used as an identifier throughout the coding process. These numbers range from 01 to 30, though there were 22 final participants, due to unusable tapes and/or scheduled interviews which did not in fact occur. These identifiers match those used in Appendix G.

These were of two predominant types: formal features, such as policies and procedures, and company influence on the general atmosphere.

Policies and Procedures

Most of the women cited policies and/or procedures helpful to women within their companies. In particular, a number of the participants indicated that their companies have flexible work practices or supportive family policies. One interviewee who is the mother of three children said that flexibility at work relieved some of the pressures of managing her parenting responsibilities. "I think flexible work practices have helped...being able to get assistance with child care and being able to get out of work at a certain time to pick [my daughter] up and also being able to work a flexible schedule [01]." Another interviewee who was pregnant at the time of her interview noted, "I have doctor's appointments every month. There's no pressure put on you that you shouldn't be doing that or you should have to do that not during work time [05]."

One participant noted that not only did her company have family-friendly policies, but the leadership of the organization modeled and encouraged their use:

> I've felt very positive encouragement from both the senior leadership in the company, and from my own direct boss that putting your family first is very, very, important. And...it's not a matter of just saying it, they have actually been following through with it. And when your co-workers and your boss and your boss's boss are also saying, "Hey, I can't travel because I've got to be at home for this thing," or, "My spouse is also employed, and my spouse is traveling, and we don't travel at the same time, and so you're going to have to come to me, I can't come to you," you know, and you see them actually making compromises, making accommodations to put their family first, saying, "I can't go to this business dinner, my daughter has a play at school, and I promised her I'll be there and I'm not going to miss it." And people will tell you that and they'll explain and generally folks will understand. And so they're setting a good example [13].

One woman who was married just prior to the interview spoke about the efforts her company had made to assist her partner in his move to join her and in his subsequent

job search, despite the fact that he was neither employed by the organization nor in the industry. She observed that her company casts a wide net in the conferral of benefits:

> They extend the employee support beyond the employee. They extend it to the spouse, the employee's mom, the employee's dad, grandmother…anybody in your immediate family, because they figure that if somebody has a challenge in your family, then it's your challenge, it's your burden [28].

Several of the women indicated that their companies have hiring and/or promotion policies which are beneficial to women (and often to people of color as well). As a result of efforts on the part of her organization, one woman claimed "I look at a lot of plants and half or better of the production engineers are women now, that's been a big turnaround, and some minorities as well [13]." There was a shared sense on the part of a few of the women that their organizations have made efforts to open up opportunities to employees who may previously have been shut out by longstanding barriers. Said one woman,

> [For] promotions and that kind of thing, and job possibilities, their policies work because those are, all the jobs are open to everybody as long as you have the qualifications. The qualifications are very clear and it's not arbitrary. And that helps for everybody to be treated the same across the board [06].

Another interviewee also stressed the importance of her company's efforts to remove arbitrary implementation of policies or inequitable provision of opportunities:

> I think the company has become much more color and gender blind lately and I feel like with the increase in an importance of training and education that they have begun developing, it allows people to maybe do a lot of things that used to not be available to them. Instead of managers choosing who's going to what classes they allow classes to be open and if your manager chooses that you go, you can go or you can nominate yourself to go. So that allows that opens it up to a lot of different people [07].

A few interviewees noted that their organizations offer or mandate training around diversity or sexual harassment issues, such as one woman who said, "We have a

very strong sexual harassment program, a training program that talks to people about what it is, what it isn't, and what's not acceptable [17]." Another remarked that in her company's diversity training, "they definitely highlight all types of diversity in terms of, you know, racial, sexual orientation, you know, male/female. So they definitely put it out there, tell you what the policy is, expect you to abide by it [03]."

Among those women who indicated that policies and procedures are in place, positive reactions were not uncommon: "I still think that the diversity should be pushed in this industry. I think that diversity training should be enforced and I think [the] Human Resources department should teach and keep an eye on things that are going on [20]."

A few women disagreed with these policies or wondered if they went too far. One participant offered, "I've never been a real big fan of affirmative action as such. I think that merit and ability should count a heck of a lot more than the wrapping that it comes in [13]." Another woman asserted:

> I know this is going to really sound bad on my part, but from my experiences I don't believe in the diversity issue anymore. I think I've made that point that everybody should be on an equal playing field no matter what—no matter where they come from, what their race is or their ethnicity—because that's not going on. They're pushing it—it's kind of like we've gone over the hill to the other side. We were moving up there trying to put everybody in an equal playing field based on that, but now we've gotten to the point where that's all that's considered. And that's not right either [14].

A few of the interviewees noted a specific lack of policy within their organizations, and these observations often came with a statement about the participants views on upper management. One individual noted that her company does not offer maternity leave to its female employees, and that women must use sick time to cover their absence from the workplace. "You just know the person that wrote this policy is male," she said. "They don't care. I don't get it [01]."

Two of the sexual minority women in the sample noted that their companies do not provide same-sex partner benefits. One claimed,

> This company is a very conservative, middle-aged, white-male dominated company still. In spite of some efforts to have diversity programs and to talk about it and stuff, I think that when you get right down to the brass tacks it's still very dominated in that way. If you look at our upper management, they all look alike and, because of that, I think, corporate policies are reflective of that. I know that there's a very strong effort right now going on for domestic partner benefits and there are a few proponents in upper management, but our CEO is not one of them, and I think that that's completely stopping that from happening.... You know, it's becoming pretty well accepted and common, but not so here yet. So, things like that, I think, show the conservatism of this company...I think the older white male influence is still very strong [26].

The other interviewee who spoke about the lack of such benefits remarked that she and her partner had been legally married in Massachusetts a few months prior to the interview, but had not been able to convince the human resources department in her organization to recognize this commitment:

> They keep telling me that, you know, we're trying to reduce the cost of benefits for employees and adding domestic partner benefits would increase costs, so we can't tolerate that. I tried to make the argument with them, if you were covering a heterosexual partner, what difference is it that you can't cover my same sex partner? I don't understand where the difference is. They just kind of start arguments...they need time and resource to study it.... So I mean, I keep pushing it. But we'll see. You know it will probably come to a place where for my family I need to progress my career a little bit more and if I'm not able to do that or if the company is not, you know, friendly enough then I'll make a decision [09].

Despite a few interviewees' assertions to the contrary, a common theme that emerged within the discussion of company policies and procedures was a lack of organizational accountability in implementing the existing policies or procedures. A number of the participants felt that their organizations had policies and procedures in place that were not enforced, or that were applied unfairly or unreliably. One noted,

> [W]e actually have a corporate policy on alternative work schedules which would allow people to do things like work a 4-day 10-hour week and yet managers veto

> that continuously, so very few people have that opportunity...whether or not their job lends itself to that kind of scheduling or not doesn't even matter or that it's corporate policy. In the end, we're not doing it [26].

In a similar vein, one participant scoffed at the idea of taking advantage of the part time employment option at her workplace: "Part time? Forget it. No corporation knows how to do part time. That's like a joke [15]." Yet another interviewee remarked upon a seeming lack of responsibility in her company for meeting established diversity goals:

> [My company] talks about having diversified groups and making sure, you know, that everybody's well represented at different levels cause that's their model, where they want to go, where they want to achieve. But I don't see them doing anything actively to make sure that they get to that point. So I don't know if it's the top or it's just a slow process. It's hard to tell [19].

Neatly summarizing the lack of corporate accountability reported by a number of the participants, one woman tersely stated, "I feel like the company talks the talk, but doesn't walk the walk [14]."

Company Atmosphere

Some of the women spoke about the impact of the general atmosphere of their workplaces on company climate. These comments typically involved a "sense" of the company on a global, and intangible, level. One woman indicated that for women in her company, the climate was one of "challenge and opportunity [07]." A few women felt that, overall, the company mood was a positive one. One such interviewee said, "[At my company] and specifically the teams that I'm working with now and I've worked with in the past, in general people that I work with are just really good people. So, it's a good environment to work in...it's very positive [24]." When asked to describe the ways in which her company contributed to the general atmosphere of the workplace, another interviewee replied, "Oh, let's see, what do they do? They do a lot, a very good company

to work for. There are a lot of employee benefits, side benefits, that you don't realize.... So they're very good and they take care of their employees [05]."

A few women found their atmosphere of their workplaces to be negative (in a couple cases, quite negative). One suggested her company was characterized by a "permissiveness of abuse," and explained, "when I say abuse, I certainly don't mean physical, but there's a lot of psychological stuff going on to make people feel less confident [28]." Another participant stated that she typically did not feel recognized or appreciated in her workplace: "It just makes me feel they're not loyal to me and perhaps just knowing that...I just don't think they have got my best interests at heart. That I feel like if I want to do better with this company I have to do it all on my own [19]."

Ten of the 22 women in the sample specifically indicated "only" experiences (e.g., being the only woman in her area, the only woman of color at her level). Being the "only" had differential impact upon the interviewees; some conceptualized their unique status as positive or trailblazing; others found it lonely or felt tokenized. All of the women who spoke about being an "only" suggested that it had significant impact on them, in the ways they perceived themselves or in the way they were perceived by others. These experiences sounded at times quite similar:

> There were very, very many times where I would go to meetings and I would be the only female in the room [30].
>
> You know, the first day when I met the work group, there wasn't another female in the room. And that was just, I mean, you know, you're almost kind of scared [15].
>
> And I haven't been around very many professional females. In fact, in the core group I am the only female [20].
>
> As far as working at...my organization, I'm the only minority that has gotten to the level I have [19].

One participant spoke in greater detail about her experience of being an "only" within the manufacturing plant of her company:

> I felt like I was sitting in a box with windows on all sides. Everyone knew who I was and every decision I made was very open and public and discussed, not just within the departments that I led, but also throughout the plant. So, in that regard, being a woman was kind of a negative because I felt like I was scrutinized all the time…. It's stressful, because particularly as a new team leader, I made mistakes just like anyone would. They seemed to hear about them more, get more discussion about why I made a certain decision or didn't make a decision. And also, it was a little unnerving to have people—our plant site is about a thousand people, that gives you an idea of the size of it—I had lots of people greet me by name and I had no idea who they were [17].

