Adding Her Voice to the Narrative: Career Development Experiences of Women in Engineering

By Kelly H. Pumroy

B.S. in Management, May 2003, The Pennsylvania State University
M.S. in Human Resource Management, May 2008, Rutgers, The State University of New Jersey

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Dissertation directed by:

Shaista E. Khilji
Professor of Human and Organizational Learning

The Graduate School of Education and Human Development of The George Washington University certifies that Kelly Pumroy has passed the Final Examination for the degree of Doctor of Education as of March 3, 2016. This is the final and approved form of the dissertation.

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Kelly H. Pumroy

Dissertation Research Committee:

Shaista E. Khilji, Professor of Human and Organizational Learning, Dissertation Director

Paige McDonald, Assistant Professor of Clinical Research and Leadership, Committee Member

Michael Pobát, Projects Lead, L-3 Communications, Committee Member

Dedication

To all those who quietly hope and/or loudly fight for equality

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Abstract of Dissertation

Adding Her Voice to the Narrative: Career Development Experiences of Women in Engineering

Existing theories of career development do not adequately address women whose careers develop differently than men's. While women's workforce participation rates indicate consistent growth, in some occupations, such as engineering, the disparities are immense. Many organizations have started to create environments that are supportive of more contemporary career development needs, specifically that of women's. Despite these efforts, norms do not always support the participation in or use of programs such as telework, the promotion of work life balance, or more flexible jobs and work environments. While women have made progress in their career advancement and workforce participation, gendered norms within organizations persist. Therefore, a basic qualitative study was used to study the career development of women engineers in organizations and how these are influenced by organizational and societal norms. Interviews with ten women engineers allowed the researcher to understand how women made sense of their experiences and the meanings they construct.

Three major findings resulted from this study. The first relates to women engineers' career development, the second highlights sensemaking and how women respond when faced with organizational and societal norms, and the third addresses social roles and their importance to participants' experiences. The researcher hopes to enhance the way in which organizations support women's career development choices and, most importantly, strives to include the voices of women in career development theories and models.

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Chapter 1: Introduction

Statement of the Problem

Super (1957) advanced the concept of career development in organizational literature. He defined career development as, "a lifelong, continuous process of developing and implementing a self-concept, testing it against reality, with satisfaction to self and benefit to society" (p. 282 as cited in Egan, Upton, & Lynham, 2006, p. 458). Since then, scholars have defined career development in many different ways. Earlier understandings described career development as predictable tasks at predictable stages; also referred to as life stage theory. Super also presented career as a "value of hierarchical organizations" (Savickas, 2011, p. 254). His definition demonstrates the foundational understanding of career development. It has helped shape contemporary career development theory. More recently Simonson (1997) defined career development as "an ongoing process of planning and directed action toward personal work and life goals" (Hite & McDonald, 2008, p. 5). As our understanding of career shifted from a sequence of occupations to a "lifelong process of work-related activities" (Hall, 2002 as cited in O'Neil & Bilimoria, 2005, p. 168), researchers also began to think of career development as an individual's unique process of growth (Hite & McDonald, 2008) and not their routine progression through a series of related jobs (White, 1995). Thus, more recent literature defines career development as an individual's "on-going series of stages characterized by unique concerns, themes and tasks" (O'Neil & Bilimoria, 2005, p. 168).

With a redefinition of career development, scholars have started to consider the applicability of career development in today's organizations; which are being reshaped by increased workforce diversity (Enache, Sallan, Simo, & Fernandez, 2011). Traditionally, careers have been viewed as linear and hierarchical where success is

defined by salary increases and promotions (Alfred, 2001; Cook et al., 2002; Hertneky, 2013; White, 1995) and there is a separation between work and family roles (Hertneky, 2013; Laud & Johnson, 2013). This view represents a traditional career model that emphasizes full-time, long-term employment with one organization (Enache et al., 2011). Traditional career development theory does not adequately address the career development of women who oftentimes pursue non-traditional careers (Alfred, 2001; Bierema, 1998; Brown, 2002; Leung, 2005; Sullivan & Mainiero, 2008; Cook, Heppner & O'Brien, 2002; Dyke & Murphy, 2006).

Careers have become more complex, thus, it is important to have women's perspectives in order to offer a counter to traditional theory and support more contemporary career development theory. Women's career development is often impacted by breaks of various lengths, shifts from part-time to full-time employment, moves from paid to non-paid work, and lateral moves in their organizations (as opposed to promotions) in order to balance other life responsibilities (Bierema, 1998; Hewlett & Luce, 2005; Sullivan & Arthur, 2006; Wilson, 1998). Their careers are less predictable as women continuously negotiate the balance between work and non-work aspects of life (Dries, 2011). Hence, as they go through various life stages, women may define their individual success more subjectively (Dries, 2011; Dyke & Murphy, 2006). Burns (2009) argues, "Getting ahead or succeeding may not figure at all, or may be only one imperative in personal life paths, and not necessarily as central as some career trajectories imply" (p. 25 as cited in Dries, 2011, p. 366). Scholars have referred to women's career development as snake-like or disorderly, discontinuous, with off-and on-ramps, where women opt-in and -out (Hewlett & Luce, 2005; O'Neil & Bilimoria, 2005). In essence,

women are going against organizational norms in order to develop their careers.

In recent years, scholars have argued that terms used to describe women's careers reflect inherent gender biases (O'Neil et al., 2008) such that it is the case that women's careers decision are being compared to the prevailing male-dominated organizational norms (Fletcher, 1999; Shapiro, Ingols, & Blake-Beard, 2008). O'Neil et al. (2008) claims that words such as 'off-ramp' and 'opt-out' have a negative connotation and reflect that the only way to succeed is through an organizational hierarchy. This language also suggests that women are impacting, perhaps negatively, their career development by following nonlinear career paths. Thus women's career choices are seen as atypical and unfavorable because they are held to prevailing organizational norms that demand full-time, non-stop employment (Shapiro et al., 2008). However, if we go by the previously stated definition (of "on-going series of stages characterized by unique concerns, themes and tasks") by O'Neil and Bilimoria (2005), women make individual career decisions in their efforts to balance work and personal goals. Therefore, despite not following the traditional linear, hierarchical career path described in most career development theories, women's careers do develop over time.

Women constitute more than 50% of today's labor market (U.S. Department of Labor, 2014). Based on Bureau of Labor Statistics (BLS) population surveys (U.S. Department of Labor, 2014e), women's labor force participation has risen steadily from the 1960s through the 1990s. In addition, the number of women attaining higher levels of education has more than tripled between 1970 and 2013 (U.S. Department of Labor, 2014e). Women's earnings, as a proportion of men's, are also increasing (82% in 2013 compared to 62% in 1979). According to a BLS report on women in the labor force (U.S.

Department of Labor, 2014e), women also account for more than half of all workers within several industry sectors: financial activities (53%), education and health services (75%), and leisure and hospitality (51%).

While these figures indicate consistent growth in women's workforce participation rates, there is much progress to be made (Beeson & Valerio, 2012; England, 2010). For example, since reaching its peak in 1999, labor force participation among women has declined (U.S. Department of Labor, 2014b, c, d). In 2013, 57.2% of women were in the labor force, down 0.5% from 2012 (U.S. Department of Labor, 2014e). In addition, while women are attaining higher levels of education, their earnings are still not the same as men's (U.S. Department of Labor, 2014a). Also, while we see women in leadership positions, currently women only hold 5.2% of Fortune 500 CEO positions and 5.4% of Fortune 1000 CEO positions (Catalyst, 2014).

In some occupations the disparities between women and men's labor force participation are immense. In 2013, 19% of men and 29% of women worked in professional and related occupations (U.S. Department of Labor, 2014a). This may seem to indicate that women are well represented. However, upon review, in computer and engineering fields, which are included in the professional and related occupations category, only 9% of women were employed, compared with 44% of men (U.S. Department of Labor, 2014a). A majority the women working in professional and related occupations, 69%, worked in education and healthcare (U.S. Department of Labor, 2014a). Delving further, among women's labor force participation in science, technical, engineering and math occupations, engineering is the occupation in which women's labor force participation is lowest. These facts indicate that women overall, and specifically

women in engineering, are still facing significant barriers within organizations.

Much of the existing research on women in engineering is specific to academic programs, the male-dominated and gendered culture, and identity negotiation of women in engineering (Bilimoria, Joy, & Liang, 2008; Buse, Bilimoria, & Perelli, 2013; Hatmaker, 2013; Roton, 2011; Schreuders, Mannon, & Rutherford, 2009). Yet few studies focus on women working in the occupation (Buse et al., 2013) or their career development.

Women are facing significant barriers within organizations. Women in engineering, in particular, are facing these barriers. Given women's workforce participation in today's labor market, career development researchers and practitioners could do more to help overcome these disparities (Hewlett & Luce, 2005; Hite & McDonald, 2008; Thomas, 2005).

Research on Contemporary Career Development

Propelled by aforementioned changes, in recent years, there has been an increased interest in career development processes. Newer theories and models have begun to focus upon non-traditional and nonlinear careers (Sullivan & Baruch, 2009). These offer alternative perspectives to traditional career models (Enache et al., 2011) and address some of the unique features of women's career development (Hall, 2002). For example, Hall (1996) proposes that the protean career is "driven by the person, not the organization," that "will be reinvented by the person from time to time, as the person and the environment changes" (p. 1). Boundaryless careers are described as "career opportunities beyond the boundary of the single employer" (Sullivan & Baruch, 2009, p. 1545). Arthur and Rousseau (1996) argue there are "a range of possible careers that defy

traditional employment assumptions" (p. 3) in contemporary career development. Sullivan and Mainiero (2005) also used the metaphor of a kaleidoscope to present the Kaleidoscope Career Model (KCM) for contemporary careers. They argued, "Like a kaleidoscope that produces changing patterns when the tube is rotated and its glass chips fall into new arrangements, the KCM describes how individuals change the pattern of their career by rotating the varied aspects of their lives to arrange their relationships and roles in new ways" (p. 1557). Although protean, boundaryless, and the KCM offer fresh perspectives on contemporary career development, more empirical work is needed to support these emerging theories (Sullivan & Baruch, 2009; Sullivan & Mainiero, 2008). One way to achieve this is by focusing upon women as they make different career choices (Alfred, 2001; Cook, Heppner, & O'Brien, 2002; Dyke & Murphy, 2006).

Prevailing Organizational Norms

Many organizations have also responded to the aforementioned changes and started to create environments that are supportive of more contemporary career development needs- specifically of women's (Enache et al., 2011; Glass, 2004). Some examples include instituting work-life policies, mentoring programs and more flexible jobs, however, scholars have discussed that despite these efforts, organizational norms do not always support the participation in or use of these programs (Dkye & Murphy, 2006; Enache et al., 2011; Glass, 2004; Kossek, Lewis, & Hammer, 2010; Ryan & Kossek, 2008; Thomas, 2005). Duxbury and Higgins' (2001 as cited in Dyke & Murphy, 2006) research indicates that work-life balance programs in many organizations pay only lip service to women's career development. It is because organizational assumptions and perceptions about women have not kept up with these policy changes (Kelly, Ammons,

Chermack, & Moen, 2010; O'Neil et al., 2008).

Organizational norms influence individual and group behavior (Schein, 2004). Norms are the implied and absolute standards and values that evolve within organizations (Schein, 2004). These are expected standards of behavior and beliefs about social acceptability of that behavior (Koller, 2014; Minkov, Blagoev, & Hofstede, 2013). Norms exist at many different levels and are often shaped by surrounding cultures (Kats, Van Emmerik, Blenkinsopp, & Khapova, 2010; Sengupta & Sinha, 2005). Lewis and Taylor (1996) argue that organizational cultures portray societal norms. There are deep-seated and implicit beliefs about women and their societal roles, which are carried into the organization and difficult to change (Ridgeway & Correll, 2004). Other scholars have also argued that organizational norms exist within the context of, and are an outcome of, societal norms (Dacin, 1997; Heugens & Lander, 2009; Ralston, 2010).

Scholars suggest that family-friendly policies, work-life flexibility, and mentoring programs that are made available to employees may introduce alternate work practices but represent a deviation from the norm (Kelly et al., 2010). In some organizations, the use of these policies may also serve to increase gender inequalities by those taking advantage of these policies as "unworthy of promotions and pay increases" (Hochschild, 1997 as cited in Acker, 2006, p. 457). Thus women may not even participate in these programs for fear that their careers will be negatively impacted (Mennino, Rubin, & Brayfield, 2005; Shapiro et al., 2008). To truly support women's career development, such initiatives would have to change organizational norms to support the legitimacy of an ideal worker, as someone who is involved in work and non- work responsibilities in pursuing their career (Kossek et al., 2010). Policies need to consider "the realities of

contemporary societies and organizations" (Özbilgin, Beauregard, Tatli, & Bell, 2011, p. 178) if they are to be effective and account for different roles in life. Organizations that change traditional norms and adopt policies that align with women's needs deeply will be better able to attract and retain women (Hewlett & Luce, 2005; Shapiro et al., 2008). Organizations that shift the discussion from women opting out to a focus on how policies and culture can provide boundless career options will be more successful (Shapiro et al., 2008). In addition, organizations that "understand, recognize and support women's career and relationship priorities" will be able to retain talented women (O'Neil & Bilimoria, 2005, p. 185).

Purpose and Research Question

The purpose of this study was to qualitatively explore the career development of professional women within organizations. Specifically, this study sought to understand the career development of women engineers in organizations and how it was influenced by organizational and societal norms. The research questions that guided this study were: *what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?*

Statement of Potential Significance

Research in this area had the potential to fill a significant gap in research and practice. While research exists on career development within organizations, more empirical work was needed to support evolving theories of career development from the perspective of women (Alfred, 2001; Cook, Heppner & O'Brien, 2002; Dyke & Murphy, 2006).

The current study contributed to research by more fully incorporating women. Much of the existing empirical work on career development used salary and promotions as measures of career success (Dries, 2011; O'Neil et al., 2008). Both of these measures reflect a male model of career development. Scholars have recommended research take gender and other individual cultural differences into account in research on contemporary careers and also to "assess it as reflected within the eye of the career actor" themselves (Hall & Chandler, 2005 as cited in Enache, 2011, p. 236). This perspective is important because contemporary theories reflect a belief that the person, not the career, drives career choices (Hall, 1996).

The research also contributed to practice. In an organization where policies in support of women's career development have been implemented but not strongly utilized, this work may be especially relevant. Despite the fact that organizations are making changes to policy (mentoring programs, family friendly programs and flexible work schedules), gendered norms still exist and there is a stigma associated with taking advantage of these programs (Damaske, 2011; Hewlett & Luce, 2005; Meyerson & Fletcher, 2000; Sullivan & Mainiero, 2008). Norms, assumptions about work, and attitudes have not kept pace with policy changes (O'Neil et al., 2008). Scholars have found that access to programs, deviation from the norm, and fear of career consequences have been cited as reasons for this divergence (Glass, 2004; Kelly et al., 2010). Embedded gender assumptions and failed attempts to change culture when policies are being implemented may also contribute (Meyerson & Fletcher, 2000). Understanding how women's careers evolve and how these are guided by organizational and societal norms may enable organizations to make career development practices more effective for

women.

Thus, this empirical study sought to contribute to research and practice through an understanding of women's career development.

Theoretical and Conceptual Framework

This study took a feminist perspective and used social role theory as its theoretical underpinning. A feminist perspective allowed the researcher to hear women's voices as they are lacking in organizational literature (Martin & Collinson, 2002). On the other hand, social role theory provided the researcher a framework from which to tease out how societal expectations shape organizational norms (Dulin, 2007). As discussed previously, research indicates that organizational norms have not kept pace with the changing choices of women (Meyerson & Fletcher, 2000). Below is a detailed explanation and a description of how they supported and informed the present work.

Feminist Perspective

A feminist perspective informed this study and the researcher's understanding of women's unique perspectives. Feminist research focuses on women's issues to help examine women's diverse situations, structural inequalities, their understanding of themselves, and the organizations within which their experiences are embedded (Bierema & Cseh, 2003; Creswell, 2007). "Feminist theory, like other contemporary approaches, validates differences, challenges universal claims to truth, and seeks to create social transformation in a world of shifting and uncertain meanings" (Weiler, 1991 as cited in Gur-Ze'ev, 2005, p. 56). Empirically, research that is informed by feminist theory and takes a feminist perspective focuses on "gender relations, and on strategies of inquiry that can facilitate the transformation of those relations" (Kushner & Morrow, 2003, p. 36).

Research studies associated with feminism "typically identify situational factors that produce female disadvantage, including phenomena such as sexist attitudes, salient gender role norms, and power structures that subordinate women" (Eagly & Wood, 2011, p. 759). A feminist perspective works well with qualitative research because it can support the researcher's goal of exploring everyday experiences of being a woman (Henwood & Pidgeon, 1995). It allows the researcher to make gender "more visible and acknowledged" (Martin & Collinson, 2002, p. 259) within organizations.

Social Role Theory

Social role theory developed during the 1980s as a gender-related theory (Dulin, 2007). Social role theory "focuses on interactions between and among individuals, groups, societies, and economic systems as developed by social systems in which people live" (Dulin, 2007, p. 104). Dulin (2007) argues that, "structural pressures (family, organizations, and communities) have caused men and women to behave in different ways" (p. 105). Research also indicates that socialization experiences are critical to the formation and understanding of gender (Dyke & Murphy, 2006). The theory suggests that social interactions are critical to how people communicate with each other. This is how gender-stereotypic expectations get embedded within societies and organizations, consequently influencing their behavior (Olson, Roese, & Zanna, 1996 as cited in Eagly, 1997, p. 1381).

Social role theory "views sex differences in social behavior as arising from the societal division of labor between the sexes" (Archer, 1996 as cited in Eagly, 1997, p. 1381). Women and men have a social role based on their gender. Social roles are formed by social norms that apply to people in a certain category or social position (Dulin, 2007).

Norms become internalized and part of an individual's self-concept and personality (Eagly, 1997). Women and men then form traits consistent with social roles and inhabit occupational roles consistent with norms. In this way, social constructions of gender are also present in organizations and can serve to support difference and inequality (Acker, 2006, p. 444).

Eagly (1997) argues that feminism aligns with social role theory in that it highlights women's changing occupational roles and calls for revised female gender role. However, scholars have also argued that while social role theory may spark a revised role, it may not be able to bring about significant change in how we view men and women's roles in society (Leuptow, Garovich, & Leuptow, 1995 as cited in Eagly, 1997). This is consistent with our earlier discussion that despite attempts to change, gendered norms still persist within organizations thus contributing to the failure of many work-life programs. Thus the researcher sought to understand women's career development "without resorting to essentializing differences between men and women and with attention to the contextual forces that shape those differences" (Diekman & Schneider, 2010, p. 495). The researcher hoped to enhance the way in which organizations support women's career development. Most importantly, the research aimed to include voices of women in career development theories and models.

Conceptual Framework

The conceptual framework (see Figure 1.1) for the current study was developed visually to depict women's career development within societal and organizational norms. The dashed line between the boxes represents the permeability of their connection. Boxes represent the very structured nature of career development as it is currently represented in

research. The boxes are situated within a larger circle to demonstrate the lens the researcher used for the present study (feminist perspective and social role theory). The use of a circle signifies the lens itself and does not make any presumption that women's career development is housed within feminism or social role theory.

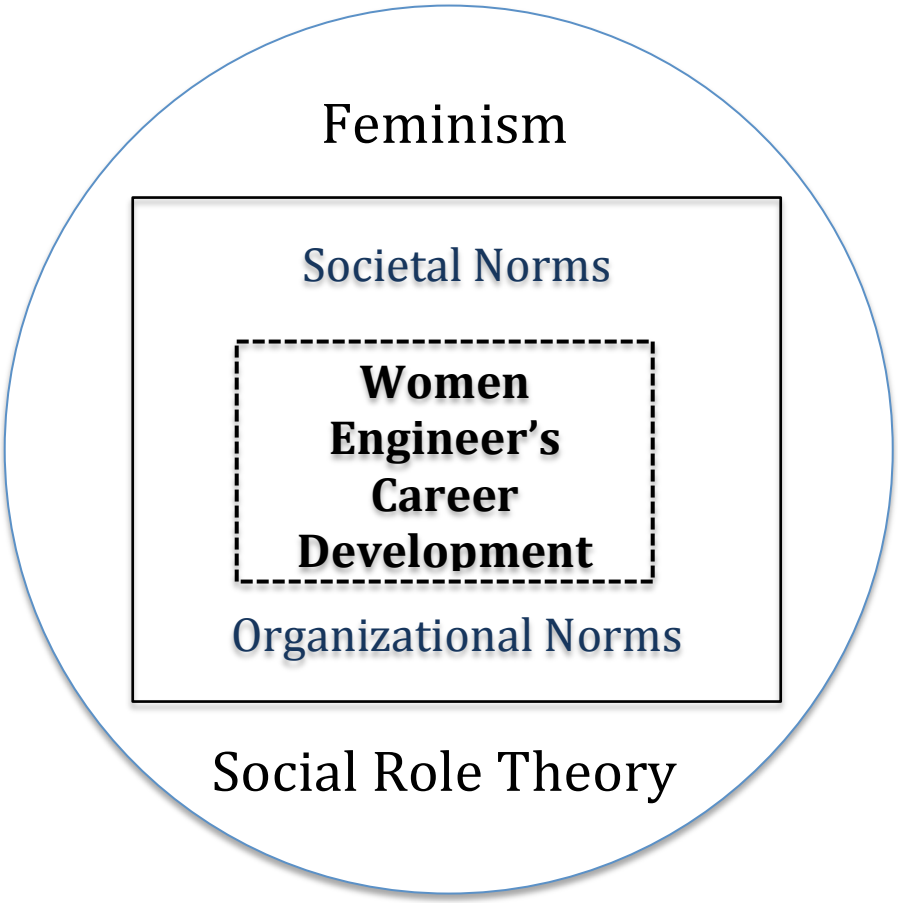


Figure 1.1 Conceptual Framework

Summary of the Methodology

A basic qualitative study was used to pursue the present work and explore the research question: *what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by*

organizational and societal norms? The construction of meaning and how people make sense of their lives is important in all qualitative work (Creswell, 2007; Merriam, 2009). Corbin and Strauss (2008) define qualitative analysis as a "process of examining and interpreting data in order to elicit meaning, gain understanding, and develop empirical knowledge" (p. 1). In basic qualitative research, however, the principal focus is to "to uncover and interpret these meanings" (Merriam, 2009, p. 24). Whereas other qualitative methods have additional purposes, basic qualitative studies allow the researcher to "understand how people make sense of their lives and their experiences" (Merriam, 2009, p. 23). The purpose of the present work was not to understand the core essence of an experience as in phenomenology, the culture of a group as in ethnography, or to build theory as in grounded theory. The present work sought to understand the meanings women construct and to further interpret those meanings. Pursuing the present work by use of a basic qualitative study supported the research purpose and questions.