Workplace Support

The participants in this sample typically spoke about the significance of support within their organizations. This support could take a variety of forms, and the types mentioned most frequently included career-related networks formally established within the company, supervisors, and mentors. [Most women also spoke about outside sources of support for their careers, including partners, friends, and family of origin. However, because these fall outside of the workplace (and therefore the workplace climate), those sources of support are beyond the scope of this particular category, and will be analyzed as part of the larger project in which this study is situated.] Six of the women in the sample also spoke about providing support to others in their workplaces, often in ways that were indirectly beneficial to themselves.

Networks

The term network is used here to describe an organized means of fostering connections between employees. Typically, networks target members of sub-groups of the employee population (e.g., LGBT workers). A dozen of the women in the sample

mentioned specific networks within their companies; while some participate actively in these networks and others do not, all of the women who mentioned the presence of networks cited them as positive features of their workplaces.

Women who utilized networks on-site did so for a variety of reasons and found them helpful in different ways. Some women spoke about skill enhancement and strategies for career development that emerge from these networks, while others focused on the social support and normalizing of experience that these groups provide. One woman said, "a lot of times it's more networking and going and chatting with other people who have similar kinds of issues and it makes you feel good to talk about those and say, 'hey there are other people who have similar issues that I have' [24]." An Asian participant spoke about helpfulness of a diversity group in her company, "where all of the people of color or people from foreign backgrounds get together and talk about issues that come in conflict in the work, personal, you know, everything. It's sort of like a support group [18]." One African American interviewee talked about the potential benefit of cultural groups whether one is a reference group member or simply interested in actively supporting a diverse workplace:

> I'm engaged in all the different networks: African American, I was a leader down in our biggest site for that network down there. But, I moved up here, got involved in the Asian diversity network, I mean, I absolutely love it. I'm learning Chinese now.... The fact that people recognize difference, you know, and it's celebrated, I love that, and people bring out the best of their culture or help us learn. ...[T]hey really want to expand folks' understanding and appreciation for the region that is the fastest growing region for our company. And a lot of companies can say the same thing, that that's their fastest growing region. So, you know, it gives us a window into the business opportunities as well as the cultural understanding, because you'll need that of course to be successful in business [28].

Another interviewee spoke about the more tangible supports that could be achieved through company-based networks:

> I also participated in a group within the company.... It's a group of about 30 women and you have to apply and be accepted to be a part of this group, and they have specific missions of looking into issues where they can lend a woman's perspective to issues in the workplace. It's a very well-respected group, we've had impact on things like fathers being able to take parental leave and things like reimbursement for education early on…. There's been a bunch of major human resource issues over the years [26].

Five of the interviewees indicated that they choose not to participate in the networks in their companies. One participant noted that her company has more than one women's network, and while she doesn't perceive that they would be of particular use for her, "knowing that they are there, that your company supports them is a good thing [03]." One interviewee who identifies as bisexual but is not out in her company stopped attending meetings for sexual minority employees and their allies after she changed positions and found herself in a less affirmative environment where an LGBT identity is seen as "not the norm, and it's a little bit freakish and weird [06]." Other women indicated that they preferred individual relationships to group support; one simply offered, "I'm not a joiner [13]."

Supervisors

The distinction between mentors and supervisors was not always entirely clear in the interviews; certainly, not all supervisors were described as mentors nor were all mentors the interviewees' supervisors. Five women specifically highlighted the encouragement or assistance they received from the individual(s) to whom they directly reported, and as such, this emerged as an additional type of workplace support.

For these few women, supervisors who were described as helpful were accessed as a source of support for job-related functions rather than for personal issues or the intersection between work and home life. (It would seem that greater intimacy in a hierarchical professional relationship may be what makes "supervisors" into "mentors" for the women in this sample.) One interviewee indicated that she had taken a new position within her company specifically to work with the supervisor she would have in that position, who is "one of the few female managers in our company and she's very successful, very good at what she does [22]." Another participant noted that she values her female supervisor and hopes to follow in her footsteps:

> It's good to have her as mentor and to follow...she gives very good advice and then she keeps you on the right path. And she's the one who wants to see me move along the same path that she moved on. So it's nice to know that, it's nice for her to give me advice. I respect her a lot for it. I take a lot of what I do from her. She manages very well and she is very well liked and she gets a lot of things done [05].

This interviewee said she was particularly interested in learning some skills from her supervisor that would assist her in being heard and respected by men in the company.

A few of the women referenced more than one supervisor in the course of their interviews. One participant illustrated the range of behaviors that she has experiences with supervisors she's had in her present company:

> I have usually relied on my supervisor to help work out different issues and problems. Most of them have been supportive, though I did have one supervisor who couldn't handle women crying.... When I came up and I wanted to vent and talk with him, well, being a woman, part of the way I vent is to cry. He assumed that meant I was trying to manipulate him because that had been his experience previously when a woman would cry. And he told me that. And so I stopped talking to him about those issues. I found someone else.... But overall, when I've had issues or I needed to talk with a supervisor, or talk about issues, I've talked to my supervisor. There are other women around that I do talk to occasionally, but not that often. It's usually with my supervisor [17].

Mentors and Role Models

The majority of the interviewees spoke about mentors and role models who have positively influenced their career development. Mentors may or may not have been a direct supervisor of the interviewee, but women who referred to mentors tended to describe significant relationships that were primarily professional but occasionally personal in scope. Women who described role models tended to refer to individuals with whom they shared some reference group (e.g., a technical woman, a woman of color) who was in a leadership role and with whom they may or may not have had a close or direct relationship.

A number of the women spoke of mentors who provided them assistance in addressing tasks or responsibilities associated with their positions, for example, one interviewee said of her mentor: "When I have presentations or reports you know she is very helpful in helping with that and in giving me a guide on how to do it or at least being more than willing to look over the work and give constructive criticism or praise. Depending on what it is, helping me get my point across. She knows what I want to say, but I may not be saying it the right way [05]." Another participant who is responsible for the care of a dependent elder described a mentoring relationship in which she receives support for personal as well as professional issues:

> [S]he'll frequently help me towards resources that I need perhaps to learn more in managing a situation, or in providing training for some of the people I have that need to make adjustments to their styles or need additional information to manage people better. She's a great resource in that regard, and she also knows the company more broadly than me, so you know, she can give me that larger perspective, so that's very helpful. [S]he also has elderly parents, so we can frequently exchange information and laugh about the current stresses [29].

One woman we interviewed indicated that she had many mentors within her company because she is flexible in who she would consider as a potential mentor and is willing to learn a variety of things from a variety of people. Her mentors were both men and women, and "it doesn't have to be people at high leadership levels, either, it may be people who are younger and haven't been with the company for as many years, but I just connect with these people [24]."

A few interviewees suggested that they cannot find mentors or role models because of the paucity of women within their companies. One such participant offered,

> I work with the four or five other women leaders at the site. One of them is extremely rigid and very hard and hardnosed and can be almost sometimes impossible to deal with. And another one is very, very soft and squishy. And you know, and then there's kind of me, I'm kind of in the middle. I mean, I can be a pain in your ass but I can also be empathetic and a decent individual, too. So it's, I don't know, it's hard to be lumped. You know, I don't want to be like you or I don't want to be like you. So who do I want to be like? Well, I don't know, because there's not that many out there. It's like you want to pattern after someone that's been successful and there aren't too many of them [07].

Supporting Others

Some women spoke about choosing to mentor or serve as a role model to others, particularly younger women in the company. A few of the women who do so noted that they find support in giving support. For a few of the older women, becoming a mentor was a clear response to not having had mentoring or role models early in their own careers.

One interviewee was aware that her longevity and role in the company made her a model for younger women in the company to follow, whether or not she specifically was interested in that role. Her awareness of this had an impact upon how she would conduct herself at work: "...at my age, I'm more of a leader. I think that entails a certain

responsibility, behavior and everything else. I think it lays the groundwork for women who follow behind me [20]."

A Hispanic-identified woman spoke about giving back as a mentor to others, including but not exclusively women and people of color. While she described changes over time in the climate of her company, the persistence of certain barriers for underrepresented groups of employees prompted her to take on a supportive role in the career development of others. She described how both she and her mentees profited from these relationships:

> Recently we have started a Hispanic [network] and I'm more often a mentor than otherwise, so I think I'm contributing to other people, but I still see some of the same things I've been affected by. They're still out there..... I just want to be a resource to other people. And I figure that how I've most often been a resource is that way, being a mentor to many different people. They have been men, they have been minorities, they have been not. So, being a mentor has helped me in my career development, figure out what I want to do, learning how to work with people, really understanding what's out there. It's not that I've been promoted for it, but I think I'm better. I contribute better to the workplace because I've had those experiences [21].

Advancing within the company was an important goal for another interviewee who provided mentorship, in part because she wanted her achievement to inspire her mentees, "and show that hey, you can get there [24]."

One participant who had helped to establish a formal mentoring program within her company discontinued participation in frustration over how the program was run. Though the program was designed in part to target women and people of color, she believed that mentors were serving their own paternalistic needs to connect with a minority employee rather than meeting the needs of the mentee. She explained,

> [T]he relationship that got established, and the partnerships that got established, weren't advancing the careers of the protégés. They weren't helping develop them or give them access to projects, and participation of projects that would advance

> their careers. So it was a flop that way. And it was just miserable to work on it. I gave up. I finally said I don't want to be involved in this. It's not a good network [01].

Demographic Differences

A third category within the key categories of identity and workplace climate relates to demographic variables such as gender, race/ethnicity, sexual identity, and disability. All women were explicitly asked to comment on ways in which their experiences in their current positions may have been influenced by gender; women representing minority racial/ethnic or sexual identities and women with disabilities were asked about these factors as well. Additionally, participants reported demographically-driven experiences which were not specifically anticipated by the researchers; these included interactions among demographic variables (e.g., gender and age, gender and race, and race and citizenship), the influence of geographic location, and the influence of specific functional areas.

Gender

The larger project in which this study is located expressly investigates the experiences of *women* in the chemistry; hence, gender-related experiences were specifically targeted in the interview protocol. Women described a range of experiences related to gender, ranging from little to no discernable influence in their workplaces to significant, permeating influence.