Delimitations and Limitations

Limitations of this study included that the data collected was restricted to what the participants chose to share and what they remembered about their career development. Along these lines, participants were self-reporting their career development. Self-reports "can be especially responsive to perceived gender roles and desires to respond in a socially appropriate manner" (Eagly & Wood, 2011, p. 763); therefore, self-reports do not always accurately convey behavior. Finally, there are biases inherent in qualitative work. The researcher serves as the primary instrument in qualitative work. The researcher may have shortcomings and biases that impact the study (Merriam, 2009). In an effort to maintain awareness of this bias, the researcher identified and mitigated her bias in her

subjectivity statement and throughout the research process. The researcher also utilized other methods such as memoing, member checks and peer review in order to manage biases (Merriam, 2009).

Delimitations of this study included that the phenomenon was bounded by the context of one occupation (engineer) and, as such, may only pertain to that setting. A second delimitation was the focus on the career development of women. As a result of this focus, the findings may only be applicable to one gender. While the researcher acknowledges that shifting career paradigms impacts men, career development theory has largely been based on the traditional, linear perspective of career (that of men) and it is important to include opposing views to the discussion. Finally, the researcher acknowledges that gender is not monolithic. Women may have shared assumptions and some group identity but construct their own identities and may be impacted by issues of race and class (Alfred, 2001).

Research Assumptions

The present work relied upon several research assumptions. First, the study assumed that being a woman impacts career development (Hewlett & Luce, 2005; Sullivan & Arthur, 2006). The second research assumption in the present work is that women have multiple social roles which do not occur in isolation, may conflict, and may have varying levels of salience at a given time (Diekman & Schneider, 2010). Lastly, the work assumed that norms guide career development (Kossek et al., 2010).

Subjectivity

As the researcher performed a basic qualitative study and explored this work through a feminist lens, she believed her positionality, or where she was situated within

her work, influenced and framed her ways of thinking. As such, it was important to acknowledge subjectivity. The researcher is a Caucasian woman. Until recently, she was a full-time employee working for the military and a part-time student pursuing her doctoral degree. Changes in her personal life influenced her decision to transition to part-time employment. These changes were required due to changes in her spouse's career. Her own career decisions were directly impacted by her changing role in relation to her spouse's. She is still pursing her doctoral degree part-time. Her academic pursuits and research interests surround human resources and studies of women in various contexts and disciplines. Her career, for the last fourteen years, has been with the military. For several years she worked as a recruitment specialist hiring primarily engineers and scientists. She acknowledged that her employment and changes in employment status had the potential to impact her work as she has always felt that she has been a woman working in a male-dominated environment. She also had a unique understanding of the human resource policies and procedures, which may have provided insight or knowledge of career development processes.

As a woman that has worked in a male-dominated environment and has changed from full- to part-time employment due to family obligations, the researcher may have been considered an insider while conducting this study. "Merton defines the insider as an individual who possesses a priori intimate knowledge of the community and its members" (Hellawell, 2006, p. 484). While the researcher understands this greatly impacted her subjectivity, she believed the empathy and understanding that came from being an insider gave her access to information that may not be conveyed to an outsider. Participants may have felt comfortable talking to her about topics they believed she

would understand. The researcher also needed to be critical of the data she collected to ensure she did not accept shared experiences as 'truths' without question (Hellawell, 2006).

Definition of Key Terms

In order to attend to concerns of multiple definitions, understandings and conceptualizations of terms, it is important to identify key terms used throughout this study. The below operational definitions were relevant to this work:

Career: "individually perceived sequence of attitudes and behaviors associated with work-related experiences and activities over the span of the person's life" (Hall, 2002, p. 12).

Career Development: "on-going series of stages characterized by unique concerns, themes and tasks" (O'Neil and Bilimoria, 2005, p. 168).

Norms: the implied and absolute standards and values that evolve in groups (Schein, 2004) and the expected standards of behavior and beliefs about the social acceptability of that behavior (Koller, 2014; Minkov, Blagoev, & Hofstede, 2013).

Work-Life Policies: any organizational programs or officially sanctioned practices designed to assist employees with the integration of paid work with other important life roles such as family, education, or leisure" (Ryan & Kossek, 2008, p. 295).

Social Role: socially constructed gender roles (Eagly, 1997).

Overview of the Study

In 1989, Hochschild talked about a stalled revolution. He argued, "The workforce has changed. Women have changed. But most workplaces have remained inflexible in the face of family demands of their workers, and at home, most men have yet to really adapt

to the changes in women. This strain between the change in women and the absence of change in much else leads me to speak of a stalled revolution" (Hochschild, 1989, p. 12). Eleven years later, Orenstein (2000), also described a half-changed world stating, "Women have moved in significant numbers into the public realm of work, but not on equal terms, thus creating a half-changed world" (Dyke & Murphy, 2006, p. 367). Fast forward to today, Bureau of Labor Statistics research shows women significantly participating in the labor force but lagging in earnings, leadership positions, and in certain male-dominated industries. While women have made progress in their career advancement and workforce participation (Beeson & Valerio, 2012; England, 2010), gendered norms within organizations persist (Damaske, 2011; Meyerson & Fletcher, 2000). Despite women comprising half of the workforce, when they make decisions that do not adhere to traditional linear career development, their choices are considered deviant to prevailing organizational norms (Shapiro et al., 2008). Hence, it is important that women continue to participate and advance within organizations, which should be more supportive of women's needs. This study, thus, sought to contribute to research and practice through an exploration of the career development of women engineers as guided by organizational and societal norms.

Chapter 2: Literature Review

Introduction: Topic(s), Purpose, and Methods of the Literature Review

Topics

The topics covered in this literature review are: career development, women in engineering, norms and social roles as they related to the purposes of this study.

Purpose

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an understanding of the career development of women in engineering. The guiding questions of this study were: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

Methods of the Literature Review

A literature search was conducted using Academic Search Premier, Business Source Complete, Gender Studies Database, Military & Government Collection, PsycInfo, Proquest Dissertation, Articles Plus and EBSCO*host* with search terms derived directly from the research purpose and question. Search terms included: ("organizational culture" AND "career development") AND ("women" AND "career development") AND ("gender" AND "career development") AND ("norms" AND "career development") AND ("norms" AND "society") AND ("societal norms" AND "culture") AND ("organizational norms" AND "society") AND ("norms" AND "social role theory")

AND (“women” AND “STEM) AND (“women” AND “engineering”). These search terms were selected based on their relevance to the research purpose and, for purposes of this paper, to explore literature on women’s career development. Searches resulted anywhere between 4,000 (“gender” AND “career development”) and 400,000 (“cultural norms” AND “career development”) articles. All searches were then limited to English language and scholarly journals in order to ensure the articles had been peer-reviewed. Initially articles were reviewed and selected based on their relevance to the research purpose. Further searches were bound by year (2000 to present) in order to review the most recent research on selected topics. Searches were conducted until the point of saturation. The researcher varied search terms until the same articles resulted from searches. All reviewed studies’ reference sections were also searched for relevant studies and citations.

The remainder of this chapter is organized as follows: career development literature is explored. Within career development both seminal and contemporary theories are identified and discussed. Following career development theories is the career development of women. Specifically, women’s career patterns, definitions of success, and work-life balance are discussed. These topics were selected due to their ability to understand how women’s careers develop. Next, research specific to women in engineering and feminist theory are discussed. Following is a discussion on societal and organizational norms. Lastly, social roles are reviewed. To conclude a synthesis of the literature is presented.

Career Development

Career development theory has evolved over the last several decades and has a

strong theoretical and empirical base (Leung, 1995). Much research has been done on seminal theories of career development. For purposes of the present work, the researcher selected four career development theories that scholars frequently cite as seminal, foundational, or core (Brown, 2002; Egan, Upton, & Lynham, 2006; Leung, 1995) to discuss. The theories selected are: Super's Theory of Vocational Choice (1953); Holland's Career Typology (1959); Gottfredson's Theory of Circumscription, Compromise, and Self-Creation (1981); and Lent, Brown and Hackett's Social Cognitive Career Theory (1987). Following these seminal theories, two contemporary theories of career development will be discussed.

Seminal theories of career development. *Theory of Vocational Choice; Career Typology Theory; Theory of Circumscription, Compromise, and Self-Creation; and Social Cognitive Career Theory.*

Super's Theory of Vocational Choice (1953) focuses on how an individual's work life evolves and on the relationships of roles played during one's lifetime (Brown, 2002; Salomone, 1996; Savickas, 2002). Super's theories evolved over the course of his life resulting in updates in 1984 and 1990. Based on his updates, scholars will also refer to Super's theory as a 'Theory of Self-Concept' or a 'Life-Span and Life-Space Theory' (Egan et al., 2006; Leung, 1995). According to Super, career choice and development is essentially a process of developing and implementing a person's self-concept (Leung, 1995). Self-concept develops from physical and mental growth, general environment, and personal experiences (Egan et al., 2006; Leung, 1995). The role of role self-concept development is emphasized and changes over time. Experiences shape self-concept and career development is life-long (Coogan & Chen, 2007). Super also created a life-career

rainbow model, which identified career advancement through changing social roles (Salomone, 1996), and different life spaces based on personal and situational factors (Egan et al., 2006). The five stages described are: Growth (ages 0-14), Exploration (ages 15-24), Establishment (ages 25-44), Maintenance (ages 45-64), and Decline (ages 65 and over). While the stages have been described with age ranges, Super considers development as only loosely tied to age (Cooke, 1994). Career changes, transitions or other personal circumstances can cause individuals to move back and forth through stages irrespective of age (Cooke, 1994; Leung, 1995; Savickas, 2002). Super's theory was built upon by Savickas (2002) and resulted in Savickas' theory of career construction. Expanding upon Super's self-concept role, Savickas took a constructivist perspective. "Career construction is that of developing and implementing vocational self-concepts in work roles. This all evolves throughout developmental stages. Continual process of evolving self-concept through work and other roles" (Leung, 1995, p. 120). "Careers do not unfold; they are constructed" (Savickas, 2002, p. 154). Super's theories are consistently regarded as seminal to the study of career development and serve as the foundation for much of the existing work in the field today. Research on this theory is plentiful and positive because of its comprehensive framework and focus on life roles (Leung, 1995). More recently, however, a call has been made for "a stronger emphasis on the effects of social context and the reciprocal influence between the person and the environment" (Leung, 1995, p. 120) as well as a focus on women and minorities.

Holland's Career Typology (1959) emphasizes a person-environment fit (Spokane, Luchetta, & Richwine, 2002). Career choice is based on an individual's personality and occupational environments. Holland developed "a set of assumptions

associated wit the manner in which job choice, job satisfaction, and job and career success occur in context with an extensive set of job and work environments" (Egan et al., 2006, p. 452). Holland developed a model of personal orientations and matching occupational environments and an occupational classification which both served as the basis for a number of other tools used in career assessment (Spokane et al., 2002). Holland's model of person-environment fit reflects a view of an individual as "a relatively stable entity who moves in and out of environments rationally when the perceived fit is no longer optimal" (Spokane et al., 2002, p. 379). A large body of empirical research exists on Holland's theory. Studies support the existence of personality types and unique competencies (Spokane et al., 2002); however, several scholars critique the theory citing an inherent gender bias (Egan et al., 2006; Leung, 1995).

Gottfredson's Theory of Circumscription, Compromise, and Self-Creation was developed in 1981 and later updated in 1996 and 2005. In Gottfredson's theory, "career development is viewed as a self-creation process in which individuals looked for avenues or niches to express their genetic proclivities within the boundaries of their own cultural environment" (Leung, 1995, p. 123). Career choice involves a process of elimination (or circumscription) and is guided by an individual's self-concept at different developmental stages (Gottfredson, 2002). A model was developed to reflect the four stages of circumscription identified by Gottfredson: orientation to size and power, orientation to sex roles, orientation to social valuation, and orientation to the internal, unique self. Research on this theory has not been extensive (Gottfredson, 2002). Some scholars cite the difficulty of the operationalization of its variables as a reason for lack of empirical

work (Leung, 1995). Others maintain the theory has value for practitioners (counselors as well as human resource professionals) due to its framework, which considers cultural contexts, and also for its applicability to children (Gottfredson, 2002; Leung, 1995).

Lent, Brown and Hackett's Social Cognitive Career Theory (1987) builds on Bandura's (1986) social cognitive theory and concepts of self-efficacy. Social Cognitive Career Theory (SCCT) "offers three segmental, yet interlocking process models of career development seeking to explain (a) the development of academic and vocational interest, (b) how individuals make educational and career choices, and (c) educational and career performance and stability" (Leung, 1995, p. 125). Self-efficacy, outcome expectations and personal goals are the primary tenets of SCCT that influence an individual's career choice. SCCT contributes greatly to career development theory because of its consideration of contextual and experiential factors and how these influence an individual's career agency. A great deal of research exists on SCCT. Due to its focus on context factors shaping career development, it is considered to be more relevant than other career development theories (Coogan & Chen, 2007) however research is mixed about causality linkages between SCCT variables and career outcomes (Leung, 1995).

Contemporary theories of career development. *Protean and Boundaryless Career Theories.*

In response to the changing face of the workforce and to address the changing conceptualization of career, contemporary theories of career development are being developed and explored. Both the protean and boundaryless careers reflect aspects of the aforementioned seminal theories but advance a more contemporary understanding of career.

In 1976, Hall first wrote about the protean career. In his 1996 book *The Career is Dead – Long Live the Career*, the concept gained popularity (Sullivan & Baruch, 1996). According to protean career theory, a career is self-directed and values driven (Briscoe & Hall, 2006). The person, not the organization, drives the protean career (Hall, 1996). As the person and the environment change, the career will be reinvented. Protean career theory states that career goals are about psychological success; success is not defined as advancing through a corporate hierarchy or receiving salary increases (Hall, 1996). One's internal values provide guidance, while pride and personal accomplishment are valued over vertical success (Briscoe & Hall, 2006; Hall, 1996).

Also in 1996, Arthur and Rousseau wrote about boundaryless careers. Boundaryless careers are characterized by psychological and physical boundarylessness (Briscoe & Hall, 2006). There are infinite possibilities; careers are not tied to a single organization, do not follow an orderly sequence, and transcend organizational boundaries (Arthur & Rousseau, 1996; Briscoe & Hall, 2006). Six different meanings of boundaryless careers are provided by Arthur & Rousseau (1996) and the common factor among them is dependence from traditional career arrangements (Sullivan & Arthur, 2006). Boundaryless career theory considers both physical and psychological career mobility (Sullivan & Arthur, 2006).

While protean and boundaryless careers are distinct theories, they are often viewed together in theoretical and empirical efforts and value is found in the combination (Briscoe & Hall, 2006; Enache et al., 2011). Quantitative work has been done on career attitudes using subjective measures of career success. Enache et al. (2011) found that women's career success is positively related with self-direction and negatively related

with their reliance on their own values.

While existing research support both protean and boundaryless careers, scholars have offered several critiques. Predominately, research has questioned whether careers are actually boundaryless or, instead, are just more permeable (Hall, 2002). Other critiques concern the supposed encouragement of a consumerist career mentality and that these theories may only be advantageous to employees who were privileged in traditional career setting. Finally, they are critiqued for neglecting the needs of unskilled people (Dries, 2011; Hall, 2002).

Synopsis of Research on Career Development

In response to the changing face of the workforce and to address the changing conceptualization of career, contemporary theories of career development are being developed and explored. More empirical work is needed to support their evolution. In their critical analysis of major career concepts and key studies, Sullivan and Baruch (2009) found that much work is still needed on non-traditional models of career development and, specifically, as they related to underrepresented populations. Alfred (2001) argues, "missing links in these grand theories are the voices and career developmental experiences of those who are non-White males" (p. 123). That career development theories are based on traditional, male models is a frequently mentioned critique in career development research (Alfred, 2001; Bierema, 1998; Sullivan & Mainiero, 2008; Dyke & Murphy, 2006). Thus, this dissertation focused on the career development of women who oftentimes pursue non-traditional careers. The next section of this chapter will elaborate on women's career development.

Women's Career Development

Women's career development is complex and not adequately addressed by traditional career development theory. Women's career patterns, definitions of career success and work-life balance are all career components that will be explored in this section.

Career Patterns

Bierema (1998) provided a synthesis of women's career development issues and argued that women's patterns of exiting and entering the workforce multiple times impacts their career development. "Women are much more likely than men to have career interruptions, change careers, and work part time" (Bierema, 1998, p. 97). Bierema argued for a more comprehensive model of career development that fit women citing that traditional models are not suitable to women. Also looking at women's career development patterns, O'Neil and Bilimoria (2005), in a qualitative study, looked at women's career dynamics over the life course. They looked specifically for patterns in women's career development over time. They argue that women's careers "take on forms, continuity and advancement patterns, and directions substantially different from those of men" (p. 169). They believe women should be studied separately from men and as a result of their study, propose a three-phase, age-linked model for women's career development based on the fluid, nontraditional and disorderly careers patterns of women. Their findings on the career patterns of women support the current study's assertion that women's career development is not adequately addressed by existing career development theory.

In a quantitative study, Luce and Hewlett (2005) analyzed data from a 2004

survey on women's career paths. Based on this survey and their analysis, they found that women's careers progress differently than men's. "A majority (58%) of highly qualified women describe their careers as 'nonlinear'- which is to say, they do not follow the conventional trajectory long established by successful men" and women report that their "career paths have not followed a progression through the hierarchy of an industry" (p. 46). They also found that women do leave organizations. Approximately 37% of women reported that they left work voluntarily at some point in their careers. The statistic rose to 43% among women with children. This was particularly relevant at the time given media attention to the trend of 'opting-out' (highly-qualified women leaving careers for caregiving responsibilities). Luce and Hewlett argued that organizations "must understand the complexities of women's nonlinear careers and be prepared to support rather than punish those who take alternate routes" (p. 54). Five years later, Hewlett, Sherbin and Forster revisited the study. They used the 2004 questionnaire and a comparable sample of women and discovered that off-ramps and on-ramps still depict women's careers. They concluded that women's careers are still nonlinear, thus, also supporting the present study's assertions.

Defining Success

Scholars have found that women define success more subjectively than objectively. In a qualitative study Dyke and Murphy (2006) explored how women and men define success and how their definition of success affects their career progress. They found gender differences between women and men. "Despite the fact that the women in our sample would be considered successful according to traditional measures, they defined success quite differently than their male colleagues did" (p. 366). Specifically,

their results demonstrated that women highlight the importance of balance and relationships while men focused more on material success. This study is important in its clear articulation of how women define career success.

In their review of literature surrounding women's career development research in the 21st century, O'Neil et al. (2008) found that male-defined constructions of work and career success continue to dominate organizational research and practice. Much of the research they reviewed used 'successful' women as their sample; however, success in these cases was defined as having advanced in the ranks, having a higher salary, or other male-based conceptualizations of success (p. 734). These career success definitions stem from male models where income, wealth and hierarchy determine success and may not be relevant for most women. "Women's own definitions of success may have less to do with externally defined, traditionally male, corporate criteria and may be more likely to rely on internal criteria such as a sense of personal achievement, integrity, balance, etc" (O'Neil et al., 2008, p. 734). In addition to supporting the difference in how women and men define career success, this study demonstrates a need for research to be done using women's own definitions of success as opposed to traditional definitions of promotion or advancement.

Dries (2011) explored the meanings of career success through an in-depth analysis of the various contexts that impact success. Dries described objective and subjective measures of career success. Objective criteria are "tangible, observable, and quantifiable, such as pay, promotions and functional level" while subjective measures concern a "person's idiosyncratic perceptions of his or her career and the resulting feelings of satisfaction and dissatisfaction" (p. 373). The objective career may no longer

be appropriate to study career success and thus far the subjective career is under-researched. This work is important as it denotes a need for future research to differentiate between objective and subjective measure of career success.

Finally, Enache, Sallan, Simo and Fernandez (2011) explored subjective career success specifically as it relates to protean and boundaryless careers. Their purpose was to "analyze the effect of gender upon the relation between protean and boundaryless career attitudes and subjective career success, in today's dynamic and changing organizational context" (p. 234). They found that the shift towards objective measures of success has underscored the importance of an individual's perceptions and interpretations. Also, as non-traditional careers are being enacted, career success will be less connected to accomplishments within a hierarchy. They recommend that work structures and policies provide career models that allow women flexibility. While organizations have made attempts to be more flexible, in the next section it will be demonstrated that such attempts have not enjoyed much success.

Work-Life Balance

Much attention has been paid to the gender gaps that exist in organizations. Women's work-life balance, in particular, has been the focus of much research (Glass, 2004; Lewis, 1997; Mennino et al., 2005). Despite receiving much attention, the debate about *why* gender gaps exist is still going strong. Primarily, in both research and popular media, women's caregiving role-related responsibilities are cited as a major contributor to existing gender gaps (Ely, Stone, & Ammerman, 2014). In response to the challenges women face in balancing work and life responsibilities, many organizations have put work-life policies in place (Ely et al., 2014; Kelly et al., 2010). Work-life policies are

"any organizational programs or officially sanctioned practices designed to assist employees with the integration of paid work with other important life roles such as family, education, or leisure" (Ryan & Kossek, 2008, p. 295). Existence of a policy does not guarantee its use, however. Despite rising adoption of these policies, issues have been widely reported with their implementation (Glass, 2004; Kossek et al., 2008). In this section, research regarding work-life balance will be reviewed.

Lewis (1997) studied organizations developing and implementing work-life policies. Wanting to concede to the demands of family and overcome the expectation that employees should conform to a 'male model' of work, these policies were put in place to help employees. In her case study analysis, Lewis identified culture as a deterrent to policy success. Existing norms regarding gender expectations of caregiving impacted women's sense of entitlement and use of work-life policies. Women did not feel entitled to both equity in career development and support for caregiving responsibilities. Women either did not utilize offered programs or accepted that their careers would be negatively impacted for doing so (Lewis, 1997). Lewis found that change at both the organizational and societal levels were required to address existing norms that prevent women's utilization of work-life policies. Lewis' work was significant in showing that not only were work-life policies not achieving desired outcomes, but also that for them to be successful norms needed to be addressed.

Glass (2004) studied work-life policies. In her quantitative study, she followed a midwestern group of employed women for seven years after childbirth, monitoring their coverage and use of family responsive policies during that time. Glass (2004) selected mothers of young children for her sample due not only to their caregiving responsibilities

but also because studies have found that they are the group that show wage penalty for having children and who are thought to have lower commitment of performance upon using these policies (p. 369). Results of Glass' (2004) studied showed a negative effect of policy on wage growth. Overall she found that "although work innovations may make family caregiving easier, many women feared that lower wage growth and blocked mobility would result from the use of these policies" (p. 369). Employers had negative reactions to employees, who in taking advantage of policies offered, were not continuously available for work. Glass also found that work-family policies may serve to reinforce norms regarding female responsibilities and that caregiving signifies weak commitment and dedication (p. 390). Significantly, Glass' study highlights some of the tangible, negative impacts women experience when taking advantage of work-life policies.

Mennino, Rubin, and Brayfield (2005), in a quantitative study, examined the impact of work-life policies in organizations. Looking specifically at spillover effects of work to home responsibilities, they argued that despite advances, gendered norms are sustained within organizations and employees often assume that participating in work-life policies will negatively impact careers (Mennino et al., 2005). They argue, "There is mounting evidence that the culture of a workplace, more so than the availability of work-family policies, is more likely to affect an employee's ability to effectively manage a job and a family" (p. 109). Their findings suggest that embedded gendered norms must be addressed if work-life policies are to be effective. An organization cannot just make policies available and expect success (Mennino et al., 2005). This finding was supported by a large-scale, mixed methods study by Kelly, Ammons, Chermack and Moen (2010).

They studied an organization undergoing a major change in a work-life policy. Recognizing existing research on the issues organizations face upon implementation of work-life policies, the organization that was studied acknowledged that a cultural change must accompany policy implementation. The study findings underscored the embeddedness of gendered norms within organizations. Despite critically examining culture while implementing a new work-life policy, gendered norms were pervasive and implementation results were mixed (Kelly et al., 2010).

Kossek, Lewis, and Hammer (2010) examined work-life policies in organizations. They argued that despite attention, "significant gaps remain between the promise of work–life initiatives and their reality" (p. 4). The existence of a policy does not guarantee successful recruitment, satisfaction or retention (p. 9). In order for successful integration of work-life policies, they propose integration that addresses culture and embedded norms. They argue for the legitimization of the notion of a good employee "being seen as dually involved in caregiving and other non-work roles while sustaining employment and pursuing a career" (p. 5). Their findings and recommendations support aforementioned studies regarding successful implementation of work-life policies.

Most recently, in a quantitative study, Ely, Stone and Ammerman (2014) surveyed Harvard Business School (HBS) students in an effort to address recent media controversies regarding women's career development and gender gaps in organizations. Their study of over 25,000 graduates sought to learn about experiences, attitudes and decisions about work and family. They found that, despite popular assumption that gender gaps in organizations can be attributed to women's 'opting-out' for caregiving responsibilities, not many women actually had done so. In fact, only 11% of those

surveyed were out of the workforce to care for children. For those that had left the workforce for caregiving responsibilities, survey results indicated that 'opting-out' was not an accurate description. Only a small number of women left because they wanted to be full-time caregivers; "the vast majority leave reluctantly and as a last resort, because they find themselves in unfulfilling roles with dim prospects for advancement" (p. 105). Kuperberg and Stone (2008) had similar findings in their mixed methods study surrounding the exit of college-educated women from the workforce to become full-time mothers ('opting-out'). They found that opting out emphasized motherhood and family, elites, and choice; however, their comparison of themes against actual trends showed a difference between theory and reality. In the HBS study, women felt a negative impact for taking advantage of work-life policies and cited norms regarding women's caregiving roles as assumptions impacting careers. Eighty-five percent of women surveyed believed that "prioritizing family over work" (p. 104) was the most significant barrier in their careers. This study was concluded with a recommendation that organizations "institutionalize a level playing field" (p. 109). This study supports conclusions regarding the unsuccessful implementation of work-life policies and demonstrates the existence of these challenges today.

Duxbury & Higgins' (2001 as cited in Dyke & Murphy, 2006) research indicates that work-life balance programs in many organizations pay only lip service to women's career development. Several scholars have maintained that organizational norms and culture do not support participation in and use of these programs (Dkye & Murphy, 2006; Enache et al., 2011; Glass, 2004; Kossek et al., 2010; Ryan & Kossek, 2008). Organizations that shift the discussion from women opting out to a focus on how policies

and culture can provide boundless career options will be more successful (Shapiro et al., 2008). Damaske (2011), in a qualitative study, explored women's expectations about paid work. She found that class and race impact women's expectations and the process through which these expectations developed. Of significant importance to the present work, Damaske (2011) found that while much has been done in organizations to support women's work-life balance responsibilities, gendered cultural norms about work still exist. Given this finding, it is important to consider the impact of norms on women's career development. This will be explored in the context of the engineering in the next section of this chapter.

Women in Engineering

As demonstrated in the previous section, gendered norms are pervasive within organizations (Damaske, 2011) and impact the successful career development of women. This section of the literature review will explore these concepts within the context of engineering.

Women Engineers in Academia

Much of the existing research on women in engineering is specific to academic programs and explores the pipeline of women both entering engineering academic programs and completing degrees (Schreuders, Mannon, & Rutherford, 2009). Haines and Wallace (2003), in a quantitative study of engineering undergraduates, examined gender-role attitudes of women in engineering. They found that women encounter gendered expectations and respond by acting in ways that "reproduce the very stereotypes of women and engineering that have been targeted by attempts to increase the participation of women in engineering" (p. 379).

Similarly, Powell, Bagilhole and Dainty (2009) explored gender behavior and attitudes of women engineering students. With an understanding that the image of engineering is masculine and that has made it seem unsuitable for women, they sought to explore how gender performance explains behaviors and attitudes. They found that women performed in certain ways in order to gain male acceptance. Women utilized coping strategies such as "acting like one of the boys, accepting gender discrimination, achieving a reputation, seeing the advantages over the disadvantages and adopting an 'anti-woman' approach" (p. 411). Most significantly, Powell et al. (2009) argued that these arise from the 'double blind effect' where "women engineers who perform in highly feminine ways are likely to be considered incompetent and competent women engineers are seen as unfeminine; thereby instilling a norm whereby only male masculinity is likely to be accepted in the current situation" (p. 425). These strategies undermine attempts to challenge norms and "contribute to maintaining an environment that is hostile to women" (p. 411). While located within the context of academia, these studies demonstrate the existence of embedded gendered norms.

Women Engineers in Organizations

In a shift from academia to organizations, Hersh (2000) examined the changing position of women engineers worldwide. In this quantitative, longitudinal study Hersh found that the "gendering of the profession has historically led to very low numbers of women on engineering courses, which reinforces the trend of engineering being seen as inappropriate for women" (p. 348). Hersh attributed this to cultural norms that exist within the occupation and mark engineering as a male environment where women are often discriminated against (p. 348).

In 2013, Buse, Bilimoria, and Perelli conducted a qualitative study on women engineers. Noting a dearth of research on women engineers in organizations, they explored the individual and contextual factors of women that had persevered in engineering careers in the United States. The found, "Women who persisted in engineering careers articulated high levels of self efficacy, described themselves in terms of their identity as an engineer, and were motivated by the challenges and novelty of the profession" (p. 139). Despite facing discrimination women engineers who were adaptable were able to persevere and do well. They also found that women who persisted were less likely to be married and had fewer children.

Finally, in 2008, Hewlett, Luce, Servon, Sherbin, Shiller, Sosnovich, and Sumberg published a study on the Athena Factor project. This effort, sponsored by a number of large, global companies, sought to examine career trajectories of women with science, engineering and technology degrees that have gone into work in those occupations. They studied women in organizations (primarily, research to that point had been located in academia) and found corporate cultures encourage the ongoing departure of women from these occupations -over 52% of highly qualified women quit their jobs (p. i). Most significantly, they found that women's attrition rates increase 10 years into their careers. Women "hit serious career hurdles at the same time that family pressures ratchet up. Stepping in with targeted support before this fight-or-flight moment has the potential of lowering the female attrition rate significantly" (p. ii). They also found that women did not have clear career paths. Hewlett et al. (2008) concludes with recommendations of several initiatives to realign culture and redesign career paths to better fit women.

Feminist Theory and Feminist Research in Engineering

Feminist theory has evolved over the last century in the United States and has taken place in three movements: first wave, second wave and third wave (Cacoullos, 2001; Gamble, 2006; Gedro & Mizzi, 2014; Walker, 2011). First wave feminism was concerned with gender equality and issues such as voting and property rights (Ferree & Martin, 1995). Gender was found to be a regular part of everyday life and women and men were assigned roles and responsibilities based on sex; gender was understood as a social construction of sex (Gedro & Mizzi, 2014). Social rules and practices furthered the construction of gender (Butler, 1999). Second wave feminism brought forth women's studies as an academic discipline and addressed such issues as workplace rights, reproductive rights, and legal inequalities. This wave acknowledged many different women – women of a different color, women of different socio-economic statuses, women of different sexual preferences and women of different cultures (Cacoullos, 2001). Women's liberation groups, women's rights movements, and a larger call for women's equality emerged during this wave (Ferree & Martin, 1995). A third wave of feminism or a postfeminist movement is referred to in more recent literature and is a result of claims that first- and second-wave feminism does not take race, class, or age into account (Gamble, 2006; Walker, 2011). Scholars differ on the years associated with each wave but in the United States, generally, first wave feminism is considered the turn of the century through the 1950s, second wave feminism from the 1960s to 1980s, and third wave feminism from the 1990s to present (Ferree & Martin, 1995; Gamble, 2006; Gedro & Mizzi, 2014).

As feminist theory has evolved, many interpretations have been identified. Scholars have acknowledged liberal feminism, radical feminism, Marxist feminism, and socialist feminism, for example, as different strands of feminism (Crotty, 1998; Tong, 1995). While all concerned with women's equality, each interpretation makes sense of the world in different ways, has different assumptions and different ways of thinking (Crotty, 1998). Stanley and Wise (1983) indicate that categorizing has implications and argue that categorizing in this way "is an essentially masculinist way of interpreting" (p. 40). Other scholars argue that categorization provides a useful analytic framework in feminist research (Tong, 1995). For purposes of the present work, the researcher took the position of Stanley and Wise (1983) and did not want to limit her work based on one specific interpretation. She strived to be open to any meanings or interpretations that emerge.

Eagly and Wood (2011) indicate that theories are "regarded as feminist if scientific support for their hypotheses could directly or indirectly further feminism**'**s mission of greater gender equality and social justice for women" (p. 759). Feminist theory questions gender at the individual, organizational, and societal levels and "disrupts the assumption 'man' is a natural category and 'woman' exists only in relation to man" (Gedro & Mizzi, 2014, p. 447). Feminist theory is not anti-male, though it questions male dominance, privilege and access (hooks, 2000).

Within research, Beddoes (2013) argues that feminism can be used to "make women's lives better or minimize gender inequalities and catalyze learning and social change" (p. 109). Feminist research focuses on women's issues to help examine women's diverse situations, structural inequalities, their understanding of themselves, and the

organizations within which their experiences are embedded (Bierema & Cseh, 2003; Creswell, 2007). Situational factors, such as those that produce female disadvantage, or phenomena that subordinate women, such as sexist attitudes and gender role norms, are typically identified in feminist research (Eagly & Wood, 2011).

Acker (1990) identified processes that perpetuate gender inequity: (1) organizational practices that produce unequal pay and hierarchies; (2) images that depict successful employees as male; (3) language that reinforces power and domination; (4) expectations of gender-specific norms; and (5) the use of gendered policies and practices (as cited in Gedro & Mizzi, 2014; p. 448). Acker's (1990) processes can be applied to multiple contexts but, particularly, apply within organizations. In contemporary organizations, gender inequities are reproduced through assumptions about women and women's roles. For example, assumptions exist regarding women's caregiving responsibilities and the unpaid labor of raising children (Gedro & Mizzi, 2014). Much of the inequality in organizations is not intentional or based on conscious actions but, instead, based on deeply rooted actions and practices (Bierema, 2009). It is in the everyday habits of individuals that discrimination operates (Freedman, 2002). Specific to career development in organizations, Gedro and Mizzi (2014) recommend, "career development programs that resist stereotyping people based upon their gender or gender expression…present a helpful type of resistance to fixed, stable, and oppressive categories of identity (p. 453-454). To correct inequities, underlying norms that privilege men have to be identified (Freedman, 2002).

In engineering, feminist theory and feminist research has much to offer (Jawitz & Case, 2002). Feminist theory can be used to explain women's experiences and the

occupation's resistance to change (Beddoes & Borrego, 2011; Jawitz & Case, 2002). Existing research in engineering in which a feminist perspective has been taken has identified a "culture of engineering that is closely tied to the society's general view on gender" (Jawitz & Case, 2002, p. 390).

Ingram (2006) utilized feminist theory and studied the career path of three women engineering graduates and found "while women's structural representation in engineering improved significantly…cultural practices and attitudes towards them have been more resistant to change" (p. 290). Ingram argues that it is important to prepare women for the culture of the engineering workplace but important to keep power relations in mind. "An understanding of a culture…is incomplete without a corresponding knowledge of the relations of power which provide its foundation. Thus, in describing a culture's values, norms and styles of discourse, one must also examine how it is a function of larger relations of domination" (p. 291).

In their literature review of engineering research that has taken a feminist perspective or utilized a feminist theoretical framework, Beddoes and Borrego (2011) found that feminist theory is underutilized. They argue that feminist theories are "needed to illuminate deep-rooted gender issues" (p. 280). Of significance to the present work, in addition to calling for additional research utilizing a feminist perspective, Beddoes and Borrego (2011) indicate that a strength of feminist theory is that it works well with other theoretical frameworks. As the present work was utilizing a feminist perspective in concert with social role theory, the researcher believed this would be a valuable combination with which to pursue this study.

While feminist theory has been utilized for research within engineering, scholars believe more can be done (Beddoes, 2013; Beddoes & Borrego, 2011; Jawitz & Case, 2002). Jawitz & Case (2002) argue, "Instead of the traditional activities which try to persuade women that they should try engineering and then help them fit into the culture, these researchers suggest that we need to create a new engineering culture" (p. 390). Godfrey (2003) supports this and argue the "tendency in prior research has been to 'cast women in a deficit role, aggregating them into one category, and viewing them as other'…" (p. 13 as cited in Beddoes & Borrego, 2011, p. 282). Sprague (2005) also recommends that, in order to surmount the status quo, research needs to "generate questions from the perspectives or standpoints of women's experiences rather than asking questions that serve the interests of dominant social positions and institutions" (as cited in Beddoes, 2013, p. 109). For purposes of the present work, the researcher utilized a feminist lens in order to not only offer work from the perspectives of women but also learn about the meanings they construct. Through her study, she sought to propagate the study of gender as an important part of engineering (Beddoes, 2013).

Synthesis of Women in Engineering

Much of the existing research on women in engineering is specific to academic programs, the male-dominated and gendered culture, and identity negotiation of women in engineering (Bilimoria, Joy, & Liang, 2008; Buse, Bilimoria, & Perelli, 2013; Hatmaker, 2013; Roton, 2011; Schreuders et al., 2009). Yet few studies focus on women working in the occupation (Buse et al., 2013) or their career development. Those that do have found a lack of clear career paths, high attrition rates for women and the existence of embedded gendered norms (Buse et al., 2013; Hewlett et al., 2008; Powell et al.,

2009). Also, while feminist theory has been used to pursue research in engineering, scholars believe more can be done (Beddoes, 2013; Beddoes & Borrego, 2011; Jawitz & Case, 2002). Given these findings, it is important to consider the impact of norms on women's career development. This will be explored in the next section of this chapter.

Societal and Organizational Norms

As demonstrated in the previous section, gendered norms are pervasive within organizations (Damaske, 2011) and impact the successful career development of women, particularly women in the engineering occupation. Scholars have found that organizations are inherently gendered (Acker, 1990; Britton, 2000; Ridgeway & Correll, 2004) with underlying policies and structure upholding this inequality. This section will more closely review research on gender in organizations and the societal and organizational norms sustaining inequality.

Britton (2000) explored the concept of a 'gendered' organization through an extensive review of the literature surrounding this topic. The concept of a gendered organization was first put forward by Acker in 1990; a gendered organization presumes and reproduces gendered attributes. In her work, Britton (2000) sought to answer the question, "how do we know a gendered organization when we see one" (p. 419). Britton discusses the three most common ways the concept has been applied in organizations and ultimately argues for a multi-level analysis of gender in organizations. Britton (1990) concluded by arguing that while societal and organizational change is impeded by underlying gender inequalities, it is important to consider each of the levels at which organizations are gendered and that "the specific contexts and methods through which some groups are advantaged over others may well provide insight into mechanisms that

could be used to begin to encourage and build less oppressively gendered organizations" (p. 431). This work is significant in its support of multi-level analysis of gender inequalities within organizations. Research on gender within organizations should consider the individual, organizational and societal levels.

Ridgeway and Correll (2004) explored components maintaining gendered systems. Based on existing research, the authors believe gender to be "an institutionalized system of social practices for constituting people as two significantly different categories, men and women, and organizing social relations of inequality on the basis of that difference" (p. 510). They found this 'social relational' context to be a core component maintaining gendered systems. Social relational contexts are those situations in which individuals must define themselves in relation to others (e.g., everyday interactions among individuals). "When gender is salient in these ubiquitous contexts, cultural beliefs about gender function as part of the rules of the game, biasing the behaviors, performances and evaluations" (p. 510) and while "the biasing impact of gender beliefs may be small in one instance, the consequences accumulate over individuals' lives and result in substantially different outcomes for men and women" (p. 520). Similar to Britton's (2000) work on multi-level analysis, Ridgeway and Correll (2004) argue that gender analysis should take place at multiple levels and that in order to eliminate a gendered phenomenon, elimination of a single process is not sufficient. Gender roles are deeply embedded at all levels and will persist so long as men and women are believed to be different. The authors recommend long-term, persistent challenges to the system in order to effect change.

Sengupta and Sinha (2005) examined societal and organizational cultural impacts on managers. They looked specifically at cultural dimensions, the relationship of society to organization, and the combinations impact on managers. Findings from this quantitative study indicated that organizational culture is impacted by and is a manifestation of societal culture. This impacts work behaviors in organizations. Similarly, Aumann, and Ostroff (2006 as cited in Kats et al., 2010) found that organizations develop cultures based on the societal cultural to which they belong.