The majority of women indicated many challenges related to gender. These were of varying types and degrees, including sexual harassment, sexism related to advancement or recognition within their companies, gender role stereotyping, and challenges related to pregnancy and parenting. Sexual harassment experiences included

overt “hostile environment” events as well as more subtle “chilly climate” events. For example, one interviewee described a story of sexually harassing behavior perpetrated against a female colleague that was recounted publicly in the form of a joke, adding to its negative impact:

> You’ve got men and women in the room, senior and junior, all the business people. And then, everyone starts laughing. But, at the same time, at the core of that joke is you’re still putting a woman down. You are still saying it’s totally permissible for a man to grope a woman and think it’s funny. So, that type of subtle sexism absolutely exists. Where they’re telling a joke about someone else misbehaving or behaving inappropriately, you know, somehow they think it’s hilarious [28].

Another egregious example of a sexist event as described by an interviewee:

> I particularly had a specific instance working with an operator—a technician—when I did an internship for the company in Texas and he flat out told me he wasn’t going to take any orders from no female engineer, I should be in the kitchen and, um, just, I was just taken aback because this was in 1999, it just seems sort of retro to me [06].

A third interviewee described two sets of standards in her area for evaluating the work produced by employees which left her at a distinct disadvantage. She stated:

> The standard is so different for us compared to our male counterparts. It really is. And I have to perform at a rate, at a delivery rate I think that’s probably anywhere from 20 to 50 percent more than my male counterparts to even feel like I’m competitive, like my peers in my work group [15].

Pregnancy and parenting were, according to some of the women in this study, frequently a target of negative commentary as well. One interviewee spoke about the reactions of her colleagues when they learned she was pregnant, “I think sometimes other people are more limiting to me than I am self-limiting as far as having a child. Because they would think that I am not able of doing, of performing the same way, after the child arrives, compared to how I’m performing now [10].” An interviewee with two children at

home described the challenges associated with reactions to, rather than the realities of, motherhood:

> I think the whole mommy track thing, you know when women become pregnant or decide they want to start their families, I think that's just abysmal. I don't think that the expectation should be that a woman puts her career aside to do that unless she wants to. You know and that should be a choice, just not something that happens naturally [09].

Women who experienced barriers or challenges related to their gender occasionally spoke about the ways in which they reacted to or managed these situations. A few women's reactions were characterized by externalization of the offending event. These women confronted the sexist behavior or attitudes directly, either through professional channels or direct personal contact, for example:

> You know, I was in a situation where there'd be 2 or 3 of us who had an equal level position in the organization we were in, and you know that scenario where the woman says something and it's never heard until the man says something? That would happen. [I]f you turned around and said something, "Hey, wait a minute, you realize I just said that a few hours ago, and now because he's saying it, you're agreeing with him?" You know, you'd take him to the side and say it, not in a public confrontational way, but off to the side. The men are receptive and their behavior changes [29].

Some other women's reactions tended toward internalization, either by questioning their own reactions, not speaking about the occurrence, or making excuses for the offender(s). Four of the women specifically described situations in which sexist language or behavior occurred, but rendered them benign in their discussion. For example, one younger interviewee was surprised by some of the language she heard used in her workplace:

> Every once in a while, there'll be a misplaced comment or something that just grates the wrong way.... It's just stuff that you wouldn't hear yourself among guys unless they've been drinking a lot of beer.... It's a guy conversation. It feels like a male environment, and it's not a lot of work made to make you feel welcome or,

> you know, whatever. And I don't think they do it with any malicious intent. It's just the way they are [08].

Another woman seemed to blame herself for occupational discrimination she had encountered: "All the other leaders in my work group are men, and they're all at one level higher than me. You know, but what are you going to do? I mean, it's like I told my sister-in-law: don't feel sorry for me, this is what I chose [15]." Three of the participants in this study spoke about the outcomes of specific sexist events which they experienced on the job. One interviewee described the following scenario:

> Because my first job, my very first job, I was sexually harassed pretty badly. Instead of addressing the question, they did what they typically do, which was move me out, and not move the man that was causing me a lot of problems, because he was the expert in that field area, and, um, they couldn't move him, because he was the only engineer that knew how to make that particular product [01].

Five women indicated that they did not experience gender as problematic in the workplace, as described in the following quote from an interviewee with two decades of experience in the industry: "I've got a mixed group of men and women, and nobody's thinking about who's a man and who's a woman. It's more the quality of the person, knowledge, skills, expertise that come into play now. Gender doesn't come into it. I just don't see it anymore [29]."

Finally, two interviewees conceptualized their gender as a strength in the workplace. One suggested that this strength was context-specific:

> I think I have more of a feel about things. Intuition. And I think the intuition has helped me. Especially I think the job that I do, it's always about relationships.... A lot of times I go to customers where they show me products and say, "I think this is what I would like to use your material for." And there are things they don't tell you about what they're looking for but just by having the intuition.... And also the way a lot of times men speak the language, a very technical language where as women are more, "Let me try and relate this to real life." So I think that's been helpful and hurtful on both sides. I think it's helpful in connecting science to

> marketing. But it's not very helpful for selling myself as a technical person to the technical people within [my company] who are all men [24].

Some of the women spoke about the relationship between gender and other demographic variables, specifically, age and race. A few interviewees suggested an interaction between age and gender such that being a young woman is a qualitatively different and notably more challenging experience in the workplace. None of the participants cited age alone, but rather, only in combination with gender. One interview who described this remembered that earlier in her career, "I got recognized for being peppy and cute doing good work, but [my] work didn't get recognized for being good work....I think now, it seems like it's not quite as bad because I've got more wrinkles and gray hair. Maybe that's helped [01]." Three of the women of color in the study reflected upon the significance of a gender and racial/ethnic "double minority" status and suggested that overall, gender had been more significant in their career experiences than race or ethnicity. The Hispanic interviewee explained,

> I just didn't want to admit, I didn't want to have anything to do with a discussion around the fact or the possibility that I would've been hired because I was Hispanic. That totally blew my mind. Later on, I learned to, I came to learn that that was probably a reason.... But you know, that affirmative action piece, I always thought that it was important but it was not going to make or break my day, as far as the race. As far as being a woman, I really have seen it play out a lot more [06].

Two other interviewees of color suggested on the contrary that a minority race/ethnicity is more likely to present additional challenges that a female gender alone would not. For example, one Middle Eastern woman who was not American said, "I think some people experience it a little bit more than others but I would think people from outside and my Black colleagues go through a little bit more than a Caucasian woman would...I don't know [19]."

Race/Ethnicity

As with gender, participants' sense of the impact of race or ethnicity in the workplace ranged from a perceptibly negative to positive, with a few participants indicating little or no impact of race or ethnicity. Likewise the manifestations of racial/ethnic barriers described ranged from flagrant, overt racism to more subtle racially-driven assumptions.

Three of the women of color in the study detailed situations in which they had confronted racist jokes, comments, or e-mails in their workplaces. Two of these women also noted their reactions to the situation and the results. These were substantive portions of the interview transcripts and seemed to be of significance to both interviewees. The experiences they described will be presented in an abbreviated fashion here.

One African American participant described a situation two months prior to interview in which she came upon an e-mail "a racial joke and, it was not only racial joke that was racially degrading, it was a joke of a sexual nature as well...very derogatory, derogatory against Black women [28]." This participant noted that her initial response was, "Should I be offended?... You just question yourself to begin with." The interviewee indicated that she ultimately decided to report the incident to her company's ethics hotline and they recommended she file a complaint. She noted that "this joke that was clearly of a sexual and racial nature and they didn't think it was violating the policy." This interviewee confronted the racist event directly, as did two other women in the sample who experienced negative events related to race or ethnicity.

Another women in the study who identified as Asian Indian American reported a conversation with a former supervisor "that really left a sour taste in my mouth [08]."

When the interviewer inquired further about the incident, she replied that the comment was

> …remarkably racist and highly uncalled for, and I don't really want to talk about it. But, I went to my current boss with that problem later, after talking to another engineer—the woman who was on the project I was assigned before she left. She was also a minority and a woman who'd been dealing with my former boss for a lot longer. And she never liked him either, because he treated her the same way. But that's the way he is. And honestly there are political reasons this man's not going to leave the company [08].

This interviewee also directly addressed the offending behavior directly, and as in the situation described by the previous participant, no action against the harassing individual was taken.

A few interviewees noted challenges related to race or ethnicity in terms of advancement or recognition within the company. One biracial participant noted that a recent downsizing in her company disproportionately affected people of color in the organization:

> I did see that more African Americans lost their jobs. I think, as far as African-Americans go, and people of color in general...I know that they had to play some games to meet EEO statistics with letting people go, you know what I mean? ...About two years after they outsourced us, they purposely went back and offered jobs back to some African Americans because their EEO was so bad [01].

Another interviewee, who identified as Asian Indian American, spoke about the challenges she sometimes faces at work when dealing with clients, based on assumptions they might make about her:

> I think the general idea people have is most Indian women are very submissive, they're not very aggressive. And I think a lot of times people have told me, "Wow, you're not anything like what I expected." And so, I don't think it's a barrier...I don't think it's a barrier. I think, especially professionally, the job that I do establishing credibility very early on, it's very important because a lot of times I'll only have an hour or a couple of hours with the client. I think that when they see me, maybe they have some preconceived ideas about what I will be and how I will be, but I think within the first five or ten minutes, when I go and start doing

> my job, basically, I think for the most part those preconceived ideas are gone and then we're just getting down to what we need to get done [24].

A few women suggested that they did not experience their minority race or ethnicity as a challenge at work, and a few others indicated that they perceived it to be a strength in their workplaces. One Asian interviewee stated:

> Well, you know, I'm definitely an ethnic minority [and] there is that opportunity for questions to come up that may not necessarily be asked of someone who visually might look the same as everybody else but perhaps might actually be quite different than the prevailing population. My personal way of dealing with it is...it's a tool to educate and I take it as an opportunity to share a little bit about myself and if people are appreciative I share a bit more. You don't want to overwhelm people with a culture diversity lesson either. So, you know, it becomes a more of a one on one exchange or sharing with whoever is interested to know [22].