Acker (2006), in a conceptual work, addresses barriers to creating equality in organizations. Acker presents a conceptual strategy, the idea of inequality regimes, to address the issue. Inequality regimes are "the interlocked practices and processes that result in continuing inequalities in all work organizations" (p. 441). Acker discusses the various practices and processes within organizations that produce and reproduce gender inequalities. In a review of research on organizations attempting to address gender gaps, Acker (2006) found that interventions fail to address underlying processes that uphold gender inequalities in organizations. For example, Acker (2006) cites male models of organizing as an underlying process that upholds gender inequalities by defining those who conform to the model as "serious, committed workers and those who do not as rather peripheral and probably unworthy of promotions and pay increases" (p. 457). Acker points to another organization that did not make a link between their actions and the inequalities that resulted. They failed to see how practices and processes were contributing to inequality in the organization. Acker (2006) also indicated that informal exclusion and unspoken denigration of women are still widespread in organizations

making it difficult to document or confront (p. 459). Issues of inequality are deeply embedded in organizations and makes change difficult.

Callan (2007) in a qualitative case study, explored cultural facets influencing two organizations' attempts to implement work-life policies. Results indicated that small changes over a period of time might be the best strategy for policy changes that challenge embedded norms. Callan (2007) specifically referred to the norm of the ideal worker which is inherently gendered as it assumes male patterns of work where employees put work first and have no other life areas which conflict with work (p. 676). While outdated, this norm is still present in many organizations. Callan (2007) does acknowledge that if an "organization's basic assumptions can be identified, policies can be presented in ways which compensate for 'root' cultural facets and help to resolve underlying contradictions" (p. 689). In this way, organizations can identify and address embedded norms and cultural issues before implementing policies.

England (2010) explores changes in the gender system and attempts to understand why some things change so much more than others over time. England reviews trends in societal and organizational gender systems and argues that over time change has been asymmetrical; women's lives have changed more than men's. Men have little incentive to move into jobs or social roles traditionally occupied by women. Women, on the other hand, when given the opportunity to move into male-dominated occupation do so; however, then face pay inequities and penalization for violating norms (p. 157). The author believes that overall gender-egalitarian trends have stalled which is indicative of how deeply embedded norms and conceptualizations of gender are in organizations.

Men's careers, in addition to women's, are impacted by organizational and

societal norms. Recently, this topic has begun to be explored in the literature. Ely et al. (2014) found that men feel pressured to financially support their families. This often means time away from their family in order to spend time at work. When men did want to spend less time at work and more time at home, they felt "harshly judged" for wanting to make that decision (p. 109). For purposes of the present work, while the researcher acknowledged that men's careers may also be impacted by organizational and societal norms, women are under-represented in career development theory and in occupations such as engineering; thus, only women's careers were explored.

Social Roles

Social role theory developed during the 1980s as a gender-related theory by Eagly (Dulin, 2007). Eagly (1987) believed that prior to that point "explanations based on the social roles that regulate behavior in adult life" (p. 4) had not been explored so utilized social role theory to demonstrate differences between men and women. A role is "a set of expectations associated with a particular social position in a specific type of setting" (Eagly, 2014, p. 372). Eagly continued to develop this theory and in 1997 argued that "in any society and at any point in history, people come to expect that women and men possess those characteristics that allow them to carry out their sex-typical productive work… The sexes' occupancy of different niches in the society initiates several processes by which women and men become differentially specialized to occupy these niches" (p. 1381). Eagly preferred two dimensions to differentiate differences between men and women: communal and agentic. Agentic qualities, attributed to males, "are manifested by self-assertion, self-expansion, and the urge to master" (Dulin, 2007, p. 106). Communal qualities, attributed to females, "are manifested by selflessness, concern for others, and a

desire to be at one with others" (Dulin, 2007, p. 106). Social role theory "focuses on interactions between and among individuals, groups, societies, and economic systems as developed by social systems in which people live" (Dulin, 2007, p. 104). Dulin (2007) argues that, "structural pressures (family, organizations, and communities) have caused men and women to behave in different ways" (p. 105).

In research, social role theory has been used to explore gender differences for many years. Eagly (1997) in her comparative piece using social role theory and evolutionary psychology to explain sex differences in social behavior, reviewed the existing empirical research on social role theory. Eagly (1997) found that research exists on: the communal vs. agentic attributes of women and men, male and female social behavior, and as it relates to leadership behavior.

Additionally, Risman, Atkinson, and Blackwelder (1999) examined the impact of gender and social roles on women's participation in the labor force. In their longitudinal study, they tested attitudes formed during socialization and their impact on labor force participation. The authors rely upon social role theory, among others, and posit, "the extent to which women believe they should participate in the labor force…will predict their actual labor force experience" (p. 321). Women's attitudes towards roles are formed during the socialization process. The authors found a statistically significant effect between women's socialization and her later work force participation thus providing what they see as some support to the social role argument. They also found that structural variables (experiences in the family or workplace) impact women's labor force participation. They conclude with a recommendation that future research consider the interactions between gender norms and gendered social structures.

Vogel, Wester, Heesacker, and Madon (2003), in a quantitative study, examined the impact of emotional vulnerability on gender stereotypes. Utilizing social role theory, they expected that stereotypes would be confirmed because of normative gender expectations. Their findings were consistent with their expectations and gender stereotypes were upheld. Men, in particular, acted in accordance with gendered norms.

Most recently, Eagly and Koenig (2014) relied upon social role theory to account for stereotypes in groups' roles. In this quantitative study, they chose social role theory because they believed social life is organized by a variety of roles, each associated with different behaviors. While other theories may have been appropriate given their focus on stereotypes, they felt social roles were the main source of stereotypes. "As predicted by social role theory, beliefs about the attributes of groups' typical roles were strongly related to group stereotypes on both communion and agency/competence" (p. 371).

Literature Review Summary

Of the articles reviewed for this paper, there were a number of methodological approaches utilized. While both qualitative and quantitative studies were performed, the predominant methodology was quantitative in nature. Of the qualitative studies that were performed, most were case studies that looked within specific organizations to assess embedded gender inequalities or to determine if culture supported work-life policy changes. Predominantly, the quantitative work was survey- and questionnaire-based and explored women's career development measuring career success in a traditional, objective manner. Primarily research took place in the United States; however, a few studies were performed in the UK, Canada, and Australia.

The purpose of this qualitative study was to explore the career development of

professional women. Based on the present literature review, a gap exists in career development theory in that current career development theory does not adequately address the career development of women (Bierema, 1998; Sullivan & Mainiero, 2008; Dyke & Murphy, 2006). Women often pursue non-traditional, nonlinear careers. Career development theory, researched for the last several decades, has primarily been based on the needs of white males and emphasizes hierarchical career paths where success is defined by salary increases and promotions (Alfred, 2001; Cook et al., 2002; Hertneky, 2013; White, 1995). Women in engineering face significant barriers such as a lack of clear career paths, high attrition rates and the existence of embedded gendered norms (Buse et al., 2013; Hewlett et al., 2008; Powell et al., 2009). The present research sought to add the voice of women and look specifically at how women's careers evolve within the engineering occupation. The literature also demonstrated that while organizations have attempted to address gender gaps and work-life balance issues that women face, these efforts have not enjoyed much success (Glass, 2004; Kossek et al., 2008). Organizational and societal norms are embedded in organizational policies and structures and impact the gendering of organizations, thus impacting the career development of women. The present research sought to study this by exploring how women's careers evolve and how these were guided by organizational and societal norms.

Chapter 3: Research Methods

Overview of Methodology

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an understanding of the career development of women in engineering. The guiding questions of this study were: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

Philosophical orientations identify "what one believes about the nature of reality (also called ontology) and the nature of knowledge (epistemology)" (Merriam, 2009, p. 8). A researcher's ontology and epistemology serves as a basis for, and informs, their work. This research study was pursued utilizing a subjectivist ontology and interpretive epistemology. "Interpretive research, which is where qualitative research is most often located, assumes that reality is socially constructed, that is, there is no single, observable reality" (Merriam, 2009, p. 8). There are multiple realities and knowledge is constructed (Creswell, 2007; Denzin & Lincoln, 2005; Merriam, 2009). Corbin and Strauss (2008) argue, "Concepts and theories are constructed by researchers out of stories that are constructed by research participants who are trying to explain and make sense out of their experiences and/or lives, both to the researcher and themselves" (p. 10).

The methodological choice of a basic qualitative study was made because the researcher is seeking meaning and understanding of women's career development and

wants to add women's voices to the narrative. The purpose of the present work was not to understand the core essence of an experience as in phenomenology, the culture of a group as in ethnography, or to build theory as in grounded theory. The present work sought to understand the meanings women construct and to further interpret those meanings. "Meaning is constructed by human beings as they engage with the world they are interpreting" (Crotty, 1998, p. 43). The researcher, thus, was interested in how women interpret their career development and what meanings they ascribe to it (Merriam, 2009). Pursuing the present work by use of a basic qualitative study supported the research purpose and questions.

Research Procedures

Site

Primarily phone interviews or Skype was used to conduct this research due to the geographic location of participants and researcher. Participants were located throughout the United States and the researcher was located in Colorado.

Population and Sample

The population for this study was professional women working in the engineering occupation. The aforementioned Bureau of Labor Statistics research indicates that more women than men work in professional and related occupations. The Bureau of Labor Statistics considers professional and related occupations to include management, business, and financial operations; computer and mathematical occupations; architecture and engineering occupations; legal occupations; and other technical occupations (U.S. Department of Labor, 2014c). The occupation identified is the type of job or work a

person performs, while the industry is the business activity of the employer or company (U.S. Department of Labor, 2014e).

In 2013, in computer and engineering fields (included in the professional and related occupations category) only 9% of women were employed. Much of the existing research on women in these occupations is specific to academic programs, the male-dominated and gendered culture, and identity negotiation (Bilimoria et al., 2008; Buse et al., 2013; Hatmaker, 2013; Roton, 2011; Schreuders et al., 2009). Yet few studies focus on women actually working in these occupations (Buse et al., 2013) or their career development. Given the underrepresentation of women in the engineering occupation and the dearth of research specific to their career development, the researcher established this occupation as the population.

The sample included 10 professional women engineers. Scholars vary on their recommendations for ideal sample size in qualitative work. The ideal sample size is dependent upon "the questions being asked, the data being gathered, the analysis in progress, the resources you have to support the study" (Merriam, 2009, p. 80). Patton (1990) recommends basing sample size decisions on reasonable expectations of exploring the phenomenon. Creswell (2007) guides, "One general guideline in qualitative research is not only to study a few sites or individuals but also to collect extensive detail about each site or individual studied" (p. 126). For purposes of the present work, the researcher wanted to illuminate the particular and collect extensive detail. Data was collected until a point of saturation was reached and no new information was forthcoming (Merriam, 2009).

Purposeful sampling was utilized for this study. In purposeful sampling participants are chosen based on their unique understanding of the problem and the fact that they can provide information that can't be obtained as well from other sources (Creswell, 2007; Maxwell, 2005). The criterion the researcher established for sampling was that each participant needs: 1) to be a woman; 2) to have reached an establishment, maintenance, or decline career phase; and 3) have experience working as an engineer or as a manager of engineering. The researcher chose this criterion in order for participants to have had time to make career decisions and for careers to develop (Buse et al., 2013; White, 1995). For the purposes of the present work, Super's (1957) life and career development stages were utilized. Super identifies five stages: growth, exploration, establishment, maintenance, and decline. During the establishment phase, "workers focus on developing in a field;" in the maintenance stage, individuals are "concerned with maintaining and updating their accomplishments;" and in the decline phase individuals are working towards retirement (Cooke, 1994, p. 389). The researcher utilized Super's phases due to its anachronistic approach. "So although one is expected to move in chronological order through the stages, changes in circumstances such as a new job, can cause one to recycle to a previous stage" (Cooke, 1994, p. 389). Super considers development as only loosely tied to age (Super, 1957) which, when exploring women's non-linear careers, is important to take into account. Women may not have progressed through career phases in a chronological order.

The researcher contacted three women's engineering professional groups to identify potential participants (White, 1995). These networks were selected due to their accessibility to the researcher and based on her previous academic and professional

contacts. As Maxwell (2005) states, “Selection data should take into account the feasibility of access and data collection, your research relationships with study participants, validity concerns, and ethics” (Maxwell, 2005, p. 90). While the researcher did not currently have a relationship with any of these networks, she was previously a recruiter and attended job fairs in an effort to recruit members so is knowledgeable of their existence. Members of each of these organizations are professional, licensed engineers or are student members pursuing degrees in the occupation. The researcher first emailed a board member within each professional organization to ask for access to members via email distribution lists or any other mode of communication utilized within the professional network (White, 1995). Board member information was provided on public websites for each of the professional organizations. With the initial email the researcher provided general information, the study’s purpose, time commitments for participants, the study’s research consent form, and the pre-interview questionnaire created by the researcher (see Appendix A). Of the three groups, the researcher heard back from one. For the sake of protecting the confidentiality of participants, this organization shall not be named. The organization is a non-profit service organization that promotes the engineering careers of women in the United States. Upon hearing back from a board member of this organization, the researcher requested that information regarding her study be sent out to members either by allowing her direct access or, if they would prefer, on her behalf. A Call for Participants (see Appendix B) was subsequently distributed by the board member to all 399 members of the professional organization. Members were asked to email or call the researcher directly if interested in participating.

The researcher created a pre-interview questionnaire (see Appendix A) in order to solicit participants. The questionnaire requested potential participants identify their age, levels of education, marital status, if they were a parent, how old their children were, occupation, industry, and usual activities or duties which are all questions included in the Census Population Survey and part of the Bureau of Labor Statistics research discussed previously. The researcher added career phase, years working, and years in engineering in order to gain insight on employment activities specific to the present study. Upon receiving an email from potential participants, the researcher responded and requested they complete a pre-interview questionnaire and research consent form.

Once completed forms were received, the researcher utilized maximum variation sampling in order to select participants. The aforementioned criteria were determined to be most relevant to the study and participants were selected that represented "the most important possible variations on these dimensions" (Maxwell, 2005, p. 89-90). This sampling strategy was selected as the researcher strived to maximize differences at the beginning of the study in order to increase the chance that findings will reflect different perspectives (Creswell, 1998). Patton (1990) contends, "Any common patterns that emerge from great variation are of particular interest and value…" (p. 172). As such, the researcher aimed to select a woman who has a traditional, linear career and a woman whose career has been nontraditional and nonlinear; a woman who is married and a woman who is not married; a woman who has children or other caregiving responsibilities and a woman without such responsibilities; a woman who has worked for only one organization and a woman who has worked in multiple organizations; a woman in each of the establishment, maintenance and decline career phrases; and a woman who

has worked only as an engineer and a woman who has worked in multiple occupations. Table 3.1 represents the questions in the pre-interview questionnaire and the criteria on which maximum variation might have been achieved. Appendix C represents the participants in the present study and the maximum variation achieved.

After the Call for Participants (see Appendix B) was emailed to members of the professional organization, the researcher received nine responses from women interested in participating. After sending the Pre-Interview Questionnaire (see Appendix A), the researcher received six responses with completed questionnaires. Maximum variation was easily achieved based on the women who provided completed questionnaires, as they happened to vary greatly in their occupations, industries, career phases, years working, age, and all other criteria. It should be noted, however, that the researcher intended to select women either in the establishment, maintenance, or decline career phase based on the career phase participants selected in their Pre-Interview questionnaire. Five participants selected phases outside of these parameters, but in their written description of why a specific career phase was selected each described reasons that met parameters of establishment, maintenance, or decline phases. Therefore, the researcher determined that despite identifying with a different career phase, they still met her pre-determined selection criteria.

Table 3.1

Maximum Variation Criteria

- Occupation
- Industry
- Career Phase
- Years Working
- Years working in engineering
- Gaps in employment
- Occupations other than engineering
- Companies other than where currently employed
- Professional organization/society affiliations
- Age
- Education level
- Marital status
- Children
- Other caregiving responsibilities

The researcher also utilized snowball sampling to identify potential participants for the present study. After participants were identified through the women's professional organization the researcher determined that she had not reached any participants who were not currently engineers. As maximum variation among participants was an important component to this study, the researcher accepted the offers of three participants to refer her to other potential participants (Merriam, 2009). Participants were asked to recommend other individuals who met selection criteria (Dyke & Murphy, 2006). Also, in order to reach women who may have 'opted-out,' the researcher asked participants to consider not only individuals that were currently working for organizations but also for women who may be in nonpaid or nontraditional careers. Two additional participants were identified through snowball sampling.

Data Collection

Semi-structured interviews were the source of information for this study. The researcher began with the assumption that "the perspective of others is meaningful and knowable and can be made explicit" and in choosing to interview, sought to "…enter into the other person's perspective" (Patton, 2015, p. 426). The researcher believes interviews added to the study because questions could be focused as dictated by the literature review and also gain insight on specific topics (Yin, 2009).

Seidman (2013) proposed a three-interview series. Interview one is a focused life history interview. "The interviewer's task is to put the participant's experience in context by asking her to tell as much as possible about herself in light of the topic up to the present time" (Seidman, 2013, p. 21). In interview two, we ask the details of the participant's lived experiences. In this interview we are asking for the details of the experiences, not for their opinions (Seidman, 2013). In the third interview participants are asked to reflect on the meaning of their experience. For purposes of the present study, the researcher utilized Seidman's (2013) approach; however, it was modified to a two-interview series. The first interview focused on the participant's historical and current career development. The second interview asked follow-up questions and asked about the meanings they construct. Seidman (2013) argues, "as long as structure is maintained that allows participants to reconstruct and reflect upon their experience within the context of their lives, alterations to the three-interview structure and duration and spacing of interviews can be explored" (p. 25).

The researcher followed Patton's (2015) interview guide approach to format questions. The interview guide (see Appendix D and E) lists the questions explored in

each interview, which ensured the same topics were covered with each participant. With the interview guide the researcher was able to ask a mix of more and less structured questions which allowed questions to emerge but kept focus on the predetermined topics (Patton, 2015). Each interview lasted between 30 and 90 minutes. Interviews were recorded using a digital recorder. The researcher also had backup recording applications available should she have had any problems with the digital recorder. The interviewer also took notes and later transcribed each interview herself. Taking notes during the interview helped the researcher concentrate and not interrupt the interviewee and also served as reminders for follow-up questions (Seidman, 2013). Interview notes also helped facilitate later analysis and served as another backup in case of technical failure of the recording (Patton, 2015).

Patton (2015) identifies six types of questions that can be asked during an interview: experience and behavior questions, opinion and values questions, feeling questions, knowledge questions, sensory questions, and background/demographic questions. Patton (2015) also distinguishes the time frame of questions and indicates that questions can be asked in the present, past, or future. For purposes of the present study, the researcher asked a mix of question types and time frames. A modified version of Patton's (2015) matrix of questions and Seidman's (2013) interview series is provided below (Table 3.2) to demonstrate the interview and type of question of some of the interview questions in the present study (p. 445).

Table 3.2

A Matrix of Questions

Interview Question and Focus	**Interview 1 – Career Development Experiences**	**Interview 2 - Meaning**
Behaviors/ experiences	You mentioned earlier [insert career path details, for example, change in organization or a change from full- to part-time] about your career path. Tell me more about the motivation for these changes.	You mentioned [insert career path detail such as a break or gap in employment, if applicable]. What did that mean to you? How did you feel?
Opinions/values	Do you think the organization you work for has influenced your career choices?	What has the choice of engineering meant in the context of your life? What has it meant in terms of how you define or see yourself as a woman?
Feelings/emotions	How do you feel about how your career has progressed with this organization?	How do you feel about women's career development overall?
Knowledge	Are there any practices or policies in place to support work-life balance? If so, can you tell me more about them? Have you used them? If so, call you tell me more about that experience?	What significant relationships, if any, did you form with other women in your occupation? In your organization? What did those mean to you?
Sensory	When I say "woman in engineering," what behaviors, characteristics or visuals come to mind?	
Background	Tell me more, if you will, about your choice of engineering.	What does career success mean to you? Suppose we could look into your future, what would be happening in your career? In other areas of your life?

Interview questions were piloted ahead of time in order to ensure the questions were tested and that participants understood what was being asked (Maxwell, 2005). Prior to sending the Call for Participants, the researcher conducted pilot interviews with two women meeting selection criteria for the present study. Piloting aided in providing the researcher practice in the interviewing technique and allowed her to determine if her

interview structure and guide elicited data appropriate to the study. Due to her determining that the interview structure and guide elicited data appropriate to the study, the data from pilot interviews was then included in the study. No changes to the interview guide were made following pilot interviews. This brought the total number of participants to ten: two participants from pilot interviews, six participants through the Call for Participants, and two participants through snowball sampling.

A wide range of open-ended questions (contained within the Interview Guide at Appendix D and E) concerning career development were asked of participants. These questions were created utilizing the theoretical framework and literature review of the present work. Appendix F contains a list of interview questions, their specific purpose, theoretical base, and how they addressed each research question. Specific interview topics included work history, current work circumstances, current organization, norms within organizations, societal norms, organizational practices pertaining to career development, perceptions of the available opportunities, work-life responsibilities, future career plans, childbearing, work-life policies, women's roles within society and within an organization, and measures of career success. So as not to impose pre-defined meanings of success on participants, before discussing success the researcher asked how each person defines success and then whether or not they had achieved success (Dyke & Murphy, 2006). Existing research on career success is mostly quantitative and success is defined objectively by promotion and salary increases (Dries, 2011; O'Neil et al., 2008); thus, it was important to the researcher to provide the opportunity for participants to define success subjectively (utilizing their own perceptions and measures).