Another Asian woman in the study noted that she is "very proud" of her cultural background and feels it is well received in her workplace. She noted, "a lot of people that are interested in foreign culture, they'll come and talk to me. And they'll share their feelings, they'll share their travel experiences. And I enjoy that about work.[18]."

Sexual Identity

As noted earlier, three of the participants in the present study were sexual minority women. One lesbian woman indicated that she was completely out at work, a second lesbian participant reported that she was selectively out at work, and the bisexual interviewee said that she was not out in her workplace. None of these women (nor any of the other interviewees) noted any benefits to claiming a sexual minority identity in their companies, and heterosexist attitudes and events were detailed by five of the women interviewed. One participant who identified as bisexual gave this initial response to the interviewers' question about the climate of her workplace for LGBT employees:

> Well, from that self-identifier I would have to say that it's, I don't think it's very supportive. I don't think—there's nobody in my group that has publicly acknowledged themselves like that. You know what I'm saying? And, I think it's mainly because of the location where we are. The company has a policy of being accepting, but I know that some of the values of particularly the operators who may be old-fashioned or something, don't allow for sometimes a lot of openness.... I don't know what more I can say about that [06].

Later in this same interview, the participant acknowledged that she is not out at work and that the presence of coworkers in her office when she was answering this question discouraged her from using more specific language related to sexual minorities. Her acknowledgement of self-censoring serves to underscore the very content of her above remarks; that is, that the company climate does not encourage openness. When asked about her decision not to be out in her workplace, she said that related to her coworkers, "as it stands now, I think I have good respect from them and I'm not sure how that would contribute." Another interviewee, while an out lesbian herself, said "I'll tell you that not many people are out in the chemical industry, especially within [my company]. And the reason for that is that we don't even have protection for sexual preference in our nondiscrimination policy [09]."

A participant who identified as heterosexual indicated that the climate of her workplace was not affirming of LGBT employees, and noted that if she "were other than heterosexual it might be a problem [22]." She suggested difficulties specific to lesbian or bisexual women who were considered "too much out of the norm or accepted practices so far as being female is concerned."

Disability

There were two women with disabilities in the sample, and both indicated that their disabilities were invisible and not generally known in the workplace. One women

with a back injury noted that her boss didn't know of her disability despite the fact that "technically, medically I think I'm at 10 percent [09]." Another interviewee with partial blindness also suggested that she doubted if her boss or any of her colleagues knew of her disability; nevertheless she did experience challenges related to keeping up with her coworkers because she does not read. She stated, "For me, the challenge of working in the industry is really keeping up with the reading, that is challenging. So therefore, you know, I utilize my time wisely. And also, there's, that's why there's always something that I'm working on, you know, I don't want to be left behind [20]."

Other women in the study typically did not speak about people with disabilities or workplace climate related to disability in their interviews.

Geographic Influences

A number of the interviewees indicated that they perceived that the geographic location of their companies had an influence on company climate related to some of the demographic variables discussed above. A few of the women suggested that the experience of being a woman in the chemical industry was dictated in part by one's location, in that attitudes and behaviors differed from region to region. One if the interviewees observed, "we're in the South and it's 'little lady' and, you know, in many cases they [men in the company] didn't mean anything, but many cases they did. They were just purely demeaning. And that relationship, you know, questioning of my knowledge because, or not wanting to work with me because I'm a woman and I'm young and I should be home [21]." Another interview picked up a similar theme of variation in gender role expectations and challenges according to location which was greater than she might have expected:

> [Within my company] there are women in a variety of geographical places, and the cultural differences in those places has been very eye-opening for me. You know, as an East coast woman, I'm very different from a Midwest or a South, a Mid-South woman, because of the cultural influences of the area. I'm very different. So I'm learning to be more open and receptive to the challenges they're facing and in some cases I can offer, you know, my experiences that I went through 15 years ago that they're just going through now. Because of the cultural difference. I hadn't quite realized how far advanced women are in achieving equality on the East coast relative to the middle of the country. I thought that we were all battling and burning our bras in the early '70s…but I guess not [29].

A third interviewee who spoke about differences in the climate related to gender noted her initial (and continued) struggle when she relocated within her organization:

> Relocating...to this part of the country was a huge culture shock for me. I mean just much bigger than anything I ever anticipated, call me naïve, I guess. So I know at first it was huge for me. I mean, people thought I was arrogant, they thought I was aloof, they thought I was cold, they thought I was this, they thought I was that. It's just like, no, I'm just from the Northeast [09].

Not all influences of geography were related to gender; one interviewee indicated that she perceived greater levels of homophobia in her company's sites in "Middle America." Furthermore, another individual suggested that the workplace climate was variously affected by greater levels of religiosity or religious prominence in certain locations. She suggested that being able to adjust somewhat to the dominant culture of one's geographical location was an important and necessary skill. Herself identified as Hindu, she noted:

> It's just always good to keep an open mind about how you're interacting with other people, and how they might perceive you and you know what are people interested in, like living in New Jersey, holidays were celebrated a little bit differently than they were here in Texas. And there is probably a bit more prevalence of particular faiths or particular groups' holidays, living in one area versus the other. And not that that should or does come into the play in an office setting. But again, you know the better I was able to know when people's minds are in more the holiday mood versus others, you know, that made it that much easier to do the job [22].

Influence of Functional Area

Nearly half of the participants in the study related certain demographically-driven experiences specifically to the area of the company in which they occurred. These women indicated that the numbers of women and minorities varied between functional areas and roles within their companies, as did attitudes related to gender. Functional areas that were particularly nonstereotypic for women seemed to be the ones cited by interviewees as most problematic.

A few women spoke about the absence of female colleagues or mentors in specific areas in their organizations. One noted, "where I am in manufacturing I wouldn't say there's any particular role models or anything like that [06]." Another woman in manufacturing suggested that she has been treated like a novelty at points in her career, and that she's taken this as a "personal challenge to show that you know it wasn't just because I was a woman I was here, it was because I was a qualified and a woman that I was here [07]."

A few other participants reported difficulties working collaboratively with male colleagues in certain areas of the company. For example, one interviewee suggested that "you have difficulty dealing with union workers [18]" because of gendered expectations about women's skills and abilities. Another interviewee provided an example of how difficult in can be in moments to get her job done when confronted by "subtle" difficulties with machinists:

> There have been circumstances where, just as an example, I will sketch up something that needs to be made up to assist in the process that we're working on to have a little part made there in the machine shop. I will give it to a machinist, I will go over it, I will show him what I want, I'll tell him verbally, I'll give him the drawing...and then if he has a question, he'll come back and he'll ask the other engineer that I'm working with....So things like that that are—maybe they're

> subtle, but when they continue to happen over and over, it gets pretty noticeable. I've never had anything really, really blatant, I wouldn't say, but there's quite a bit of subtle stuff [26].

Lastly, another interviewee suggested that one's reactions to such behavior could either aggravate or ameliorate the situation:

> You know when you run into things like that, you know, this belief that a female can't be an engineer or you know it's not right for a woman to work outside the house or when you run into prejudices like that, the way I've done it I've just taken it individual by individual. This is particularly out in the field. You know, I try to address it and let them know that I'm aware of what they're doing, and bring it back to the job on hand and you know, to me it's about the job. And I think that's also a test too, I've found, you know, is she going to focus on the job or not? And that tends to kind of important, the most important thing [22].

Identity Management

The fourth category which emerged from the data associated with the two overarching key categories, Workplace Climate and Identity, is Identity Management. Unlike the Demographic Difference category, which explicates participants' experience of structural and attitudinal barriers and benefits, this category focuses on the ways in which individual women in the sample embraced, concealed, utilized, or conceptualized various dimensions of their identities within their workplaces. If Demographic Difference is a category which is typified by ways in which the vocational context reacted to the demographic specifics of the participants' complex selves (e.g., their gender or age), then Identity Management is the category in which are positioned the ways in which the participants responded to the influences of their workplace environments. While the former tends to focus on interactions between the interviewee and her coworkers/company/industry, the latter seeks to describe the personal accommodations in self-presentation or -identification made by the participants.

The vast majority of the data subsumed under this category were gathered from responses to the question from the interview protocol associated with the second research question. All of the women were asked to speak about the labels which they would us to describe themselves. They were subsequently asked which, if any, of these descriptors were salient in their workplaces, and which, if any, were absent or minimized. The answers that participants provided were interesting in both content and in form, and both will be discussed here. Though the associated question on the interview protocol was intended to gather information about women's demographic identities, the responses given actually fell in three categories: demographic aspects of identity (e.g., Hindu, mother), roles and functions (e.g., teacher, counselor), and personality variables (e.g., optimistic, intelligent). Results presented here will focus primarily on the first category of response with brief mention of responses in the second category, in that these collectively reflect the reference groups to which these women associate. The personality attributes cited by participants, while clearly of importance to the interviewees, varied so greatly as to be difficult to organize in a concise way. Moreover, these individual differences are beyond the scope of the present discussion and will be considered in discussion of the results of the larger study in which the current project is embedded. Because each response to this interview question typically entailed a list of (sometimes many) identity labels, the content of this category will be presented, unlike other sections of this chapter relying heavily on quotations from interviewees, predominantly in summary form.

Content

Important identifiers. Participants named over 30 specific identity labels as important in the way in which they would label themselves. Among these were labels

associated with gender ("woman" or "female"), race/ethnicity (e.g., "Asian," "minority"), religion (e.g., "Hindu," "religious"), citizenship or acculturation status (e.g., "1st generation"), family roles (e.g., "sister," "mother," "wife"), profession (e.g., "scientist," "chemical engineer"), geographic location or identification (e.g., "Oklahoman," "coastal") and political or philosophic affiliation (e.g., "libertarian," "closet feminist"). They provided a similar number of distinct personality characteristics. They also named seven additional functional roles such as "teacher," "mentor," "dancer," and "technical" (related to her role at work). Some of these labels were offered in response to prompts on the part of the interviewer rather than spontaneously, as will be discussed in greater detail in a later section.

Among the characteristics cited most frequently by this sample of women were mother/parent (9 responses), scientist/chemist/engineer (9 responses), woman/female (8 responses), and wife/partner (7 responses). It may not be surprising that these were so frequently mentioned, as these were identities held in common by many of the women. However, a slight majority of the sample identified as White, yet this label was not named as important to any of the women. Only four identity labels were specifically cited as *not* important to the interviewees; these were "woman" and "scientist" (indicated by two interviewees each), "Hindu," and "Native American."

Identities brought to work. Interviewees were subsequently asked to indicate which of the identities cited as important they felt they brought into the workplace with them. Some of the women suggested that they brought all of the pieces of their identity with them, either through an intentional process, or because they could not conceptualize how to do otherwise. All of the women who cited parenting or motherhood as an

important aspect of their identity indicated that they brought this part of themselves to work with them. Three of the women of color suggested that they actively brought their race/ethnicity into the workplace; perhaps significantly, all of these women were Asian or Asian American, with no other women of color citing their race/ethnicity in response to this question.

A few women mentioned their profession or job roles, one woman indicated "grandmother" and another interviewee cited "friend." One participant also described herself as a "spouse" at work, in the way she would take care of her (mostly male) employees. Interestingly, only one interviewee indicated that she brings "woman" to work with her.

Identities left behind. A number of women cited aspects of their demographic identity that they felt they did not bring into the workplace with them. One participant said that in the past, she left "all personal roles" behind, though she also suggested that this was beginning to change, in part because her status in the company allowed her more flexibility to talk about (or leave for) personal situations. Three interviewees indicated that they did not bring their identity as a partner/wife to work, and one stated that she did not bring her role as parent into the workplace with her. One of the African American interviewees declared that she brought neither her race nor her gender to work with her. Neither of the two biracial indicated that they purposefully left their Native American identities out of the work environment; however, both indicated that they do not "look" Native American. Furthermore, one suggested that this was not an aspect of her identity she identified with very strongly, as mentioned in the section above.

One woman with a disability in the sample noted that she did not bring this aspect of herself to work with her, as her disability was both invisible and broadly undisclosed. The other participant with a disability also indicated that her disability was an invisible one that people at work did not know about, or if they did, would not speak about with her.

Two of the sexual minority women indicated that they did not bring this aspect of themselves into the workplace fully or at all; one said, "I've made that conscious decision that that is one part of me that I leave at the door…and I think that people would be accepting but I think that my authority would be questioned…if I were out [06]." The other described a process of deciding whether to discuss her sexuality on a "case-by-case basis" and said that managing those decisions is "uncomfortable, in a word…it feels like part of my life gets hidden, and yeah, it can be uncomfortable [26]."

Two of the women mentioned aspects of their identity which felt important to them that might not be demographic variables per se, but that were related to this idea; one said she felt she could not bring any of her "family struggles" to work with her, and another (heterosexual) interviewee indicated that she did not bring in her feelings about same-sex marriage, as she perceived these would not be supported in her workplace.

Process

While the information offered by the women in response to the question about their important demographic identities in and out of work was thought-provoking, the question itself proved difficult in some ways, and the process of working with it provided some additional data.

Though the interview question was revised several times in the development of the protocol and in piloting, the researchers found it difficult to settle on language that would be neither too leading nor too laden with jargon. In the final interviews, a number of the women seemed to quickly understand the question and were able to consider, if not answer, it easily (one indicated she has just been discussing her "role map" in another context). In the case of several interviewees, it was unclear whether they did understand the question at first, in that they provided non-demographic responses, such as personality attributes. It is difficult to determine if the discussion of characteristics such as "intelligent" or "strong" resulted from a lack of clarity about the intention of the question as it was being asked, or if demographic labels simply did not feel relevant to these women, where more intrinsic attributes did. The prompts associated with the interview question (e.g., "for example, woman or scientist") sometimes elicited demographic or role-related content from the participants, and sometimes did not. Four of the women in the sample even after prompts seemed not to understand the question or were unwilling to conceptualize themselves in that way; one flatly stated, "this is weird."

Trends

Roughly half of the participants described ways in which the chemical industry, their specific companies, or functional areas in which they are employed have changed or are changing over time. The perception of movement related to the presence and/or status of women within the industry served as an important reminder that while it may be possible to derive a "snapshot" of the workplaces of the women in this sample from their interviews, the situation of women in the chemical industry is dynamic rather than static. The trends they described were of two different types: trends related to patterns of

occupational participation, and trends related to individual or collective attitudes. Each of these represents a property under the category "Trends," and dimensions ranged from "increase/ improvement" to "decrease/decline."

Patterns of Participation

"Patterns of participation" refers to the actual number of women or members of other underrepresented groups employed in the industry overall or in specific locations within the industry. Several of the women indicated that the numbers of women in the industry and/or their companies appears to be increasing. One interviewee attributed this to governmental influences and pressure rather than company-driven initiatives. Some of the women noted a growing number of women in specific areas particularly susceptible to field segregation, such as manufacturing (where gender role stereotyping may be a barrier), and upper-level management position (where both gender role stereotyping and occupational discrimination may impede the full participation of women). For example, one woman noted "more women in the leadership roles in manufacturing [03]" while another said, "I see more and more women being promoted in the company. In fact, our CEO is a woman.... I see women being promoted in the engineering ranks here at the plant, and also [in] production [17]." A third interviewee offered, "I think you can pretty much interview for any job you want and be considered for it. I think in the past, that wasn't the case. They didn't really want women in certain areas [20]."

A few of the women suggested to the contrary that they believe the numbers of women in the industry and/or their companies may in fact be decreasing. One participant attributed this to the continued lack of family policies in some companies:

> I know more women leaving the industry now than ever. And they tell me..."I'm sick of it." And what are they sick of? Well, they're sick of the way that they're

> being treated, the environment. Management does not care that, you know, the environment that they're working in is not amenable to them. They don't have sometimes childcare within the immediate vicinity of where they work, and so they translate it into, "Well, this company doesn't care. I'm going to leave. Not only am I going to leave this company, I'm leaving the profession [28]."

Another interviewee remembered frequently being the only woman in the room when she began her career, and noted that after a period of increasing numbers of women in the company, "I have found myself back in the mode of showing up for some meetings where I'm the only female in the room. And that's very, very interesting to me, seeing that, you know, come back around [30]."

Additionally, a few of the interviewees indicated that they perceive the numbers of people of color (including women of color) to be increasing within their companies. Interestingly, all but one of the women who reported this trend identified as White. Said one participant, "If I were to think back to where I was 15 years ago, and compare that population with the population at that same level now, the population now is much more diverse, as compared to, you know, when I was in that level [29]." Furthermore, three of the women noted an increase in the number of people of color in management; "we have had women becoming managers, becoming vice presidents here...it's no longer the first, it's more becoming the norm around here..... It's become much more common to see women and minorities in management positions [07]" said one.

Attitudinal Changes

A number of the participants in the study indicated that, overall, there are improvements in the general atmosphere of their workplaces for women. In some cases, these changes were described as quite dramatic. One interviewee with 25 years of experience in the industry noted:

> ...when I started, there was a lot of that going on...I know secretaries who got chased around desks, you know, and there were jokes about if couches in certain offices could speak, you know. So, I know that that sort of thing did occur and was occurring when I first came to work. But, you know, and I guess maybe because you know, I'm seeing that transition, and people—and the generation that's coming in after me...doesn't really understand what that really was all about [30].

Another participant observed, "there is a sensitivity to sexual jokes or not making sexual jokes that is present today that wasn't present when I started 26 years ago. So I've seen those attitudes change [17]." Some of the attitudinal shifts described by participants were somewhat more subtle but described as significant nonetheless. One interviewee indicated that it was no longer necessary to be like the "'80s superwomen, women who act like men," and suggested that now, "in business people recognize that women maybe think differently and behave differently and the way to approach issues are different [24]."

One interviewee who identified as Black reported positive change in the climate for people of color as well as for women, with continued room for improvement: "I think it's come a long way but it's not quite there yet. Not just for women but for anyone that is a minority [19]." A lack of attitudinal change was also described by one participant. She indicated that over time her company has tried increasingly to meet the needs of its female employees, but with limited success: "I see that there, you know, the company has really tried. They're still failing miserably.... They don't know how to deal with women. They don't know how to coach women, and by the time they learn how to coach women, it's too late [15]."

Summary

In this chapter, results of analysis of two of the key categories from 22 semi-structured interviews with women working in the chemical industry have been presented. The overarching key categories are Workplace Climate and Identity, which were found to be overlapping and interconnected. These two key categories were comprised of five major categories, which include Company Contributions to Climate, Workplace Support, Demographic Differences, Identity Management, and Trends. These categories further encompassed multiple properties and dimensions which accounted for a wide range of experience in the two key categories, and attempt to answer the two guiding research questions outlined in Chapter 2, specifically: 1) What do these women experience in terms of workplace climate in their current positions and how are these perceptions linked, if at all, to company policies and practices?; and 2) With what identities do these women choose to label themselves and how are these identities "managed" in the workplace?

CHAPTER 5

Discussion

Summary of Results

The present study resulted in the identification of several significant factors related to the broad constructs of Workplace Climate and Identity in the career experiences of 22 women formally trained in science and engineering currently employed in industrial chemistry. The study examined results related to the five areas identified through analysis and described as Company Contributions to Climate, Workplace Support, Demographic Differences, Identity Management, and Trends. The findings are discussed related to the overarching research questions as well as the current literature on women in nontraditional careers.

The first research question inquired about how the women experienced their current company climates and how this might be related to organizational policies and practices. It was found that these women typically described complex and sometimes incompatible interactions of company, self, and other variables which collectively constructed the experience of workplace climate.

Returning to the definition of climate offered by Reichers & Schneider (1990), which emphasized the *shared* assessment of formal and informal organizational policies, practices, and procedures, serves as a reminder that it is the perceived as well as actual company contributions to climate that must be attended to in understanding these women's experiences. While the participants in this sample typically spoke of the presence of supportive policies and several articulated changes for the better in the numbers and treatment of women and people of color, the significance of the viewpoint

shared by a number of the interviewees that their companies do not hold themselves accountable to their own policies must be highlighted.