Data was collected until a point of saturation was reached and no new information was forthcoming (Merriam, 2009). The researcher felt as though saturation was reached when no new themes were emerging. As data analysis began immediately after finishing the first interview and continued throughout the study (see below) she felt saturation was reached once she developed an understanding of what these themes were, their properties, possible relationships, and was able to discuss the themes. For example, not just to know that discrimination was taking place but how and what discrimination meant, what it looked like in different circumstances, and what the consequences were (Corbin & Strauss, 2008). The researcher reached saturation after analyzing data from the first eight participants. However, as maximum variation was important and she had determined that she had not reached any participants who were not currently engineers, she continued to collect data from the two additional participants identified through snowball sampling.

Data Analysis

Data analysis began immediately after finishing the first interview and continued throughout the study with a period of intense analysis following the completion of interview transcription. The researcher wanted to ensure substantial analysis was ongoing and that she was fully immersed in the data throughout the study (Creswell, 1998; Maxwell, 2005).

The researcher began the inductive data analysis process by reading and transcribing each interview. All transcripts were read and coded by the researcher. Data analysis continued with the identification of segments of data that were potentially responsive to the research questions (Merriam, 2008). The researcher began with the assumption that every identified segment of data had the potential to be meaningful. She,

therefore, did not believe any one segment of data was more important than another and highlighted anything that appeared to respond to the research questions. Through this initial identification process, over 400 segments of data were identified. Each segment of data was added to a spreadsheet, "Master Data Analysis Spreadsheet," that she worked with throughout the entire data analysis process. This spreadsheet was organized by interview question; interview one in Tab 1 and interview two in Tab 2. A separate spreadsheet, "Data by Participant," was created using the same segments of data but spreadsheet tabs were organized by participant. These spreadsheets allowed the researcher to later compare codes by question, by participant, or by segment of data.

Following the identification of segments of data, the researcher utilized open coding and segments of data were named as the researcher read and re-read transcripts (Merriam, 2009). In vivo codes, or exact words used by participants, were also used during this process (Creswell, 1998). All codes, and subsequent themes, were recorded and as new codes or themes emerged the researcher reviewed previous transcripts to ensure all themes were captured (Dyke & Murphy, 2006). During this time the researcher utilized the initial Master Data Analysis Spreadsheet and an additional document, "Master Codes List," where she listed all possible codes identified. This served as a point of reference as she read and re-read transcripts. With each new code the researcher reviewed previous transcripts to ensure she had thoroughly coded the transcript.

For example, when asked about the choice of engineering participants mentioned having parents who were engineers and wanting a career that could provide for them financially. These segments of data were coded "Family influence" and "Financial" respectively. When discussing their experiences at work many women talked about overt

and covert discrimination. During coding these were labeled “Overt” and “Covert.” As data analysis continued the researcher continued to read about discrimination in transcripts. To ensure she had thoroughly coded each transcript, she reviewed previously coded transcripts to review for discrimination.

As new codes were added to the Master Codes List, the researcher also updated the Master Data Analysis Spreadsheet to ensure consistency in documentation. The Master Data Analysis spreadsheet, therefore, continued to change and be updated throughout the data analysis process. This process resulted in over 200 initial codes and potential themes. See Tables 3.3 and 3.4 for examples of the Master Data Analysis spreadsheets and Table 3.5 for an excerpt from the Master Codes List.

Table 3.3

Master Data Analysis Spreadsheet Example of Tab 1 and 2

Interview Question	**Segment of Data**	**Potential Theme/Code**	**Participant/Interview**
Choice of engineering	My father was a chemical engineer.	Family influence	Quinn, Interview 1
Similar experiences as male counterparts?	I felt like I was underhandedly, not overtly discriminated against, but discriminated against because of being a woman.	Discrimination	Susan, Interview 1

Table 3.4

Data by Participant Example of Katherine

Interview Question	**Segment of Data**	**Potential Theme/Code**
Career	I was only the third woman manager they had ever had.	Witnessing women’s firsts
Work Life Balance	What you have for balance are fleeting moments where it’s all balanced.	Balance

Table 3.5

Master Codes List Excerpt

Potential Codes	
Discrimination	Family influence
How engineering is viewed in the U.S.	Financial
Gender equality	Climbing the ladder
Opportunity	Knowing how to progress
Culture	Success
Norms	Linearity
Traits	Conforming
Good old boy	Stereotypes
Career choice	Media
Family decisions	Balance

The researcher then created a new document, "Main Coding Spreadsheet," to organize her data, which served as her main coding spreadsheet throughout the remainder of the process. This spreadsheet identified much smaller, more condensed segments of raw data, the code assigned, and the participants who mentioned them in Tab 1. Tab 2 of this document provided the same information but included full segments of data and raw quotes in order for the researcher to confirm her interpretations and better recognize participants' meanings. See Tables 3.6 and 3.7 for examples of the Main Coding Spreadsheet tabs.

The researcher then repeatedly returned to transcripts to sort, code, and compare themes (Creswell, 1998). Codes were compared and contrasted using the Master Data Analysis Spreadsheet, the Main Coding Spreadsheet, and list of codes document as the researcher continuously fractured and rearranged the data to review for additional codes (Corbin & Strauss, 2008; Maxwell, 2005).

Table 3.6

Main Coding Spreadsheet Example of Tab 1 (Code Progression)

Participant(s)	**Segment of Data/General Idea of Quote**	**1st Order Theme (Sub-Theme)**	**2nd Order Theme (Theme)**
Lakshmi; Katherine; Carol; Sue Ellen; Clara; Angela	examples of overt discrimination	Discrimination	Women's Experiences at Work
Jan; Carol; Ann	camaraderie and support between females	Social Capital	Women's Experiences at Work

Table 3.7

Main Coding Spreadsheet Example of Tab 2 (Code Participant Examples)

2nd Order Theme (Theme)	**1st Order Theme (Sub-Theme)**	**Segment of Data/General Idea of Quote**	**Participant**	**Raw Data**
Women's Experiences at Work	Discrimination	Examples of overt discrimination	Katherine	…the store room had Kotex pads on the shelf. And the label on the shelf said manhole covers. So, yeah, it seems appalling now but some of that stuff still goes on.
Success	Intrinsic	Career success: having an impact	Carol	Feeling like you're having an impact. Getting things done in a way that everybody feels good about.

Continuous fracturing and rearranging the data resulted in 39 codes from which six themes and 22 sub-themes emerged. As possible themes and sub-themes emerged they were added to the Main Coding Spreadsheet next to the segments of data and raw quotes they aligned with. Themes and sub-themes were also continuously reviewed for areas of overlap and to ensure they were responsive to the research purpose and

questions. In order to finalize themes and sub-themes the researcher created a visual representation of the relationship between themes. This helped to consider final areas of overlap and look at the same information in another format thereby helping to clarify and think differently about the information. Themes and sub-themes will be presented in Chapter 4. The researcher adhered to Merriam's (2009) criteria for category construction throughout the data analysis process as it related to her identification of codes and themes (p. 185-186):

- *Categories should be responsive to the purpose of the research*.
- *Categories should be exhaustive.* All data determined to be meaningful should be find a place within a category.
- *Categories should be mutually exclusive.* Data should fit into only one category.
- *Categories should be sensitizing.* Be exacting when creating categories.
- *Categories should be conceptually congruent.* Adhere to the same conceptual level.

Using the themes and sub-themes that were identified, the researcher developed findings and conclusions. Three major findings resulted from this study and will be presented in Chapter 5. As the researcher organized her themes and finalized data analysis, patterns clearly emerged regarding women's career development. As it related to sensemaking, for example, women were clearly taking actions in response to underlying norms in organizations. These actions will be further discussed in Chapter 5; however, it became clear to the researcher as she finalized data analysis that their actions fell into one of three categories. Women were conforming, deviating, or negotiating with

norms. Women's reflection and suppositions explaining their actions helped the researcher identify whether women felt they were conforming, deviating, or negotiating. Once the researcher noted an initial pattern, she returned to all participant transcriptions and discovered this was the case for all participants. During a discussion with her dissertation advisor she presented these findings and was guided to review sensemaking literature. Sensemaking was not expected to emerge and is a key contribution of the present study. As will be further presented in Chapter 5, women took action regarding career choices, decisions about family and work life balance, and success based on prevailing norms and in doing so were either conforming, deviating, or negotiating to norms. Women understood this through sensemaking. All findings and conclusions will be presented in Chapter 5.

The researcher documented the analysis process through analytic memoing. Through the memoing process the researcher examined her own subjectivities and kept track of her notes, observations, and any other potentially relevant information. Maxwell (2005) argues, "Memos not only capture your analytic thinking about your data, but also facilitate such thinking, stimulating analytic insights" (p. 96). Seidman (2013) also supports the use of memoing and recommends that if the researcher has identified a segment of data is undefined or if the significance is unclear, one should write a memo about it (p. 131). "Through your writing about them, and how they were picked, about what they mean to you, the properties and import of the category may become clear" (Seidman, 2013, p. 131).

Trustworthiness

Lincoln and Guba (1985) recommend four criteria to consider when establishing trustworthiness in qualitative work: credibility, transferability, dependability, and confirmability. For purposes of the present study the researcher attended to each of Lincoln and Guba's criteria for trustworthiness. To establish trustworthiness and address each of Lincoln and Guba's criteria, the researcher employed member checks, peer reviews, and reflection. She also clarified biases through an analysis of her reflexivity in order to raise awareness of her subjectivity and to guard against bias in the analysis of data.

Credibility deals with the question of how research findings match reality (Merriam, 2009). Member checks were used throughout the study to establish trustworthiness and attend to credibility. Johnson (1997) indicates that this is "perhaps the most important strategy" (p. 285). Using member checks allows for higher credibility and an answer to the question "Are the findings credible given the data presented" (Merriam, 2009, p. 213). Following each interview, the researcher transcribed and sent each participant the transcription of their interview. She asked participants to read and confirm accuracy. Additionally, she asked if participants thought anything else should be added giving participants the ability to confirm and provide additional insights or clear up any miscommunications (Johnson, 1997). The researcher followed this process for interview one and two. Several participants provided additional comments and clarity on comments after reviewing their transcription. In addition to member checks, the researcher added representative quotes from participants to support her findings. Using

participants' actual words supports credibility and demonstrates that she is accurately interpreting participants' meanings (Creswell, 1998).

Transferability is showing the findings have applicability in other contexts. Lincoln and Guba (1985) suggest that the "burden of proof lies less with the original investigator than with the person seeking to make an application elsewhere. The original inquirer cannot know the sites to which transferability might be sought, but the appliers can and do" (p. 298). To attend to transferability, as previously noted, the researcher utilized maximum variation sampling. This provided a great range of participants and therefore the potential for "a greater range of application by readers or consumers of the research" (Merriam, 2009, p. 227). The researcher also took care to provide rich, thick descriptions throughout the study, which attends to transferability.

Dependability is showing the findings are consistent with the data collected. Dependability does not mean that another researcher would yield the same results; instead, "if the findings of a study are consistent with the data presented, the study can be considered dependable" (Merriam, 2009, p. 222). Peer review was used to attend to dependability in this study. In addition to discussions with her dissertation advisors, the researcher discussed her codes, interpretations, and conclusions with two colleagues (researchers not directly involved in the study) (Johnson, 1997). Peer review provided an "external check" of the research process (Merriam, 2009, p. 208). As Lincoln and Guba (1985) recommend, the researcher kept a written account of these sessions. Written accounts helped maintain an audit trail ensuring decision points made throughout the research process were documented.

Confirmability is the degree of neutrality and integrity of the qualitative researcher. In order to attend to confirmability, the researcher reflected. York-Barr, Sommers, Ghere, and Montie (2001) describe reflective practice as a deliberate pause (as cited in Merriam, Caffarella, & Baumgartner, 2007, p. 172). Krefting (1991) discusses the paradoxical nature of the threat of closeness to the data. While important in qualitative research to get close to the research, the relationships that develop (or that previously existed) could influence the researcher. "Although close researcher-informant relationships are critical to the research enterprise, it is possible to lose the ability to interpret the findings" (Krefting, 1991, p. 218). Reflexive analysis forces the investigator to analyze their background, perceptions and assumptions. "The investigator, then, must analyze himself or herself in the context of the research" (Krefting, 1991, p. 218). Merriam, Caffarella, and Baumgartner (2007) focus on four elements of reflective practice: a deliberate slowing down to consider multiple perspectives, an open perspective, a conscious processing of thoughts, and an examination of beliefs. These elements result in a deeper understanding of the work and enhanced trustworthiness.

Human Participants and Ethics Precautions

Qualitative researchers face many ethical issues during studies (Creswell, 1998). In order to attend to concerns of human participation and ethical precautions the researcher took the following steps. All participants were provided and required to sign an Informed Consent Form (see Appendix G). Each participant read the consent form prior to the start of the first interview. For interviews held over Skype or telephone, participants were asked to sign the Informed Consent Form and send back to the interviewer prior to the start of the first interview. Along with the Informed Consent

Form information was provided to participants regarding the purpose, expected duration, and procedures of the study; a description of any applicable risks; an explanation of confidentiality and management of data; the benefits of the study; and the voluntary nature of the study. In order to maintain confidentiality and anonymity, pseudonyms were assigned to each participant and utilized throughout the study. Finally, given the sensitive nature of data collected during qualitative studies, the researcher took great care in the storage of data (Creswell, 1998). Data was maintained on a computer with back-up files on an external hard drive. Both the computer and external hard drive were maintained in a locked room in her home. The researcher was the only person to access the data. All email communication between participants and the researcher was from an email address the researcher created and maintained solely for this purpose. The email account was password protected and accessed only by the researcher.

Methodology Summary

A basic qualitative study was used to conduct the present work. This study served to explore the career development of professional women within organizations. Achieving maximum variation was key to the researcher's sampling strategy and overall research design. Interviews were used to gather data from professional women engineers in the United States. Data analysis began after the first interview was complete and continued throughout the duration of the work. Data will be presented in Chapter 4.

Chapter 4: Findings

Introduction

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an understanding of the career development of women in engineering. The guiding questions of this study were: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms? Based on data analysis, six themes emerged: Organizational and Societal Norms, Occupational Choice, Career Progression, Work Life Balance, Women's Work Experiences, and Success, with corresponding sub-themes. This chapter is organized as follows: participant demographics and narratives are presented in order to provide background information on participants. Following the narratives is a discussion of themes and sub-themes.

Participants

Participant Demographics

Ten women who are either currently engineers or who previously were engineers based in the United States were interviewed. Each participant currently works in a different industry though participants have worked in several industries through the course of their careers and some overlap can be found in previous jobs. All participants belong to women's professional organizations, years working ranges from nine to 39, and their years working in engineering ranges from six to 38. Eight participants are currently

married and four have children (see Appendix D for maximum variation attributes). A more detailed narrative of each participant is provided in the next section.

Participant Backgrounds

Ann. Ann is currently employed with the Federal Government and is a Supervisory Engineer. After completing her degree, she has spent all 14 of her working years in engineering. In her Pre-Interview Questionnaire Ann selected career phases three and four (Establishment and Maintenance) and indicated that she has established herself in her current role though there is opportunity to learn and improve her skill set. She has worked in organizations other than her current organization, is 33 years old, unmarried, and does not have children. Ann became an engineer because she felt it would qualify her to do a broad range of things; she also sought a career that would provide financial support over the course of her life. She is happy with how her career has progressed. She is at a point where she is uncertain of next steps and questions her future career choices. Ann feels as though she has achieved success in her career through her career progression and advancement to her current supervisory position.

Jan. Jan is currently employed as a Regional Environmental Manager in the Metals Recycling Industry. After completing her degree, she has spent all 12 of her working years in engineering. In her Pre-Interview Questionnaire Jan selected career phase two (Exploration) and indicated that she is always looking for opportunities to grow and learn. She has worked in organizations other than her current organization, is 34 years old, married, and has a stepchild that lives part-time with her and her husband. Jan became an engineer due to her interest in the environmental impact she could make and is happy with her career progression. Jan intends to continue gaining experiences that

push her to the next level in her career. Jan feels that while she has achieved success in her career that she has more to do in order to fully achieve success.

Lakshmi. Lakshmi is currently employed as a Marketing Director/Sales Engineer at her family business that she co-owns with her husband. After completing her degree, she has spent six of her ten working years in engineering and has worked in other organizations and other occupations outside of engineering. In her Pre-Interview Questionnaire Lakshmi selected career phase three (Establishment) and indicated that she is developing her skills. She is 36 years old, is married, and does not have children. Lakshmi became an engineer primarily due to strong family involvement in the decision of what she do and has left and returned to the occupation due to recession, financial reasons, and negative experiences within the occupation. Lakshmi feels some confusion and embarrassment about her career progression due to her negative experiences in engineering but is now feeling success in the business she and her husband started. She is hopeful that her career progression and success continue.

Katherine. Katherine is owner of her own consulting firm, which she started due to her passion for both engineering and human relations, both of which are areas she currently provides consulting services on. After completing her degree, she has spent all 30 of her 30 working years in engineering. In her Pre-Interview Questionnaire Katherine selected career phase 3.75 (Establishment and Maintenance) and indicated that while she is established, she is always looking to build new skills. She has worked in both other occupations and other organizations, is 54 years old, and is married with children. Katherine's husband stayed home to care for their children while she pursued her career. Katherine became an engineer primarily because of her interest in math and science but

also because she was seeking a career where she could earn enough to support herself. Katherine is satisfied with her career progression and values the flexibility she gained from owning her own business as opposed to working for a large organization. Katherine feels success in her career due to satisfaction she receives when she is making a contribution to humans.

Carol. Carol's career as a Staff Engineer was with the Industrial Engine and Generator Controls Industry. After completing her degree she spent 28 of her 35 working years in engineering. She has worked in both other occupations and other organizations. In her Pre-Interview Questionnaire Carol selected career phase five (Decline) and indicated that she recently retired from her job as a Staff Engineer. She later discussed feeling as though she now starting a new career with new possibilities. She is 63 years old, not currently married, and has a child. Carol's educational background is in physics, which she chose because of her skills in math, but she became an engineer when she found she enjoyed the engineering aspects of a job she held after graduate school. She believes her personality is well suited to engineering. Carol is very happy with her career progression and feels as though she achieved what she wanted.

Sue Ellen. Sue Ellen is a Principal Engineer with a biotech pharmaceutical company. After completing her degree, Sue Ellen has spent all 33 of her working years in engineering. Shortly Sue Ellen's company is closing down the location she works and she will be starting her own consulting company. In her Pre-Interview Questionnaire Sue Ellen selected career phase four (Maintenance) due to her experience and skills. She has worked in more than her current organization, is 55 years old, is married, and does not have children. Sue Ellen became an engineer because of her interest and ability in math

and science. She also felt that engineering was a good fit. Sue Ellen feels success in her career in that she's made a difference and also in that she is getting inquiries about her availability for work once she starts her own company.

Clara. Clara is CEO of an organization that honors the achievements of American women. After completing her degree, Clara has spent 38 of her 39 working years in engineering. Clara has worked in both other occupations and other organizations. In her Pre-Interview Questionnaire Clara wrote in career phase 'None of the Above' (not an option provided) and indicated that she is in a new phase and applying all of the skills she has learned over the years. Clara is 60 years old, married, and does not have any children. Clara entered college as part of the third class where women were accepted at the university. Without guidance on a major, Clara initially choose math because of her strong inclination and skills in the subject. Halfway through her first semester she realized engineering was a better fit and made arrangements to transfer. She chose engineering as an occupation because she's a problem solver and engineering was well suited to her. Clara is excited about her career progression and feels as though, looking back, she can see how all the pieces fit together, which she could not see as it was happening. Clara feels as though she has achieved success her in career and while she has long-term career goals, because she could not have predicted the last few years, she is not sure what the near term career choices will be.

Susan. Susan is a Process Engineer in the Energy Industry. After completing her degree, Susan has spent nine of her nine working years as an engineer. She has worked for other organizations during this time. In her Pre-Interview Questionnaire Susan selected career phase 2 (Exploration) and indicated that she is exploring her options as

her career could go in several directions. Susan is 30 years old, married, and does not have any children. Susan chose engineering primarily due to family influences. While Susan feels her career started slowly, her career progression has recently surged and she feels successful.

Angela. Angela is an Executive Vice President and Chief Financial Officer in the Electric Utility Industry. After completing her degree, Angela spent nine of her 25 working years in engineering. She is currently involved in engineering planning work in her organization though these are not typical functions of a CFO. Rather, they are skills she possesses so is able to provide. Angela has worked in other occupations and other organizations. In her Pre-Interview Questionnaire Angela selected career phase 4 (Maintenance) and indicated that she knows the job well and is situated to leverage knowledge and skills within her company. She is 46 years old, married, and has children. Angela became an engineer because of her math and science skills and also family influence. She left engineering because of her interest in finance, validated through completion of her MBA, and her desire for work life balance. Angela feels successful in her career and as though her career has progressed well. She feels fortunate to have the opportunities she had though is uncertain of her next steps and future career choices.