Participants in the sample described experiences which were consistent with the primary climate-related constructs in the literature on women's career developments: hostile environment, chilly climate, and the null environment. These constructs have been defined within the literature in overlapping ways, and the difficulties experienced as a result of any of them vary only by degrees. Many of the women in the sample described overtly sexist or racist events, particularly in the way of jokes or direct comments and inequities in the hiring, promotion, and recognition of women and minorities, which would constitute a hostile workplace environment. The "only" experiences (this key word used by several participants was preserved to highlight the commonality among stories) shared by a number of the women epitomize tokenism (Fassinger, 2002), another gender barrier in these interviewees' workplaces.

In the absence of the most egregious behaviors, several women in the study also reported gender role assertions within their workplaces (and especially within certain functional areas) where women were not taken seriously or were evaluated according to male standards of behavior, as is typical in discussion of "chilly climates" for women (AAC, 1982). The sexual minority women in the study likewise reported chilly climates related to that aspect of their identities. Finally, some of the women described a feeling of being unsupported by their companies or of being unable to locate role models or mentors of similar demographic characteristics that recall Betz's (1994b) "null environment."

In the positive direction, many women spoke of the support they did receive from mentors, supervisors, and networks. While the latter two relate to structures of the

workplaces, the mentors described by the women in the sample were for the most part not formally assigned but independently acquired through the establishment of positive relationships. All three of these supports for women could easily be viewed as part of the workplace climate and therefore comprise part of the response to the first research question; however, it is unclear to what extent the women who described such supports would associate them directly to organizational policies and procedures.

It is worth noting that while every effort was made to preserve the possibility of a positive construal of workplace climate on the part of the interviewees (e.g., in the construction of interview questions inquiring about facilitative as well as inhibitory factors), the resulting data suggest that while some of the participants in the study did in fact endorse a globally positive workplace climate, in actuality, the women typically described experiences in or features of their workplaces that are unfriendly to women, particularly women of color and sexual minority women.

The second research question asked what aspects of identity might be most salient for these women, and how they would choose to "manage" these identities in their workplaces. This question is somewhat less clearly answered than the first. Certainly, the majority of women in this study highlighted experiences related to their gender (including motherhood), race/ethnicity, sexual orientation, and disability status which were of significance in their careers. Some also spoke more broadly about how these facets of their identities were intrinsically meaningful, such as women who drew strength from a marginalized identity within the industry if not also in the world. However, much of this information was elicited by questions directly addressing aspects of the interviewee's previously disclosed demographic information. Attempts to encourage women to

articulate more spontaneously or organically which facets of their multidimensional selves felt most important to them met with moderate success; some of the women had difficulty understanding or responding to the question which attempted to capture this information. Nevertheless, the process was useful in itself in that it demonstrated the apparent preference of some of the women in the sample to think about themselves exclusively in terms of internal attributes such as personality characteristics rather than external, sociocultural attributes (and the tendency of others to want to combine the two). It seems fair to say that for many of the women in this sample, gender, particularly as related to family roles, was a significant aspect of identity.

A reasonable area of future investigation is the possibility that this preference may in fact reflect some aspect of the culture of the chemical industry, where White male overrepresentation in American companies may lead to a certain "rugged individual" value system and a decrease in role salience for some of the women employed within it.

With respect to the management of identity for the participants in this sample, it appears that Chung's (2001) conceptualization of strategies often used by LGBT people may have been evidenced by some of the "double minority" women, whatever their second minority status. Certainly, the sexual minority women openly discussed their choices to reveal (in the case of one) or conceal (in the case of two) this aspect of their identities. Furthermore, and perhaps more interestingly, some of the women representing other marginalized or underrepresented groups in the sample also discussed similar identity management choices. For example, both women with disabilities in the sample concealed their disabilities through "passing" as if they were nondisabled. The two biracial women in the sample seemed to evidence "covering" strategies, in their refusal to

deny but tendency not to claim their Native American heritage in the workplace. Even a few of the White women in the sample, in their tendency to downplay the significance of gender in their vocational experiences, or to deride corporate policies intended to facilitate the careers of women, could be conceptualized as engaging in a process of identity maintenance within their workplaces. This finding suggests that it may be useful to consider the potential applicability of identity management to all women in nontraditional fields.

In sum, most of the women in this sample spoke about their workplace climates in a manner that reflected one or more aspects of their demographic identities. Additionally, the participants variously described their workplace climates as positive, negative, or neutral; in some cases, a single participant might describe the climate of her organization as positive in certain attributes and negative in others. Workplace policies and workplace supports were cited as positive attributes of workplace climate, and most women in the sample described access to both of these, yet the absence of enforcement of policies was also cited as a negative attribute. Lastly, while most of the participants in the study spoke about demographic identity in some portion of the interview, when asked directly about aspects of their identity in the workplace, some of the women tended to detail and discuss personality characteristics rather than or in addition to demographic variables.

Strengths and Limitations of the Study

The present study is characterized by certain strengths and limitations which must be considered in evaluating the quality of the research and the trustworthiness of the results. The discussion of these strengths and limitations is guided by the terminology typical to evaluation of qualitative research; these may be parallel to but are distinct from

the terms used in assessing the rigor of quantitative research. Because of unavoidable trade-offs that are made in the design and implementation of empirical research, some aspects of the present study represent both strengths and limitations; as such, these are discussed concurrently.

A significant strength of the present study is that it attempts to articulate some portion of the experience of a group of women who are effectively invisible in the current literature: female scientists working in industry. It offers an initial exploration into the ways in which identity and climate may shape or have shaped the career development of these particular women. In this way, the present study endeavors to contribute to the research on women's vocational development.

Investigator bias frequently is cited as particularly problematic in qualitative research, while this charge typically is not levied against qualitative methodologies; however, the principal of confirmability indicates that research is never objective and, as such, recognition rather than elimination of bias should be the goal (Morrow, 2005). At the outset of the larger project in which the present study is embedded, the research team members had a discussion about personal assumptions and beliefs which might influence their conceptualization of the study and their interpretation of the data. This conversation continued openly over the course of the study, and team members strived to challenge one another's thinking about the participants and the data throughout the process. The results presented here, though audited by team members with varying levels of involvement in interviewing and analysis as well as one outside auditor, were bound to some degree by this researcher's biases and may have been differently construed by another researcher.

Additionally, some limitations exist related to the sample in this study. The first is that the majority of these women were recruited from one of the 15 Fortune 1000 companies which formally assisted with this project. The climate of organizations on this scale may be notably different from that of smaller companies within the industry; as such, the transferability of the results may be limited to women working in similarly large companies. Secondly, though every attempt was made by the researchers to include a maximally diverse sample in the study, technological problems had the unfortunate effect of reducing variability in the participant pool. This also may limit transferability. Furthermore, the participants in the study were self-selected and it is difficult to know how they might have differed from their female colleagues who did not elect to participate in the study. Nevertheless, the relatively large number of participants and the resultant diversity in the sample in terms of both personal and vocational variables also represents a strength in the study, and in fact appears to be greater along certain dimensions than the industry itself (e.g., a relatively large number of women of color and of women in manufacturing). This is consistent with the goal of much qualitative research to give voice particularly to those individual experiences that might be absent or overlooked in the existing literature rather than privileging a certain "typical" experience. In this study, criterion-based oversampling was used purposefully to ensure that frequently ignored voices were included, which is appropriate to a grounded theory methodology where the goal is to saturate the data rather than to be preoccupied with locating a representative, generalizable sample, as is common in quantitative research.

In terms of the instrument used in the study, a strength is that the semi-structured interview protocol consisted of open-ended questions that allowed women to elaborate upon events or situations that felt most relevant to them. The interviews were fairly in-depth and enough women elected to share so much of their personal stories that original solicitation for a 60-minute interview was changed to a 60- to 90-minute interview. Whereas grounded theory specifically and qualitative methodologies generally require rapport between researchers and participants rather than a distant, "objective" stance, this study profited from the skills of the interviewers in building connection and communicating interest and nonjudgment to the participants. Indeed, a few of the women specifically acknowledged the interviewers for "listening." Nevertheless, all of the interviews were conducted by telephone and the majority was conducted while the women were in their workplaces, therefore, possible self-censoring is of concern. A few of the women in the study directly or subtly communicated an inability or unwillingness to fully answer certain questions related to climate in situ. While censoring is a possible limitation of the study, it is also a finding of note, as in some cases it appeared to relate to the variables of interest in the present study (e.g., identity maintenance as a function of climate and identity).

A further limitation of the instrument used in the study relates to the wording of the question on the interview protocol that inquired about identity and identity maintenance. This question was revised multiple times both before and during piloting of the protocol. The goal was to create a question that was free of psychological jargon yet was not overly leading, as existing work on identity typically centers the demographic variable of interest (e.g., research on sexual minority populations tends to focus narrowly

on sexuality). The researchers did not wish to presume that a minority identity (e.g., woman, person of color, lesbian, person with a disability) was necessarily significant in the career experiences of these women; indeed, this is in part what the research question sought to investigate. After many incarnations, the team members proceeded with a question that was improved but not ideal, and some of the interviewees seemed to be initially unclear as to what the question was asking. The prompts that were introduced typically resolved the ambiguity, but did so by listing some or all of the interviewee's demographic information, and hence could be seen as leading. The difficulty associated with asking about the influence of identity was informative if, at times, frustrating, and further refinement of this question is warranted.

Implications

Implications for Research

The present study is part of a broader investigation into the career experiences of women with training in science and engineering employed in the chemical industry. This population is one that has not been directly addressed in the vocational psychology literature on women's career development. Additional research on women in nontraditional fields broadly and STEM fields specifically, particularly those in non-academic settings, is needed to better understand the career choices, development, and experiences of this population. While this study endeavored to include the voices of women of color, women with disabilities, and sexual minority women, future research continuing to target these subpopulations often neglected in the literature will enhance our understanding of how these aspects of identity play out in the workplace, particularly in fields where White men are traditionally overrepresented. Might there be protective

factors in a sexual minority, racial/ethnic minority, or disability identity that enhance rather than hinder the vocational experience for women in nontraditional fields? Thus far, the scant empirical and theoretical work in this area appears committed to a belief that marginalized identities are unilaterally harmful in the workplace, and further investigations of this conviction may be beneficial.