Quinn. Quinn is a Wealth Management Advisor in the Financial Services Industry. After completing her degree, Quinn spent seven of her 15 working years in engineering. Quinn has worked in other occupations and other organizations. In her Pre-Interview Questionnaire Quinn selected career phase 1 (Growth) and indicated that there is room for opportunity and growth in her occupation. She is 39 years old, married, and does not have children. Quinn became an engineer because of her math and science skills

and also due to family influence; she also sought a career that would provide good jobs and financial support. Quinn left engineering because she was not happy as an engineer. She did not feel as though she was impacting anyone personally and wanted to do something where she made more of an impact. After completing her MBA, she was happy to leave engineering and take a risk on her new occupation in wealth management. She feels great about her career progression and success as she is making an impact on people's lives.

Themes and Sub-Themes

Based on data collected during this study, six themes and 22 sub-themes emerged. Themes and corresponding sub-themes are listed in Table 4.1.

Table 4.1

Themes and Sub-Themes

Theme	Sub-Theme
Organizational and Societal Norms	Societal: Roles, Family, Impact of Media, Stereotypes Organizational: Culture, Unequal Values
Work Life Balance	Balance, Family Support, Conflict with Roles, Tough Choices
Women's Experiences at Work	Discrimination, Social Capital
Career Progression	Self-Selection, Gendered
Occupational Choice	Problem-Solving, Financial, Family, Self-Efficacy, Social Approval
Success	Intrinsic, Extrinsic, Evolution

The following sections describe in more detail each theme and provide supporting quotes from participants. The first theme presented, Organizational and Societal Norms, emerged across participants, throughout both interviews, and it both influences and relates to all other themes identified. Following Organizational and Societal Norms,

remaining themes are not presented in a particular order of emphasis. Rather, the researcher describes remaining themes with the understanding that each theme is valued and equal.

The themes in this chapter were developed through data analysis. Using the themes and sub-themes that were identified, the researcher developed findings and conclusions. Each theme contributed not only to the researcher's findings and conclusions but also addressed each of the three research questions. Sensemaking, for example, is a key contribution of the present study. As it relates to the present chapter and themes presented, each theme contributed to the researcher coming to sensemaking. All participants, throughout both interviews, discussed taking action regarding career choices, decisions about family and work life balance, and success based on prevailing norms and in doing so were either conforming, deviating, or negotiating to norms. Women understood this through sensemaking. In the themes of Organizational and Societal Norms, Work Life Balance, Women's Experiences at Work, Career Progression, Occupational Choice, and Success women discussed the actions they take. Together, the researcher was able to use all themes and representative quotes to discover the pattern of conforming, deviating, or negotiating. Findings, conclusions, and a discussion of how each theme addresses the research questions will be presented in Chapter 5.

Within each theme section below is a visual representation of the relationships between themes and sub-themes. The visual is provided as a whole (see Figure 4.1) and then as each theme is discussed the corresponding section of the visual is provided and relationship between themes and sub-themes explained (see Figures 4.2 through 4.7). Light blue bubbles represent themes and dark blue bubbles represent sub-themes. Bi-

directional arrows show the reciprocal relationships between Organizational and Societal Norms and all other themes. Despite some themes having more sub-themes than others, this does not convey importance or emphasis of one theme versus another. As previously mentioned, other than Organizational and Societal Norms, all themes are of equal importance and value. The visual exists within the context of a web of relationships, hence the spider web-like nature of the background of the visual. The researcher chose not to add additional arrows or other lines between theme bubbles in order to maintain clarity in the visual; however, themes do interact and a relationship exists. These relationships will be explained in the following sections on each theme.

Figure 4.1 Visual Representation of Relationship Between Themes and Sub-Themes

Theme 1: Organizational and Societal Norms

Women experienced Organizational and Societal Norms in every area of their lives. Through the interview process they discussed norms related to organizational culture and values. They also discussed societal norms related to family, roles, media, and stereotypes. Each of these will be discussed in more detail below. See Figure 4.2 for the visual representation of this theme. Organizational and Societal Norms relate to every other theme that emerged through the interview process. Bi-directional arrows between the central bubble, Organizational and Societal Norms, and every other theme bubble represent this relationship. Reciprocity exists between these themes. While norms influence each other theme, an individual woman and the norms she espouses at the individual level subsequently evolve into organizational and societal-level norms.

Figure 4.2 Visual Representation of Organizational and Societal Norms Theme

Theme 1: Organizational and Societal Norms. Sub-theme 1: Roles (Societal).

Roles included women's experiences and feelings on societal norms that impact the various roles women hold in society. Roles such as being the mother, being the caregiver, and not being an engineer were represented in this sub-theme.

Ann and Sue Ellen discussed the mother and caregiving roles:

I think that women will always [*sic*] the mother roles. The mother role will never go away. I don't think that's a bad thing. I don't [*sic*] it's a bad thing to have slightly different gender roles. I just think that you shouldn't have to feel like you have to do everything. (Sue Ellen, Interview 2)

Ann shared how the norms around caregiving in society translates to organizational norms:

…women's roles in society, I think of as a lot of caregiving. And I think that some of that, from gender-roles, translates a little to women in organizations where the woman is the one who is more likely to think of 'oh, we're going to have this long meeting, let's make sure we accommodate to have food'…those kinds of things, those caregiving responsibilities to the team. And also women tend to be, in society, very compassionate. I think that that's true in the workforce, too, to some degree. That women are then willing to listen and address people's feelings and concerns. They are more likely to be empathetic and so forth. And that might impact business decisions to some degree. Sometimes it can be good, sometimes it can be bad. I think that sometimes, I had a guy that we didn't retain in his probationary period. Sometimes I think, oh, if I was a man I would care less about it. But maybe not. Maybe that's just some misconception but I'm sympathetic to this poor guy. He's just trying to make a living and we're not going to be able to keep him at this job. And then what is he going to do next? So I'm very sympathetic to that. It would be a bad decision for me to keep him at the job because I'm sympathetic to it. But is it a good thing? I don't know. That balance of you don't want to let the emotional component of these things to interfere with proper business decisions. (Ann, Interview 2)

Quinn also felt the impact of societal norms in her role as an engineer:

I think there is a lot of difficulty with being a female engineer. …difficulties in that they look at you and we still, we live in a society where culturally it's not a norm. I think we live in a society where response to the females, people are just culturally not used to thinking, oh that person probably is an engineer. (Quinn, Interview 1)

Angela discussed traditional roles at home:

…it falls back to the traditional male female roles in a family where the guy is the breadwinner and the woman manages everything at home. For a lot of men I think that whether they like it or not they think that's what I have to do and that's my role in life, to bring home the money so that my whole family can live off of it. (Angela, Interview 1)

Susan and Clara discussed unequal roles of women in society:

Women don't exist just to support and create our society. We can have any sort of responsibility and contribute all kinds of different things to society. We're definitely critical to the operation. More than biologically. I think that our opinions are needed to virtually any aspect of life in order to help out. (Susan, Interview 2)

I think that's one of the areas in which our society is losing a tremendous ability to utilize skills and knowledge and capabilities that would benefit all of us if we would actually value women. (Clara, Interview 2)

Finally, Carol felt that that roles are shifting enough that we might be on the verge of another women's movement:

… I'm kind of getting this feeling there is another women's movement building up. …I think maybe we get tired and then we have to build up our energy again before we can take on the next wave…I'm hearing little things like we have to engage these guys. I think that's true. I think this time the women can't do it themselves. It has to engage these guys and get them in there. (Carol, Interview 2)

Theme 1: Organizational and Societal Norms. Sub-theme 2: Family (Societal). Family included women's experiences and feelings on societal norms that impact/influence families. Women felt the impact of norms as they dealt with issues surrounding having it all and who in their family is responsible for working and childcare.

Angela, Lakshmi, and Carol all discussed having it all:

I have that syndrome that we talk about so much that we're supposed to have it all as a woman. A heterosexual woman. You're supposed to have your family; you're supposed to have your work. (Lakshmi, Interview 2)

I think that women also still think they can do it all. (Carol, Interview 2)

For some women …I think they'll say, oh, they can have it all. Well they don't have it all. Like just like I made and am sacrificing some of my potential for my career but I do have a great job. But I don't have, in my mind, I don't have it all. I've made some

sacrifices. And I bet if you talk to them they would say, yes, I've made sacrifices even though it looks like they have it all. (Angela, Interview 2)

Later, Angela continues:

I feel like I've heard people say that you can have it all but not all at once. So I feel like that's what I'm trying to do. I'm trying to stay in the workforce, have a challenging job, continue to grow and learn, get to a point where my kids are out of high school and well on their way…And then I can just decide, okay, do I want to make one more big push to try something and challenge myself or what do I want to do. (Angela, Interview 2)

Katherine and Angela both discussed decisions regarding childcare and working and how that relates to societal norms:

I see many, many more families where the husband is deciding to stay home. For my family and my husband that was groundbreaking…I think the idea that women don't have to be the sole caretaker, my generation grew up that if we were working we probably then had to come home to a full-time job with the family and the kids. And while I think that's still there, I think the proportions are shifting. I see men stepping up more to the plate and taking a larger role at home and maybe having their job take the second place or the backseat to their wife or partner's job now. (Katherine, Interview 2)

My working has afforded us the ability to send my kids to private schools, which is good for them. And my working, I think, also has helped changed the mindset of, I've got two boys, of what it is for a woman working. Most of their friends' moms don't work but they've grown up with I can't come volunteer at the book fair like all the other moms.…I try to make appearances but I'm not going to be that mom that is at the school all the time. So they've grown up seeing how that works and I think they're going to be better men in society for that. When they get in the workforce they're not going to look at a woman who is working, especially in an executive level, and be like wow, that's strange because their mom did it. (Angela, Interview 1)

Theme 1: Organizational and Societal Norms. Sub-theme 3: Impact of Media (Societal). Impact of Media included women's experiences and feelings on societal norms related to how women are portrayed in media and the perceptions that may result.

Ann discussed her college experience in comparison to a popular movie:

When I was in college, especially if you look at electrical and computer-type engineering, the percentages of women in those areas of engineering will be lower than the percentage of women in chemical engineering or industrial engineering and so I think about this in terms of when I was in school was the same time that the guy who came up with Facebook [Zuckerberg] was in school…So then they made a movie about when he was at Harvard. Now I wasn't at Harvard, but the time that he was in school studying

engineering and going to like physics class was the same time I was in school doing those core requirements. And in that movie there's a ton of women in those classes. And I'm like, no, that was not my experience. (Ann, Interview 1)

Katherine, Lakshmi, and Carol all discussed Sheryl Sandberg's 'Lean In' concept:

Sheryl believes that if you just think you want to do it differently, you can just poof, lean in and do it differently. That's just not my experience. My experience is that sometimes women need help in terms of whether it's a barrier that stands in their way, externally or internally…And she [Sandberg] had children. On the other hand, did she have a nanny? There is a little bit of a special life, it's not as real of a life as most women have. But still, closer. Progress. On the other hand, we don't think badly of a male executive who happens to have a nanny for his kids. So there is a little bit of double standard. (Katherine, Interview 2)

And Sheryl Sandberg came out with that book. And many women are coming out with books. And there is a lot more talk now about what are we doing and why are we working. Which is good. I think we have a ways to go still. (Lakshmi, Interview 2)

I have to go along with Sheryl Sandberg on this one…you can't expect to do everything yourself. And I think that we still are doing that to young women. (Carol, Interview 1)

Susan felt that media in general has had an impact:

There is certainly a focus now where businesses are pressured by media and by women's groups and by men who want to support women in the workplace. I think there is a big push right now and it's become a focal point. (Susan, Interview 2)

Theme 1: Organizational and Societal Norms. Sub-theme 4: Stereotypes (Societal). Stereotypes included women's experiences and feelings on societal norms that impact/influence stereotypes of women in society. Stereotypes included how women look, act, dress, and behave.

Susan, Ann, and Sue Ellen all discussed such stereotypes:

All of the younger women have decided that they can look feminine and it's okay. We know that we're good enough, smart enough that we can still look feminine and play the part… But I go around the room and it's everyone like thirty and under wear CEO-type dressing that you would think about for women. And above that it's mostly jeans and stuff. I'm sure some of it is that they needed to fit in. Being feminine was not helpful. I think that now it is more accepted. (Susan, Interview 1)

I don't want to be perceived as boring or dull because I'm an engineer. I think people have perceptions about engineers as being boring and dull and square…There's more to

me than just numbers and math and equations and so I don't want to be perceived as only those things. (Ann, Interview 1)

… being a woman I had to adjust my style. I really do think that's still true. Maybe not so much with the younger guys. But I think a really smart woman is very intimidating to people. (Sue Ellen, Interview 2)

I feel like you're singled out because you're a woman but oh, you might be difficult to work. Or you might value your home life. (Susan, Interview 1)

Theme 1: Organizational and Societal Norms. Sub-theme 5: Cultures

(Organizational). Cultures included women's experiences and feelings on organizational norms regarding organizational cultures that impact women in organizations.

Susan and Carol both felt the impact of culture:

It just has to do with how culturally aware the company is, I'm sure you can find some corporations that are the most progressive that are still sort of backwards with how they value women. (Susan, Interview 1)

I think it's forced me to be more competent and more forceful with my ideas and opinions. And I have to be very straightforward otherwise you're just not heard. You're not taken quite as seriously. I think you do have to have a higher level consciousness for how you look and what you're saying and how you respond in certain situations. I think in those ways it's certainly, I've had to pause and think about in my career. And say, okay, how do I handle this situation without coming off as catty or really difficult. (Susan, Interview 2)

Okay so probably I have less confidence than if I were a man. I think that's just cultural. So that has implications everywhere. (Carol, Interview 2)

Katherine, Angela, Jan, and Quinn all discussed organizational structures impacting culture: Katherine felt that pigeonholing exists and Angela, Quinn, and Jan felt that women work in certain occupations.

Women's role in organizations, I think there is a still a lot of pigeonholing or assumptions about which roles in organizations women can do or not do. As I look across all the fields I work in, the number of women in equality, legal, HR, marketing, huge. Engineering, product supply, not so many. I think there is, they're calling it now unconscious bias, I think there is still and I believe, for the good organizations, I do believe it's unconscious. I don't think they're trying to do it that way but I think they just, okay, it's a coin flip between him and her. Okay, we'll pick him. Or there is a piece of, well, but if we give her this job, we know she values being home with her kids by five and we just don't know

how she'll be able to that so we won't even put her in that awkward position. There is still protectionism going on. And opposed to saying, let's go talk to her about what needs to be done on the job and let her decide as the fully formed adult that she is. They wouldn't make the same comments about men. So I still think there is some unconscious bias in organizations. (Katherine, Interview 2)

I think you have the stereotypes of usually women's roles in organizations are more in HR and accounting and finance areas. My thoughts are evolving on this as I have more and more experience in organizations… I don't think that a woman has to have the same; I think men might be better at certain jobs than women. And I think women are better at certain jobs than men. I don't think that you should be forced to take a woman into a type of job that a man really is a better person for because they are more muscular than we are. [Laughter] And they do have different traits about them in general…I used to be where I thought I'm a woman and I can do anything just as good as a man. That's how I was raised and that's how I thought. And then I've come to appreciate that there are things that I think I can do better than men and I think there are things that men can do better than me. I think a company needs to put their assets to work where they bring the most value. There may be exceptions where a girl is different and she may, I don't think she should be excluded from that opportunity but, in general, I'm not as bothered by the fact that most of our guys that work on the power plants that are out there, most of them are men. I don't look at that and go, ugh, we're discriminating. (Angela, Interview 2)

…there is a tremendous amount of women that are staff, and associates, assistants, in the industry itself, just not necessarily as the advisor. (Quinn, Interview 1)

… I still feel like obviously women in the work place have been traditionally secretaries, receptionists, more on the admin side or just human resources.…there is still some of that stigma, I think, just because that is, I feel like traditionally that's where women started in the workplace. Is to assist instead of lead. … watching some of the women in our offices, they do take more of the administrative role even though their equal male counterpart doesn't necessarily do the same amount of administrative work. (Jan, Interview 2)

Sue Ellen felt that women need to behave a certain way in order to advance through existing structures:

Some of the women that have made it, in my experience, have been the ones that have been a little bit more tough…Tough and I think you have to be. You actually had to be tough, probably, to get up through. (Sue Ellen, Interview 2)

Quinn felt that the systems in place for advancement are male-dominated; Carol described an emerging women's profession, and Angela felt that awareness is being raised about advancement systems:

…there are so many more men on Boards, that are executives, that are at very high-level positions in organizations. So part of it is probably people opting out so just the pool of resources for those levels and types of positions is probably male-dominated. And the level, hours of commitment may be such that more men are willing to put in those hours than females. …there are good reasons for that. But I do think there is a lot of room for growth of women in higher-level positions of leadership in organizations. (Quinn, Interview 2)

One of the things that has happened in engineering, we have this, for lack of a better word, a pink collar profession which is program management. A lot of women are going to that and I think it's less; it's more of a woman-type field. Accepted. It's organization, it's planning, it is all these things we learn from our mothers. Make sure when the kids come home from school they have a snack, make sure you go grocery shopping. There are a lot of those skills and I don't know if it's inherent, if women are just inherently better at it. I tend to doubt it but I think that what's happened is that a lot of women engineers are much more comfortable in a position like that because they're accepted a lot more in a position like that rather than regular hard-core engineering. If you look at program management in companies, which is not a low level job, but there is a much larger percentage of women than in regular engineering fields and many women are going into that. (Carol, Interview 2)

I think it's [women's career development] still lagging what just naturally happens with men. But I think the awareness has been raised, maybe, in a lot of corporations. So I think that the onus is on both the company to be aware of it and provide opportunities for women but also on women themselves. Not to just be meek and mild but to seek out their own paths and their own opportunities to advance their career. (Angela, Interview 2)

Theme 1: Organizational and Societal Norms. Sub-theme 6: Unequal Values (Organizational). Unequal Values included women's experiences and feelings on organizational norms that impact/influence how women are valued in organizations.

Susan feels that women are not always valued:

Women's roles in workplaces. I think there is potential. I think that, in general, women have different skill sets, we have different ways of approaching problem solving, we have different value systems. I think society has built up fifty percent men and fifty percent women but I think you need that viewpoint in your organization to really be successful and to continue to be successful in order to navigate the future. (Susan, Interview 2)

Clara and Katherine feel women need to be better represented:

I think it's very important for women to be in leadership positions in corporations. ... It's because we bring different perspectives, we think differently and, for example, why should men be the ones that are making decisions about women's clothing. Or about any kind of women's products. Women should have a voice in that…Why should people be

making decisions like that because if they're not thinking about entire, fifty percent of the population, in their product decisions. A Palm Pilot, the original PDA, it was designed to fit in a men's breast pocket. We don't have that kind of clothing. ...The Windstar moms? ...The Windstar moms put features into that vehicle that they wanted. For example, the previous sliding passenger door was on the passenger side. Now it's on both sides because guess what? The mom gets out of her door and she wants behind her the groceries and the kid. But the first vans only had a sliding door on one side. And the camera that allows you to see when you back up and the beeping noise when you back up and cup holders for everybody, not just the driver. …One of my favorite examples, the lavaliere microphone which is designed to fit on the tie. I don't have a tie. And many women I have seen present have to hold the whole damn thing in their hands because there is no place to affix it anywhere on their clothing. (Clara, Interview 2)

So that's the other thing that I'm hoping changes over the next twenty years. I'm hoping that we see more women better spread, more representative, higher up in the organization. (Katherine, Interview 2)

Angela and Clara felt that unequal values exist for women:

To me, you have to have a little more than what the average guy has to stand out. The spotlight is on you when you're in man's world and every little thing…like a guy can do something a little wrong and they'll give him a pass but if a girl does something a little wrong that's stuck with her for life and she's branded. You have to do more and prove yourself constantly that you're deserving and equal. (Angela, Interview 1)

…women only have to work twice as hard in order to be regarded as good as the men. (Clara, Interview 2)

When women ask [for higher salary] then they're actually negatively reviewed. That's not looked upon as positive. If they don't ask at all they don't get it. And if they ask then it's inappropriate behavior so we're now back in [a no-win situation]. There are many of these no-win situations. (Clara, Interview 2)

Theme 2: Work Life Balance

Work Life Balance encompasses women's feelings on balance and their experiences making tough choices, experiences when conflict arises between roles, and the support their family provides. See Figure 4.3 for the visual representation of this theme. Work Life Balance is related to Organizational and Societal Norms through the perceptions and expectations women have of themselves due to prevailing norms. This is evidenced through their feelings that they have to make choices and that conflict among

roles exists. Women's feelings on Success, Theme 6, are impacted by how they feel in the area of Work Life Balance. Measures of success such as relationships with spouses and children, healthy lifestyles, and number of hours women work are all related to work life balance. Occupational Choice, Theme 5, is also impacted by Work Life Balance as women make choices about staying or leaving their occupation due to issues related to balance.

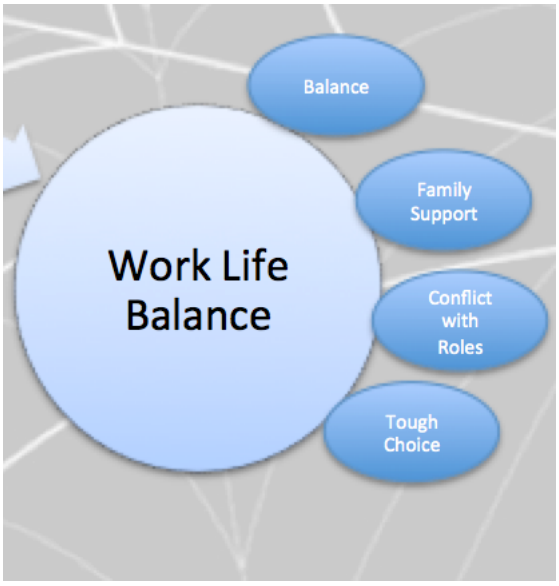


Figure 4.3 Visual Representation of Work Life Balance Theme

Theme 2: Work Life Balance. Sub-theme 1: Balance. Balance included women's experiences and feelings on balance as influencing their overall feelings on work life balance.

Katherine feels there is no such thing as balance:

The first thing I'm going to say is there is no such thing as balance. Nature abhors it, there is no such thing as homeostasis where it all stays the same all the time. What you have for balance are fleeting moments where it's all balanced. What I would say is, then two, I don't want you to think that there isn't a satisfaction with how much time you spend at work versus at home. But there may not be balance. I believe it's about choices and juggling. It takes a lot of work. …But the reason I say there is no balance is because on any given day when the school calls and your kid is sick and has to be picked up by you or on any day when you have vacation planned and your boss comes in and says no,

the VP is coming here on tour, you have to change your vacation which happened to me. You're out of balance. I see too many, especially women, I don't see this with men, I see women beating themselves up because they can't achieve this nirvana called balance. I don't think it's healthy. I think it's worth saying no, what do you want to do, what are the boundaries you put in place? Usually on work so that you can have the personal life that you want. (Katherine, Interview 1)

Jan, Katherine, and Clara all discussed making decisions about balance:

Honestly, when I first started working full-time…a little more driven and serious, and spent way more time than I probably needed to be in the office. And so I think over the years I've learned that it's only just a job. And that balance is very important to keeping yourself sustained. (Jan, Interview 1)

I will always tell young people, look, work will ask for everything you're willing to give and then up it by twenty-five percent. You can never rely on work to set boundaries for itself. It can't. Because its goal is to make money. As much productivity, as much profit for as little expense as possible. If they can get you, for the same salary, to work eleven hours a day instead of ten they're celebrating. You have to be the one that say, no, this is what I'm willing to do. (Katherine, Interview 1)

In the early years I think I did have, I don't have a bad balance now. It's really so defined individually. There are people who look at me right now…and say you must not sleep. And I tell them, each of us sets our priorities. And we make time for the things that are important to us. You know, and so, other people might look at me and say I don't have it. But I'm not unhappy. In fact, I'm probably at the happiest I might be in my whole life right now. (Clara, Interview 2)

Theme 2: Work Life Balance. Sub-theme 2: Family Support. Family Support included women's experiences and feelings on the support their spouses or other family members provided.

Carol, Quinn, Angela, Susan, and Katherine all talked positively about the support they have been given:

I was very lucky…And we [my husband and I] always had a 50/50 arrangement. Right down to he cooked every other night and I cooked every other night. Because we weren't compatible in the kitchen [laughter]. (Carol, Interview 1)

He [my husband] is unbelievably supportive of me and my career goals…I think having a supportive significant other is completely integral in someone's success. I'm a firm believer that even if someone is individually successful, they have a team of support around them and that you can't be as success without that. (Quinn, Interview 1)

I do have to say that I could not have done what I've done with my career and my children without having a husband who was an equal partner in sharing responsibilities for the family. (Angela, Interview 1)

I don't think I could be where I am without him [my husband] being as supportive as he was. (Susan, Interview 1)

I had a lot of women who were jealous and who were like, do you know what I spend on daycare? It's your choice. We made different choices. And there were some male colleagues who believed I had emasculated my husband in order to get him to stay home. I think there were more ramifications for him in that some people were like did you make him stay home and it's like, no, it's a family decision. Complicated. I think less complicated now. Now that our sons, we're kind of empty nesters and he's deciding what he's going to do next. It's fascinating because it's not a whole lot different than a mom who had stayed home for twenty years. If I had stayed home it would be the same thing. Trying to re-enter, trying to say, oh my god, my skills are twenty years out of date. Now what do I do? (Katherine, Interview 1)

Theme 2: Work Life Balance. Sub-theme 3: Conflict with Roles. Conflict with Roles included women's experiences and feelings on the roles they have at work, the roles they have at home, and the conflict they often feel and see between these roles.

Sue Ellen, Katherine, and Quinn discussed the exodus of women from their jobs after working for ten to fifteen years:

I'm on call…And depending on what it is you've got to get up in the middle of the night and go to the plant. And that is really hard to do once you start having children. And I have friends that started out with me and basically it was the call that got them to change careers. A lot of them just left. Some of them just left automation and got into being a manager. A manager's job is a little better from that point of view. You have to work a lot but you can at least take it home. But my one friend she went into accounting because she just didn't feel like she could keep up. She worked, she had a commute to her plant and there is no way she could get up in the middle of the night to leave her kids. And you know, you have to have a husband with a really flexible job otherwise you need someone else to be there. (Sue Ellen, Interview 1)

I see them start to diverge into other areas. Whether they go into HR, there is a lot of companies that hire degreed engineers and put them in HR…I think that after about ten years may correspond with the age thirty to thirty-five, they also either start having family and believe they have to take a back seat. (Katherine, Interview 1)

I think that a lot of women are highly educated and then chose not to work. And I don't know why. But I struggle with why I see that all the time. And maybe companies are starting to figure that out, how to incorporate that. But I think that there should be more

resources. …There has got to be a middle ground where everyone wins. I don't know what the answer is but I think there is room for development. (Quinn, Interview 2)

Sue Ellen witnessed this conflict during a layoff:

It was really interesting because, I bet you, eighty percent of the women that were flexing got laid off. I think managers looked at them and said they're not committed. They're not committed to their jobs. (Sue Ellen, Interview 2)

Quinn and Clara have made occupational choices that help deal with conflict:

…I'm fortunate that I can kind of make my own hours. So I feel like I've spent a lot of years building a practice that you can build in flexibilities once you have kids. So, again, I think career choices along the way; it's been really a driver for me in the background to know that you could have a career where it's a little bit more flexible than suddenly there is a mandatory, you're in the office eight to ten hours a day, Monday through Friday. So it is somewhat of a calculated career choice as well as a woman. …it's kind of scary out there, scary to figure out how to make it all work… (Quinn, Interview 2)

That's how many of us deal with the issues. Instead of continuing to be in 'Corporate America,' however you want to define that, you go out on your own, you control your own destiny, you set your own hours, you work as hard or as little as you want and your efforts, you get the rewards that are commensurate with your efforts. (Clara, Interview 2)

Carol feels men can be more involved to alleviate some conflict:

We still talk about men helping out rather than, wait a minute, it's just as much theirs as it is ours. (Carol, Interview 2)

We have not yet gotten men involved as much as we need to. So everything depends, of course, on having a supportive spouse if you're going to have a family. Otherwise work-life balance is the same whether you're a woman or a man. Its just men have been able to have helpmates at home who do all the work or a lot of the work. (Carol, Interview 1)

Theme 2: Work Life Balance. Sub-theme 4: Tough Choices. Tough Choices included women's experiences and feelings on the difficult choices they feel they've had to make when faced with work life balance issues.

Sue Ellen, Angela, and Carol shared the tough choices they had to make:

I feel like I traded having family for these really intense work experiences that I have. They were all really positive for me and they are things I did that I'm proud of. But probably if I was going to do it over I should have slowed down in my early thirties and found somebody and had some kids. (Sue Ellen, Interview 1)

I felt like it [leaving consulting] was a compromise. I felt like I was, and I will say to this day, I love the work. I love the pace of the work, I love the type of work, I loved helping people. It is a hundred percent fit for my type of personality and what I like to do. But I hated that lifestyle. So you have to make choices and make compromises. I feel like my career, although some would look at it and be like wow, you're very successful and you've done really well, but I know in my heart I could have done more. And I still think I can do more. So I feel like I've held myself back a little bit just so I could have the lifestyle. I don't have as much satisfaction from my work as I could but I also have way more satisfaction in my work-life balance than I would otherwise. (Angela, Interview 2)

…the decision to have only one child definitely was impacted because I wanted a career and he wanted a career. So I think it's a lot harder for people that have more children. There is no question. You know with one kid, when he got sick and my husband and I would be on the phone with each other…what's your schedule look like…what's your schedule look like? And then whoever had it easiest to take off work and go pick up the kid at the daycare was how we did it. So I was very fortunate. I did not have a spouse who thought I should do all the work, and I didn't. (Carol, Interview 1)

Susan, Quinn, and Jan speculate on the tough choices they may face. When discussing whether or not having children would impact their career they said it would be unavoidable, changes would be massive, and life would be different.

I think it's sort of unavoidable [impact to career]. …I can't be a CEO and full-time stay at home mom unless I'm CEO of my house. It's a little scary just because it's unknown. I don't know exactly what it feels like to have children and, I mean, it's possible it could completely 180 change my values or my priorities…I suspect that it'll be okay. That I'll still be able to achieve. And maybe I'll have to readjust my bar or my priorities later. That'll be okay. I've had to do it a lot of times already. (Susan, Interview 2)

I know it'll bring massive changes and it'll be really hard to plan but it's hard to exactly know what those changes are. …I don't think it's a negative thing, I just don't know exactly how it's going to impact. (Quinn, Interview 2)

Working as a consultant I do a lot of traveling and I don't think I would have accepted as many projects as I did if I had more responsibilities to stay at home. So I definitely think it would have impacted how my career has gone. And I definitely wouldn't have been traveling as much. Where, for me, most of my valuable work experience has come from, has been, from projects that require travel. It would have impacted what I was doing and maybe even how my career has gone so far. … I was fortunate enough that I just wasn't in that situation where I had to choose family over career. …I think that would be very difficult decision to make especially early on in the career when you're trying to gain as much experience and exposure to the industry as much as possible. (Jan, Interview 2)

Sue Ellen didn't always feel as though her experiences were actual choices:

I never really thought I wouldn't get married and have kids. …I never had that drive. It's an important part of a woman's life and I didn't experience that so I do have some regrets with that. But when I was thirty I had a friend who was ten or fifteen years older than me who never had any kids. She told me there are going to be these times when you're going to have that regret and then there is going to be times when you're going to be glad that you're not dealing with it. It works both ways. I don't feel that was a choice. It was definitely not a conscious choice. (Sue Ellen, Interview 1)

Katherine, Clara, Angela, and Sue Ellen talk about some of the factors impacting tough choices:

There is a lot of assumptions with women engineers about what I'm going to be 'allowed' to do instead of saying, no, this is how I want my life to work and then making the request of work and then finding out what work environment supports your life instead of how does your life fit in with work. Does that make sense? I really don't want to give you the impression that I lay it all at the feet of women having children. That's what major corporations want to do. They want to blame, oh, it's just her choice to have kids. And it's like, no, that's crap too. (Katherine, Interview 1)

…for those times when women have taken maternity leave which they are permitted to take, then that's a negative influence on their career even though if one of their colleagues has a heart attack or some kind of illness, then everybody pitches in to take care of Joe's work while Joe is gone. But why should we help Mary when she's having a baby because she chose to do that. (Clara, Interview 2)

And so you have no time to yourself. It's just long hours. You're away from home, away from your family. I didn't even like that before I had kids. I just found that that was all consuming and I could only do it for a little while before I realized that that just wasn't for me. (Angela, Interview 1)

Some of these younger women, they've got two kids and they're just thirty-five and in the prime of their lives. It's really awesome. They're just in meetings just telling everybody how it is. …There is no male/female stuff going on like when I first started out. It's really great to see. I think we're over the hump to a certain point but then those are the same women that, if I got online right now, I'd see them at nine o'clock show up online. They put their kids to bed and then are working two or three hours every night at home. That's what they may want to do because they want to do a good job. And that's what it takes these days. (Sue Ellen, Interview 2)

Everybody is working all these hours. …It's not just the company I work for. I look around at my friends and they talk about their work hours and what's going on and it's just out of control. …for a man it seems like his wife maybe gives him a little, he gets a little bit more of the support. And that's his expected role, right? That's he going to work overtime. But it's got to be really hard for a mother. I think that's why you start losing people so I don't know what they can do about that. (Sue Ellen, Interview 2)

Theme 3: Women's Experiences at Work

Women's Experiences at Work encompass the social capital they rely upon at work and the discrimination they face. See Figure 4.4 for the visual representation of this theme. Organizational and Societal Norms are related to Women's Experiences at Work. How women perceive and make meaning of the discrimination they experience, the social capital they have sought, and their experiences overall are evidence of the influence of norms. Women's Experiences at Work relate to other themes. Women's Career Progression, Theme 4, is impacted by their experiences at work. Both their present work experiences and their perceptions of future work experiences impact how they learn about career paths, how they come to decisions on climbing the career ladder, and how they feel about their progression. Work Life Balance, Theme 2, is also related to Women's Experiences at Work as women are forced to make choices regarding balance based on their current work experiences.

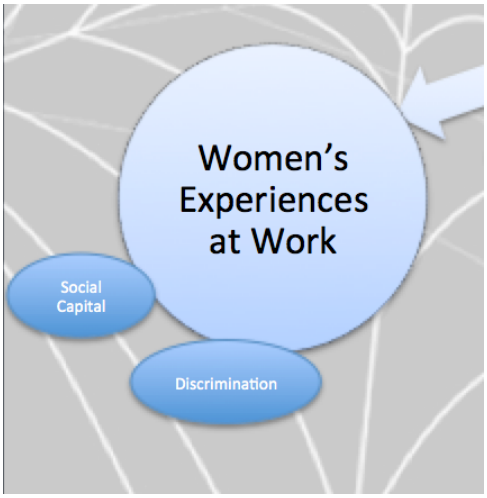


Figure 4.4 Visual Representation of Women's Experiences at Work Theme

Theme 3: Women's Experiences at Work. Sub-theme 1: Discrimination.

Discrimination included women's experiences and feelings on the discrimination they've experienced throughout their careers and the shift from overt to covert discrimination over time. Discrimination also included women's experiences and feelings on being the only women in their organizations or offices. This was viewed in both a positive and negative manner.

Katherine, Susan, Carol, and Lakshmi shared stories of discrimination:

…this would have been early 80s, the store room had Kotex pads on the shelf. And the label on the shelf said manhole covers. So, yeah, it seems appalling now but some of that stuff still goes on. (Katherine, Interview 1)

Then I felt like I was sort of stagnating there. Especially as a woman. It was never really anything overt that happened, it was just that you could see the male new grads had more responsibilities than I had after four or five years there. You could just tell that there is definitely the sense that the women can't handle this extra stress and all these responsibilities. (Susan, Interview 1)

Not being heard in a meeting, being kind of ignored. I think people don't hear you. Nobody means to be mean and nobody means to look down on you. But it's one of those things where you say something, you throw out an idea and then fifteen minutes later somebody else throws out the same idea and they get heard. It's still happening I'm sorry to say. It was happening in the 70s, early 80s when I got out and it's still happening. (Carol, Interview 1)

At the second company, leaving there because I felt like I was underhandedly, not overtly discriminated against, but discriminated against because of being a woman. (Susan, Interview 1)

…it's just little things. Where you're just, you don't notice it. But then they pile up, I think. So the unfortunate things where the term career comes up. Well, what happened to my career? You look back and think my god, I just became a statistic that all the women have written about and talked about. [Laughter] God, how did that happen? (Lakshmi, Interview 1)

Clara and Carol both discussed overt versus covert discrimination:

And I know you've seen the research that says that whereas when my aunt graduated in Math in 1955 and no one would hire her because the ads actually said single white males apply. So that the discrimination was overt. Now it's just gotten stealth or covert. Or whatever word you want to use. And maybe it's not even conscious. I think in some ways

it's not even conscious. I think in some ways it is. But in some ways it isn't. (Clara, Interview 1)

So they've got a harder job now because when I was younger, everything was much more out in the open. When I was in graduate school there was a colleague of mine that actually said I won't hire a woman because she's just going to get pregnant. So in those days it was way out in the open. But in some ways it's easier. You can deal with that. But when it's subtle…People are careful about what they're saying. It's much harder to address. So in some ways they have a harder time now. (Carol, Interview 2)

Katherine, Clara, and Sue Ellen all experienced being among the first women to do something at school or work. Katherine discussed this as it related to her choice of engineering and Sue Ellen as it related to advancing within her occupation.

I was only the third woman manager they had ever had. And they never had a woman technician. (Katherine, Interview 1)

Fall of 1972 was the third year that women were admitted as undergraduate students to the university. …I transferred [majors] and I didn't know there weren't women in engineering. …So I didn't expect there to be women professors, I didn't expect to be other women students, I didn't know. (Clara, Interview 1)

There was a real pragmatic part to choosing engineering as well as a calculation of okay, there had been enough women engineer that I don't have to plow the road but I understand that there will probably be some discrimination and some difficulties yet also perhaps some advantages because I am a woman engineer. (Katherine, Interview 1)

When I was interviewing for the only manager job I ever took, I got interviewed by some pretty high-level suit guys. … they asked me the question of where I saw myself in twenty years. That really stumped me. I answered it honestly. I said, you know, that's a hard one for me because if you think about it there is plenty of old grey-headed men in control rooms and out in plants. But there are no grey-headed women. I was not even forty yet when I answered that question. So, for me, that was almost shocking to think about. I couldn't think of an old lady that came to work everyday and did technical engineering stuff. Tons of old men doing it that retire and come back. But there is really no role model. And even now I'm probably the role model for people. I'm fifty-five. There are seventy-year-old guys at work. There are no seventy-year-old ladies at work. I'm breaking that mold. (Sue Ellen, Interview 2)

Clara believes that in order to negotiate these norms women need to have rhino skin and learn to value one another:

One of my friends, she calls being a woman engineer having to have rhino skin. Not even thick skin but rhino skin to be able to have, the stupid stuff that people say and stupid stuff that people do, that it can just run off. You can just let it go. (Clara, Interview 1)

We have to learn how to support other women. We, women, have to learn how to value women because until we do that the men aren't going to. (Clara, Interview 2)

Jan, Angela, and Clara described sticking out or being isolated as a discriminating factor in a negative way:

...while it could be good to be a female, it can have some downsides because a lot of times I am the only female in the room. Most of the time doesn't make a difference but in certain situations you can kind of feel a little bit isolated or left out. (Jan, Interview 1)

You don't fit in, just because of your gender, to the way business was done before there were a lot of women in the workforce. That's where you have to decide, as a woman, you have to pick your battles. Are you going to make a stink about everything that happens or are you going to try to encourage slow change. (Angela, Interview 2)

And that is sticking out, being the only. Being different. Not being necessarily respected because you're a woman. Or that you have the right skills or the right knowledge. (Clara, Interview 1)

Jan, Katherine, Ann, Quinn, and Sue Ellen described standing out as a discriminating factor in a positive or neutral way:

I guess the one thing that I like about being a woman in an engineering field that that you are one of the few females in the industry and it's kind of nice, a lot of people are like 'oh, wow'. You kind of stand out a little bit more in terms of who you are and what you do, for example. (Jan, Interview 1)

And when you're good you stand out a lot. And I think then that makes you more visible for promotions, for special projects, for things like that because you stand out. You're not part of the crowd. You bring a different perspective to things. I think it's made a difference in a predominantly male-oriented field both on the positive and on the negative. (Katherine, Interview 2)

I think if anything it's created more opportunities for me. Because there are fewer women so if any company is looking to have people involved, of a diverse gender, if there are fewer women in the pool there is more opportunity for the fewer women in the pool to participate in things. So, if anything, more opportunities because of reduced numbers compared to men. (Ann, Interview 1)

I think my managing directors and managing partners have taken extra care of me because there are no females. (Quinn, Interview 1)

Like part of it is part of nice to be novel, part of it is weird to be the only person of that variety. …I don't know if I would say it's that I like that I don't like about being a woman in engineering but it's something that's very, it's defining about being a woman in engineering is that there are not many of us. (Ann, Interview 1)

Sue Ellen and Ann have both discussed non-discriminatory experiences:

The last fifteen years I've worked for a company where I don't feel that anyone notices that I'm a woman. (Sue Ellen, Interview 1)

I know that here at the office, I know clearly that I make the same money as my male counterpart who got promoted at the same time as me. We make, dollar for dollar, the same amount of money. (Ann, Interview 1)

Finally, Clara discussed her feelings on these issues over the course of her life:

You know I'm sixty years old and these are all of the things we were talking about when I was twenty-one and I graduated. It's now forty years later almost and we're still talking about all of these things. (Clara, Interview 1)

Theme 3: Women's Experiences at Work. Sub-theme 2: Social Capital. Social Capital included women's experiences and feelings on the relationships they've built at work and how these relationships have supported and been critical to their career development.