This study sought to understand the influence or workplace climate and identity in the experiences of the participants, and the results presented here may be used to guide further explorations in this domain. For example, future qualitative studies may choose a specific focus on either or both of these constructs to gather more expansive data in these areas. The present study utilized an interview protocol that was designed to additionally serve the purposes of the larger project in which this study was embedded; as a result, the protocol may have invited breadth rather than depth of experience. Future quantitative work also is needed with this population which may offer greater generalizability as a strength; this might include use of recently developed and validated instruments related to diversity and workplace climate (e.g., the LGBT Climate Inventory, Liddle, Luzzo, Hauenstein & Schuck, 2004).

Gender and race/ethnicity have received some attention in the vocational literature, and Noonan and colleagues' recent work (2004) on disability in the career development has begun to explore this dimension of identity. Sexual identity-related career research is uniquely hindered by heteronormative assertions that sexuality is private (though the experiences of some of the women in this sample might serve to suggest otherwise); indeed, patterns of occupational participation of sexual minority individuals are not readily available as such data are not typically collected. Vocational

psychologists must continue their attempts to include participants whose sexual orientation is partially or completely concealed in the workplace. This appears particularly relevant to the STEM fields, where more conservative organizations still actively wrestling with gender may have not have found the impetus to organize initiatives for sexual minority individuals. It remains challenging to capture an accurate representation of workplace climate for LGBT people when factors contributing to concealment of identity may encourage self-selection out of studies such as this one. Future studies may benefit from different procedures targeting such individuals (e.g., conducting interviews out of the workplace), particularly as the literature has suggested that sexual minority women may be present in male dominated fields in greater than representative numbers (Fassinger, 1995).

More than one interviewee in the present study suggested that she found the experience of being interviewed helpful in itself; this is consistent with the recognition in the qualitative paradigm of the impact of research on participants. A constructivist or critical perspective suggesting that there is at best an indistinct line between research and practice would support the belief that, for some women in STEM jobs, simply participating in future studies—particularly those that are qualitative in nature—may serve as a therapeutic intervention in its own right. Additional work examining the impact of qualitative research on participants (as well as researchers) could aid investigators desiring to maximize these opportunities for intervention without sacrificing the quality of the research.

It should be noted that the opportunity for continued research in the chemical industry seems promising, as the larger project in which this study was embedded was

facilitated by the assistance of corporations and professional organizations in the recruitment of participants; furthermore, the present researchers were almost overwhelmed by the unexpectedly large numbers of women willing to be interviewed about their career experiences. It would seem that the doors to additional empirical work in this industry are open.

Implications for Practice

The present study's focus on the career experiences of women in a nontraditional setting is well matched with counseling psychology's attention to both vocational development generally and to the sociocultural context in which individuals live and work. In the practice domain, continued development of vocational interventions for female scientists, particularly early-career scientists, may be enhanced by an increased understanding of the ways in which workplace climate is differentially experienced by individual employees, in part as relates to other demographic variables.

At the individual level, psychologists working with clients contemplating or working in scientific careers may be able to draw from the experiences of the women in this sample to contextualize (if not "normalize") occupational challenges related to gender, race, disability, and sexual orientation in scientific industry. Many of these women had few other women in their companies with whom they could share or compare their experiences; while some knew or suspected that they were not atypical, a few were surprised to learn from interviewers at the conclusion of the interviews that similar stories had been reported by other participants. A few of the women indicated health problems attributed to career-related stress, and loneliness and isolation was a common theme described by participants. Working with clients to heighten their awareness of the

external forces which impact upon their experience, particularly ableism, heterosexism, racism, and sexism, may empower clients and prevent them from needlessly and harmfully internalizing these challenges. Preventing external barriers from becoming self-barriers (e.g., Fassinger, 2002) needs to be an overarching goal of (career) counseling with women.

At an institutional level, psychologists employed in or consulting with STEM organizations might highlight the importance of workplace support in all its forms for traditionally underrepresented groups, and pursue the development of networks and formal mentoring programs that work in service of the individual employee. The study in which this research project is embedded seeks to compile "best practices" in the industry for facilitating the careers of female scientists which may further facilitate the use of the findings in practice. The broad dissemination of results from this study and the project in which it is situated (i.e., in psychology as well as S&E journals, on the study website, through magazines and newsletters associated with professional organizations for female scientists, and directly to formally participating employers as well as the 22 individual women interviewed) will enable companies and associations, and women in S&E themselves, to initiate their own programs reflective of the needs of demographically diverse women in these settings.

Finally, in terms of policy, psychologists must continue to document the existence and detrimental consequences of inequitable workplace practices in hiring, promotion, salary, and provision of benefits to effect change on a larger scale for diverse women in their careers. Despite their increased presence in STEM fields, women continue to be highly disadvantaged in these occupational settings. It has been suggested that even in the

face of improvements in workplace practices, this disadvantage persists because of "micro-inequities," the slight favoring of men in the workplace, which over time lead to "cumulative disadvantage" (Fassinger, 2001a). As the need for skilled workers in these areas increases, the barriers to full participation of women will likely garner more attention from policymakers. Studies such as this one which attempt to document the experiences of women in a way that recognizes the complexity of multiple identities may encourage the creation of policies which treat women as coherent wholes rather than fractured pieces of their selves.

Conclusion

This chapter offered a discussion of the results of the current study (as presented in Chapter Four) in relation to the research questions which guided the study as well as the body of literature on occupational climate and demographic diversity in the workplace. Additionally, strengths and limitations of the study, as well as its implications for research, practice, and policy were offered.

This study highlights the continued need for research on women in nontraditional fields, and particularly for studies which engage with under-discussed populations of women or with occupational fields or settings about which little or no empirical work exists. The literature on women's vocational development and career development generally has attended only recently to the potential significance of demographic differences in the workplace, and limited work has explored the relationship between these differences and workplace climate, or the management of demographic identity for women and other minorities, in White male-dominated fields.

An expanded understanding of the navigation of a multidimensional identity in the context of a specific organizational or industry climate will advance the work of researchers and practitioners in the area of women's career development. While additional research is called for, this study offers an initial exploration of these two constructs in the lived experiences of a group of women operating in a context—aptly described by one participant—of "challenge and opportunity."

Appendix A

Recruitment Letter for Company Participation

ENHANCE
Enhancing the participation of women scientists and engineers in the chemical industry

Goal: Using the chemical industry, the leading employer of scientists and engineers in the U.S., as the model sector:

- Document and analyze the career paths and experiences of women formally trained in science and engineering in order to identify factors that impede or facilitate their careers.
- Identify and share effective corporate practices, as identified by women and management, in the recruitment, retention, and promotion of women formally trained in science and engineering.

Background: Science and engineering (S&E) fields are considered crucial to U.S. economic growth and are expanding rapidly. Demographic trends indicate that women and minorities represent the greatest increases in workforce participation; however, the continued under-representation of women (including minority women) in S&E fields is well documented. While much of the attention to women's relative absence from S&E fields has focused on women in academe, very little is known about women in other S&E intensive settings, especially industry.

Because the $450 billion U.S. chemical industry is the largest employer of scientists and engineers, individual companies and the industry as a whole need to:

- Extract the greatest value and contribution from women formally trained as scientists and engineers
- Define where women formally trained as scientists and engineers stand compared with men in:
    - Career progression within technical and other professional roles
    - Job types
    - The contextual factors and workplace climate they experience
    - Retention and promotion
- Develop and implement effective industry-wide programs to support the retention of women and the promotion of women into leadership positions in both technical and non-technical roles.

Methodology: To accomplish the goals, three primary studies and one secondary study are planned.

<u>Primary Studies:</u>
Study 1: (A) A quantitative web-based survey to determine the professional experiences of women formally trained as scientists and engineers regarding:

- Job Satisfaction

- Organization/Company Support
- Home-Work Interface
- Job Stress and Coping
- Workplace Climate
- Mentoring Experiences
- Advancement and Leadership Opportunities and Challenges
- Company Mechanisms to Facilitate Career Success

(B) A follow-up qualitative interview study of selected survey participants to further explicate the career trajectories and experiences of women formally trained as scientists and engineers.

Study 2: (A) A quantitative web-based survey to determine management perceptions and practices regarding support for the career development of women formally trained as scientists and engineers. (B) A follow-up qualitative interview study to further explicate the perceptions of managers regarding the career progression of women formally trained as scientists and engineers.

Study 3: A compilation of current "best practices" as reported by women and management in Studies 1 and 2 (and supplemented by a review of the literature) regarding programs, initiatives, and methods employed by companies in the chemical industry to support the career progression of women formally trained as scientists and engineers.

Secondary Study: Documentation of company patterns of the career progression of women and men formally trained as scientists and engineers.

To assist and advise us with the planning, design, and implementation of the various studies, we have established the ENHANCE Development and Implementation Oversight Committee. Committee members all have extensive chemical industry background and represent a cross-section of levels and functions: marketing, sales, technology, HR, and manufacturing. Names of committee members are available upon request.

How You Can Help:

- Have your company participate in the three primary studies, and (if possible) in the secondary study.
- Encourage women in your company who were formally trained in science and engineering (regardless of current job function) to complete the quantitative survey and participate in follow-up qualitative interviews, if invited.
- Designate appropriate senior level managers (VP, director level) representing multiple pertinent functions (e.g., business, technical, manufacturing, HR) to complete the quantitative surveys and participate in follow-up qualitative interviews if invited.
- Encourage your colleagues in other companies to participate in order to help ensure a rich and comprehensive database.

Projected Timeline:
Primary Studies:

- Study 1A: Quantitative studies for women – Start: beginning Q4 2003; End: end Q4 2003.
- Study 2A: Quantitative studies for management – Start: beginning Q1 2004; End: end Q1 2004.
- Studies 1B & 2B: Qualitative studies for both women and management – Start: mid to end Q1 2004; End: end Q2, beginning Q3 2004.
- Study 3: "Best practices" study (based on information provided in first two studies; no additional information required from companies) -- End: Q1 2005.

Secondary Study:

- Start: end of Q3 of 2004; End: end Q4 2004.

Investigators and Funding:
Research funding is provided by the National Science Foundation. Research will be conducted by project leaders Dr. Ruth E. Fassinger, University of Maryland and Dr. Judith C. Giordan, Visions in Education, Inc. and a research team of doctoral students at the University of Maryland.

For further information or if you are interested in participating in the studies, contact:
Dr. Judith C. Giordan, 412.362.5743 (judy@visionsineducation.com) or
Dr. Ruth E. Fassinger, 301.405.2873 (rfassing@umd.edu)

Appendix B

Sample Company E-mail for Recruiting Initial Participants

We at [insert name of company] invite you to participate in Project ENHANCE, a groundbreaking study of the career experiences of women formally trained in science and engineering who now work in the chemical industry. This research is sponsored by the National Science Foundation and is supported by our company as well as other major chemical companies, and by professional organizations such as ACS and AICHE. We support this project because it will identify important influences on women's career trajectories, and the researchers will share with our company leadership the effective corporate practices they discover that are aimed at improving the experiences of women in industrial settings.

The survey you are being invited to complete is completely anonymous (there will be no identifying individual or company information) and takes about 30 minutes. While you are not required to participate in this study, we strongly encourage your participation and urge you to complete the survey. The survey will be available on-line until the end of February. Please click on the following link in order to go directly to the survey: http://enhance.technopsychology.com/survey.html

We appreciate your interest in helping our company support the careers of women.

Appendix C

Sample E-mail for Contacting Selected Interviewees

Dear _____,

I am contacting you on behalf of Project ENHANCE, a research project sponsored by the NSF and the University of Maryland on the experiences of women in the chemical industry. Recently you completed our online survey and indicated your willingness to participate in a follow-up interview. We would very much like to include you in this study. Interviews typically last 60-90 minutes, and we suggest that you be in a place where you feel able to speak freely about your personal career experiences at the time of the interview. Your employers will not be informed of your participation in this study, and none of the information you provide will be connected to you directly in any way.

If you are still interested in participating and would like to suggest some times when you are free to be interviewed, you may email me at the address below. I will try to reach you by phone tomorrow to discuss your potential participation—we're really hoping to include your voice in our work! I look forward to speaking with you soon.

Thank you,

Julie R. Arseneau, Ed.M.
Project ENHANCE
University of Maryland
jra87@umd.edu
(301) 405-0243
http://enhance.technopsychology.com

Appendix D

Sample Acknowledgment E-mail

Dear _____,

Thank you for participating in an interview for our Project ENHANCE study on the career experiences of women in the sciences and engineering. Our multi-phase study is proceeding, and preliminary results from our online survey have been posted on our web page, with more results forthcoming. We have also updated our resource page, and will be including additional results from our online surveys and interviews as they become available. If you have any questions about the Project or wish to offer any feedback, please feel free to contact me.

I enjoyed having an opportunity to speak with you, and appreciate your willingness to share your experiences with me. I look forward to sharing our results with you. Again, thank you for your participation.

Julie R. Arseneau, Ed.M.
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Appendix E

Field Notes Form

Age	
Degree	
Race/Eth	
Disability	
Sex. Or.	
Partner	
Children	
Elder	

TAPE NUMBER:

Date:

Interviewer:

Participant *(first name, last initial)*:

Participant location at time of interview *(e.g., home, work)*:

Length of interview:

Comments on rapport:

Other noteworthy information *(may include interruptions or difficulties in conducting interview, questions that were unclear to interviewee, prior contact with interviewee, notes on interviewee's tone of voice or speaking style, etc.)*:

Appendix F

Final Interview Protocol

Note to interviewer: Listen for post-9/11 (e.g., economic) influences. If present, follow up (e.g., does the present state of the economy/industry affect the way you think about issues for women in the chemical industry?).

(Introduce self.) 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 collection and analysis only. The only people who will hear this tape will be members of the research team. 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. **Your responses will not be shared with your employer.** In this interview I'll be asking you a number of job-related questions. **I am hoping to learn a little about *your* experiences rather than the experiences of people working in your company or in positions like yours generally.** We'll be covering a lot of different areas, and I'll give you an opportunity at the end to add anything I may have missed.

1) Can you please tell me the title of your current position and what it is you actually do in that position?

    a) *Prompt:* Do you travel, work alone or with others, # of hours, setting?

2) Could you tell me a little about the path that brought you to your current position—any significant personal, educational or professional events or experiences?

3) Are you currently doing what you want to be doing and are you where you want to be professionally?

    a) *If relevant:* What type or level of professional advancement do you aspire to?

4) How confident do you feel about your performance in your current position? What has contributed to this level of confidence (or lack of confidence)?

    a) *If relevant:* How confident do you feel about your potential ability to perform in the position that you aspire to?

5) What has your experience been as a woman in this industry?

    a) What barriers or challenges have you encountered?

    b) What helpful factors have you experienced?

    c) How did the absence or presence of women in your field influence your professional development?

    d) *If relevant:* How has the absence or presence of people of color/people with disabilities/sexual minority people influenced your professional development?

    e) Do your work life and your home life affect each other, and if so, how?

6) How does it feel to go to your current workplace every day, and what contributes to those feelings?

    a) How would you describe the climate of your workplace for women (*if relevant:* people of color/people with disabilities/sexual minority people)?

    b) What does the company do or not do that you feel contributes to that climate?

7) What are your sources of support for your professional life and what specifically do they provide?

    a) Are there individuals who provide support?

    b) Are there groups, for example, organizations or communities, that provide support?

8) How would you describe yourself in terms of *roles* or *labels*, other than personality characteristics?

    a) *Prompt:* You indicated to us that you are [read from field notes form: race/ethnicity, disability, sexual orientation, partner status, # of children, elder care]. Of those labels, which are important to you, if any, in how you think about or describe yourself? Why? Are there other labels that are important that I did not mention?

    b) Of the identities that are important to you, which ones do you or are you able to bring with you into the workplace? Which ones do you not bring with you?

9) In your opinion, what needs to be done to improve things for women in this industry?

    a) What do you wish were in place or could happen?

10) Is there anything else about your experience in the chemical industry that you'd like to share?

Thank you so much for your time. If you think of anything that you'd like to add you can contact me via e-mail at [address]. If it's all right with you, I may also contact you again if I have additional questions. Do you have any feedback you'd like to give me about this interview? Thank you again.

Appendix G

List of Final Interview Participants

Int. #	Race/ Ethnicity	Age	Degree	Functional Area	Disability	# of Children	Sexual Orientation
01	Biracial	39	BS	Organizational Development	No	3	Heterosexual
03	White	37	BS	Technology	No	2	Heterosexual
05	White	34	BS	Technology	No	1	Heterosexual
06	White	42	BS	Manufacturing	No	1	Bisexual
07	White	40	BS	Manufacturing	No	1	Heterosexual
08	Asian American	22	BS	Manufacturing	No	0	Heterosexual
09	White	37	MBA	Purchasing	Yes	2	Lesbian
10	White (non-U.S.)	33	PhD	Technology	No	0	Heterosexual
13	Biracial	46	MS	Technology	No	1	Heterosexual
14	White	44	BS	Technology	No	3	Heterosexual
15	White	35	MS	General Management	No	2	Heterosexual
17	White	48	BS	Manufacturing	No	2	Heterosexual
18	Asian (non-U.S.)	25	BS	Marketing	No	0	Heterosexual
19	Black (non-U.S.)	42	BS	Technology	No	0	Heterosexual
20	White	44	BS	Six Sigma Expert	Yes	2	Heterosexual
21	Latina	40	MS	Organizational Development	No	4	Heterosexual
22	Asian American	26	BS	Environmental	No	0	Heterosexual
24	Asian American	39	MS	Technology	No	0	Heterosexual
26	White	40	MS	Technology	No	0	Lesbian
28	African American	31	PhD	Manufacturing	No	0	Heterosexual
29	White	47	PhD	Technology	No	2	Heterosexual
30	White	45	MBA	Finance	No	1	Heterosexual

Appendix H

Master Category List

1. Jobs/roles/tasks/responsibilities
2. Work-related travel
3. Educational experiences
4. Pre-degree work experiences
5. Post degree work experiences
6. Governmental influences
7. Economic influences/issues (systemic)
8. Company restructuring/changes
9. Career/job transitions or disruptions
10. Salary/financial issues (personal and/or family)
11. Self-evaluation
12. Coworker evaluation of self
13. Supervisor evaluation of self
14. Composition of management (all demographics)
15. Experiences with management
16. Perceptions of management
17. Mentors and role models
18. Recognition (or lack)
19. Success attributions
20. Management support (or lack)
21. Coworker support (or lack)
22. Non-work related support (or lack)
23. Company policies and practices
24. Partner influences, issues, and impact
25. Parenting influences, issues, and impact
26. Workplace flexibility
27. Teamwork experiences
28. Ideas for improvement
29. Generic home-work conflict
30. Identity
31. Reactions to interview, interviewer, or study
32. Geographic influences
33. Technology track v. people (or "people managing") track
34. Perceptions of composition of workplace: gender
35. Intangible atmosphere of workplace: gender
36. Treatment of self or others based on gender
37. Perceptions of composition of workplace: all demographics other than gender
38. Intangible atmosphere of workplace: all demographics other than gender
39. Treatment of self or others based on any demographic other than gender
40. Health issues

41. Workplace atmosphere: generic
42. Career goals
43. Issues regarding advancement
44. Attitudes regarding science or being a scientist
45. Attitudes regarding gender and gender roles
46. Early experiences, non-educational
47. Gratitude regarding employment
48. Activism and outreach
49. General attitudes regarding job or work
50. Specific company characteristics
51. Networking
52. Coping
53. Negotiating one's own minority status
54. Experience as a supervisor
55. Experience with coworkers
56. On-the-job training

Appendix I

Key Categories

1. JOB ROLES AND RESPONSIBILITIES
2. CAREER PATH
3. WORKPLACE CLIMATE
4. SUPPORT
5. HOME-WORK INTERFACE
6. IDENTITY
7. INTERVIEWEE ATTITUDES
8. EXPERIENCES WITH WORKPLACE OTHERS
9. PERCEPTIONS OF SELF
10. CONTEXT
11. PERSONAL ACTION
12. ADVANCEMENT
13. IDEAS FOR IMPROVEMENT
14. INTERVIEW REACTIONS

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