Ann and Carol felt a sense of unity and camaraderie among women at work:

…there are very few women in engineering and there are all these guys, when you are in a group that is a minority there is a sense of unity in the minority. (Ann, Interview 1)

I think that when I met other women engineers I think we have had a certain camaraderie and it was, I guess I would say that in general, we want to support each other. (Carol, Interview 1)

Ann, Angela, and Carol all felt mentoring was an important component to social capital and women's experiences at work:

Mentoring, not necessarily through formal programs, informal as well is a big component to career success for engineers and anyone. (Ann, Interview 1)

So I was lucky enough, and I think this is critical for women, to get somebody as your advocate in the company. …In my industry in particular, it's very male-dominated and

I'm in the South and my type of company…they are not as progressive. So even having a woman have a job, a career, is a little foreign to some of these businesses. It was imperative that I had an advocate looking out for me and creating opportunities for me. (Angela, Interview 1)

And I think it's still true that the most successful women have good mentors. I think in general a lot of the, especially technical women, have had some kind of good mentoring. Maybe it's their advisor and it's probably because we're having a little bit harder time understanding the culture of the workplace. (Carol, Interview 2)

Clara and Ann both felt women's professional organizations are an important component to social capital and women's experiences at work:

The experiences I've had through the [women's organization]… have been critical to my career development... A lot of the skills that I needed in my career I got in [women's organization]. (Clara, Interview 2)

And so I'm grateful to those organizations, and I don't know that other career paths where women are, there aren't many, if they have similar programs that help them get that done because I think that it was really special, those things for me, and valuable. (Ann, Interview 1)

Theme 4: Career Progression

Career Progression encompasses women's self-selection throughout their careers and the gendered nature of their experiences. See Figure 4.5 for the visual representation of this theme. Organizational and Societal Norms are related to women's Career Progression. How women perceive their career paths and overall progression is evidence of the influence of norms. How they come to know these things also supports the impact of norms. Career Progression relates to other themes. How women think and feel about their Success, Theme 6, is related to how they think and feel about their progression. Work Life Balance, Theme 2, is also related to women's career progression as women are forced to make choices regarding balance based on their own career progression.

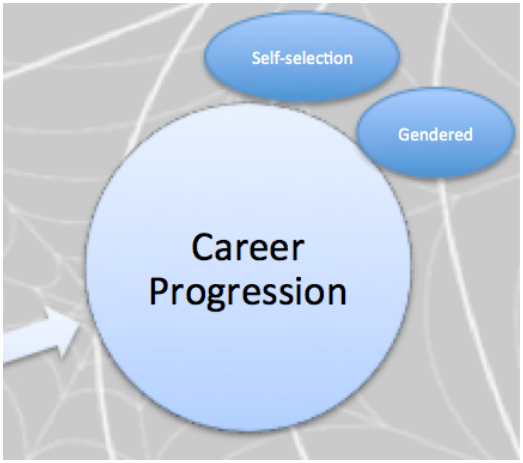


Figure 4.5 Visual Representation of Career Progression Theme

Theme 4: Career Progression. Sub-theme 1: Self-Selection. Self-Selection included women's experiences and feelings on career choices, career path, and climbing the career ladder.

Carol, Sue Ellen and Clara discussed climbing the ladder and whether or not their career path was a straight line:

…career path was not my goal. I was committed to my job and committed to my career and I expected rewards for what I did but I just didn't think about, oh, if I do this I'll get promoted. I didn't even think about changing the levels of engineer. It just happened. (Carol, Interview 1)

I feel like I've had a pretty rewarding career. And even though I never climbed up the corporate ladder very high there is a lot to say about job satisfaction. (Sue Ellen, Interview 1)

That straight line was my model. So I was going to go to work for [company] or whomever and I was going to spend my entire career in the electric utility industry. And I was going to retire. That's nothing like what has happened. But that's what I saw. (Clara, Interview 1)

I try to tell people that I work with that nothing is ever really a straight line. Sometimes you make a move and it's not necessarily good but it sets you up for your next move, right? (Sue Ellen, Interview 1)

Susan, Angela, and Clara felt luck impacted their self-selection:

I wouldn't say anyone was particularly guiding me. I did, it was sort of a serendipitous moment…it was a little bit of good timing. Just the right opportunity came along. (Susan, Interview 1)

It was serendipity. They had an opening and it was a fit for me…I think I feel fortunate. I think that a lot of it is luck. (Angela, Interview 1)

I believe that my career has been a series of taking advantage of opportunities. (Clara, Interview 2)

Sue Ellen felt that it wasn't a choice:

I'm not sure how much I've really chosen. You kind of get off the ride from college and then you get on the ride that's work…My best description of how I made it to [state], that happened so fast. Was that a choice? I don't know, like a whirlwind of reactions, it's like a reaction more than a choice. (Sue Ellen, Interview 1)

Carol, Ann, and Jan discussed concerns about climbing the ladder:

Higher-level managers are more ambitious so they're looking for ways to advance in their careers. I was more interested in solving the problems. (Carol, Interview 2)

…the people who were progressing up that career chain, they were incredibly hard workers but they also were sacrificing a lot from their personal life it appeared. And, I didn't love that. (Ann, Interview 1)

…as you get more involved in more complex projects they become more time consuming. And as I watch my boss's boss's boss, their time is definitely absorbed in work and so I don't see that there is a balance. And if you did, you'd have to limit how much you're doing and how much you could offer the organization. (Jan, Interview 2)

Finally, Ann, Lakshmi, Angela, Quinn, and Sue Ellen mentioned their thoughts on future career choices, lack of predictable career path, and lack of awareness regarding possible choices:

I've reached a spot that I could stay at for the rest of my career, but is that what I do? Or do I do something else? And what would I do if something else? I don't know and there are options available, yes, but do I want to explore those? I'm not sure. Lots of unknowns so it was nice when I had the career progression laid out for me, it was clear. You do this and that will happen. And this and that will happen. So I made it through all of that and now I'm to a stage where it's like, okay, well you can keep on doing what you're doing or you can do something else. Up to you. (Ann, Interview 1)

I've been thinking about, I just don't know what's out there still. So if there was a distant career choice or options I don't even know about them. So I think that's kind of effected me… (Lakshmi, Interview 1)

I think in college one of the downsides of the engineer field is you get out of an engineering program and you have, you know about thermodynamics and quantum physics but you know nothing about the career world. And you don't have any time to take any other classes for it. So I do wish I had the foresight to know more about what type of careers existed in the world. (Quinn, Interview 1)

So I think it's [my career] progressed really well. I'm forty-six years old, I'm a CFO of a pretty large electric utility, but what I struggle with is so the only move for me here is to go from where I am to the CEO. (Angela, Interview 1)

At the end of December I'm getting a very nice severance package, and then, I mean, I could get another job right? Go work for another large corporation or even a consulting company where they would pay me a salary and I wouldn't have to worry about finding work. But I'm hoping to not do that because I want to be able to pick and chose where I work and what I do, and I want to be able to take large amounts of time off. I want to be able maybe I do a start-up and work seven days a week for six months. But then I want to be able to not work for six months after that. (Sue Ellen, Interview 1)

Theme 4: Career Progression. Sub-theme 2: Gendered. Gendered included women's experiences and feelings on the gendered nature of their career progression.

Clara talked about the gendered nature of career paths:

So I draw a picture when I answer this kind of question. [Holds up a finger in a straight line] That's a male career path. Just draw a straight line. And then just start two inches to the left of it and draw a squiggly line and cross it a couple times and go up and around and about. That is a female career path. Sometimes it's a lateral transfer, sometimes it's an upward promotion, and sometimes it's a different field of work. I don't think it's at all like a male career path. (Clara, Interview 1)

Susan and Katherine talk about the progress organizations have made:

…I think we've come a long way. They [older generations at work] have some pretty good horror stories about how they were treated and the way they managed or navigated the workplace. I think we're doing much better…But at the same time there are still plenty of paradigms that we need to shift or turn around that people have this conflict about women in workplaces. (Susan, Interview 2)

So I like to say some organizations have gotten an A for effort and a D in the class. It's not enough. Some organizations where they have made a concerted effort to move women up. There are other organizations where they're still behaving abysmally. (Katherine, Interview 2)

Theme 5: Occupational Choice

Occupational Choice encompasses problem solving, financial, family, self-efficacy, and social approval. See Figure 4.6 for the visual representation of this theme. Organizational and Societal Norms are related to Occupational Choice. Women's choices regarding the engineering occupation and why they made those choices supports the connection to norms. Occupational choice relates to other themes. The self-selection aspect of women's Career Progression, Theme 4, is related to their choice of occupations. Women's Experiences at Work, Theme 3, also impact their occupational choice.

Figure 4.6 Visual Representation of Occupational Choice Theme

Theme 5: Occupational Choice. Sub-theme 1: Problem Solving. Problem Solving included women's experiences and feelings on their choice of engineering due to problem solving interests or abilities and as a tool to use in every day.

Ann, Clara, and Angela discussed engineering for problem-solving:

The process of going through school for engineering teaches you how to think and how to problem solve and how to approach situations and those skills apply to all kinds of things in everyday life. You don't necessarily know the solution to a problem, but am confident

that I have a skill set that will enable me to find a solution. And so that's what engineering taught me. (Ann, Interview 1)

Engineers make the world work. We solve real problems; we provide such value. (Clara, Interview 1)

Engineering is all about problem-solving and critical thinking. You can have that skill set and apply it to different things. (Angela, Interview 1)

Ann, Katherine, and Jan discussed the broadness of the occupation and engineering as a tool:

One of the things that was attractive to me about engineering is the career path seemed to allow you to be more qualified to do a broad range of things. As opposed to selecting a field where you are very focused and maybe that skill set isn't as in demand or transferable. (Ann, Interview 1)

…what I tell young women who are looking at engineering, is that it is a very broad education. You have to really think beyond just getting your engineering degree because it's so broad…many women, especially women, I think the guys less so, so many women students think that it's fairly narrow. And if you're a civil engineer you're going to work bridge construction. Well, maybe. But engineering is pretty broad and you can do a lot of different stuff with it. (Katherine, Interview 1)

What I really like about engineering is that it is a great tool to use and I honestly feel like everyone should have a pretty good background in fundamentals in engineering because so much of our modern world is based on everything that has been engineered. (Jan, Interview 1)

Theme 5: Occupational Choice. Sub-theme 2: Financial. Financial included women's experiences and feelings on their choice of engineering due to a desire to have a career that supported them financially through the course of their lives.

Quinn and Ann discussed being able to support and provide for themselves:

It was also something that, family-wise, it allowed my parents to go from growing up with not much money to okay, you get an education and you can get a really great job. And do better than the generation before you, in a good way. It always stuck with me that it was, getting a degree in engineering was a way to have a lifetime ability to have a career. (Quinn, Interview 1)

My parents lived paycheck to paycheck while I was growing up and money was always very, very tight. So…part of what was attractive of engineering what that you made money. And there could be job stability as well within the field. I think that instilled in

me an interest in having some security and knowing that I know where my, I'm able to save some money, I know that I can provide for myself over the long term not just the short term. (Ann, Interview 2)

Theme 5: Occupational Choice. Sub-theme 3: Family. Family included women's experiences and feelings on their choice of engineering due to a strong family influence.

Susan, Angela, Quinn, and Lakshmi all had family that influenced their occupational choice of engineering:

It was definitely highly family influences. (Susan, Interview 1)

My father was a chemical engineer. (Angela, Interview 1)

I come from a family of engineers. My dad was and I had two brothers…they all have engineering degrees. So it was somewhat in the family. (Quinn, Interview 1)

When I chose it was actually mostly my dad and my brother. And I didn't have strong opinions at that time. …I wasn't, in the family that I was raised, and I would attribute to my culture also, that the elders make decisions for you. (Lakshmi, Interview 1)

Theme 5: Occupational Choice. Sub-theme 4: Self-Efficacy. Self-Efficacy included women's experiences and feelings on their choice of engineering due to their own belief and confidence in being engineers.

Clara and Katherine felt as though they were always engineers:

I AM an engineer...To be a woman engineer, which I absolutely am, that is how I define myself. (Clara, Interview 2)

There is a part of me that feels like I've always been an engineer. That at one point certainly I went to school and I got the education and credentials to say I was an engineer. But the way my brain works and the way I like to understand how things work, to me, that's all part of engineering. (Katherine, Interview 2)

Sue Ellen believed it was important not to force someone without a belief in being an engineer into engineering:

I really hate to see people forcing someone who doesn't want to be an engineer into engineering. Male or female. Because it's not the kind of thing that anyone can embrace. It's hard in school and if that's not what you want to do I can't even imagine what that experience would be like. It was just such a good fit for me. I'm very happy. (Sue Ellen, Interview 1)

Theme 5: Occupational Choice. Sub-theme 5: Social Approval. Social Approval included women's experiences and feelings on their choice of engineering due to how engineering is viewed or how they would be viewed as women in engineering.

Ann, Katherine, Susan, Quinn and Angela all felt as though social approval would result from their choice of engineering or that social approval has resulted from their choice of engineering:

A lot of people are surprised when you tell them that. And it's like you're a woman and they give you an inquisitive look. They're questioning why you would be doing that and so that's part of what made me want to stick with it was that I was like, I can do that and so I think that also people do treat it with respect to some degree. And so I suppose I like that people think that it's something that is a demanding, was demanding to study and they automatically characterize that as, oh, I respect that you did that. (Ann, Interview 1)

So I like being an engineer in that there is some inherent credibility of intellectual capability that simply a lot of clients go, okay, she's smart. (Katherine, Interview 1)

They're like, wow, it's so impressive that you're a woman and you're like yes, I feel like any woman can do this but it's cool to feel like people are excited you are a woman in science and being a leader. (Susan, Interview 1)

I think it's an impressive background, having an engineering degree. Most people can't finish or don't have an engineering degree. So I think the best part about it, to me, is having it on the resume and having done it. (Quinn, Interview 1)

I like that it's a stamp of approval in this man's world. That I got that degree and I got it from a darn good school and a lot of guys can't do it. I think it gives you some immediate respect. (Angela, Interview 1)

Theme 6: Success

Success encompasses intrinsic measure of success, extrinsic measures of success, and the evolution of women's definitions of success. See Figure 4.7 for the visual representation of this theme. Organizational and Societal Norms are related to Success.

How women make define success is largely impacted by organizational and societal norms that exist. Success relates to other themes. How women feel about Occupational Choice, Theme 5, and Experiences at Work, Theme 3, both impact their feelings on success.

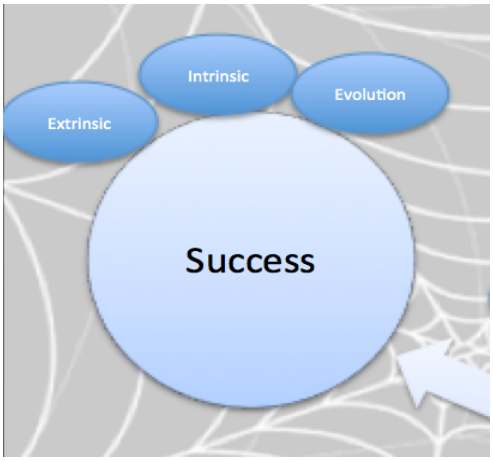


Figure 4.7 Visual Representation of Success Theme

Theme 6: Success. Sub-theme 1: Intrinsic. Intrinsic included women's experiences and feelings on subjective measures of success. Measures such as social approval, making an impact, and adding value are discussed.

Sue Ellen, Susan, Jan, and Carol discuss social approval and making an impact:

…having the respect of the day-to-day operator guys and having them have that look of happiness on their face when you show up to help them and not, oh no. You know we're on call. They would never know who would answer the phone when they called the pager. They would say, oh, I'm so happy it's you. That's success to me. Or is it just that good girl? I don't know. It's just that being one of the guys and having people, not being the last person that gets picked for kickball. I would be the first person they would pick. It's not a traditional success so much. (Sue Ellen, Interview 2)

Probably one of the more successful times I felt was when I was looking for my current job… two companies…offered me competitive jobs and they wanted to know what the offer was from the other company. …Just feeling like people wanted you to work for them. It was confirming that what I've done has worked out for me. (Susan, Interview 2)

…there was definitely a couple of projects where I worked on them long term with certain clients for a while and they were so happy with my work that they actually tried to hire me full-time. So that's always kind of a nice check to say, hey, I must be doing the right thing. (Jan, Interview 2)

If we start with how we define failure, that would be for me feeling like I had not had an impact or a positive impact. So success is the opposite; success is I feel like I have a positive impact. I think there is an aspect of other people thinking that I was helpful or useful. (Carol, Interview 2)

It means that I'm taken seriously in my role, people value my opinion. I feel that the project work that I do day-to-day is valued by society and that I'm contributing and making an impact. (Susan, Interview 2)

Sue Ellen and Carol subjectively define success as not climbing the ladder:

The whole management, rising to the top, that has never been anything I wanted. I see that as success for other people but it's not a choice for me. (Sue Ellen, Interview 2)

I guess I have been fortunate that success has not been defined as climbing a ladder, a corporate ladder. (Carol, Interview 2)

Quinn believes success is multi-faceted:

I think that it's multi-faceted. To me success is having great family relationships, it's being healthy, it's maintaining that to the best of your ability, it's doing what you think is your best everyday. At the end of the day being tired and knowing that you've given your all to what you're passionate about. (Quinn, Interview 2)

Clara, Angela, and Jan discuss being happy and satisfied as measure of success:

For me, success now means being happy in what I do, feeling that I'm making a difference, and that I'm having an impact. That's career success, life success, personal success. For me they are now all integrated. At one point I think we discussed, for me, success early out of college is that I was going to be CEO of the company and that's not it for me anymore. To work with people I want to work with, to do the kinds of things that I think are worthwhile and meaningful, to have fun, to enjoy it. (Clara, Interview 2)

A lot of it has to do with your satisfaction.…I learned when I was in consulting that I made a lot of money and I liked the work but the lifestyle was just, I couldn't tolerate it. … I might have felt successful in my career there but I didn't feel successful as a person. I was not a happy person. So I looked at the broader success that is the work-life balance where you can still feel satisfaction in your job but you have the scale balanced right with going to work and feeling like you're adding value, having a career that is respected and have a position where you are making the most of what you can given the constraints you put on yourself. (Angela, Interview 2)

I would think I would say that as long as I am happy I would think that that was a definitely a measure of success. And in that sense I don't think that that's much different than career success. …I never viewed career my measure of success. Only one way of success so obviously it's a big part of my life. It's a majority of my time. So if I wasn't happy at work I don't think I'd be a successful person. (Jan, Interview 2)

Katherine and Ann describe success based on family:

… I get tremendous satisfaction from the work that I do but I think the absolute ultimate for me is watching my kids be successful as young adults. (Katherine, Interview 2)

Success overall in life is trying to lead a healthy lifestyle and maintain relationships and family and be in a place that is healthy and not depressed or stagnating or something. Traveling, adventuring, seeing, exploring interests, learning, all those things. …I don't know what the standards are so much for my personal valuation of success but I kind of always am evaluating where I'm at and where I want to be. (Ann, Interview 2)

Finally, Clara notes the difference between how men and women define success:

…how women define success and how men define success and that definition is different. I think women define their career options and their success very, very differently. It's something that provides value, something that makes a difference in the world, something that gives them satisfaction. (Clara, Interview 1)

Theme 6: Success. Sub-theme 2: Extrinsic. Extrinsic included women's experiences and feelings on objective measure of success. Lakshmi, Ann, and Susan identify measures such as managing large value projects, climbing the ladder, and financial support for her family.

I think success, for me…and this is unfortunate, I think it means having big numbers that I can manage. Being able to say I manage, and this is what I do tell people, I manage part of a $28 million project. Having my name attached to something big. (Lakshmi, Interview 2)

I guess the other piece of success is perhaps accomplishment or achievements and so some of that would be the milestone of becoming a [job title]. That's how I perceive success personally. (Ann, Interview 2)

And that also that I'm providing for myself and taking care of my family. And you know, if I had to live in the world all alone that I know that I could take care of myself. (Susan, Interview 2)

Theme 6: Success. Sub-theme 3: Evolution. Evolution included women's experiences and feelings on how their definitions of success have changed over their lives.

Angela, Sue Ellen, and Ann discussed initially thinking success meant they would climb the ladder to a CEO position but have since revised that plan:

…I think you get out of school and you think you're going to set the world on fire and you drive in to be the CEO, or whatever it is, and then you get a few years in to your career and reality hits more. You experience life a little more, and you learn about yourself a little more. (Angela, Interview 2)

I'm sure that I had that, like a lot of college people do, you have that idea of being CEO someday. And that's such a fuzzy idea when you come out of college. (Sue Ellen, Interview 2)

There was always people saying about me being a CEO or something like that. Did I make some changes along the way and end up where I'm at now and now, I have, I don't think I would want the future CEO title. But perhaps it sounded nice way back when. But exposure to seeing some of the challenges and obstacles that my new position now I see more of what the executives do at the [company] and it makes it almost a little less attractive of a position. (Ann, Interview 2)

Susan and Katherine associated success initially with salary and promotions:

I think definitely from my life experiences, I've learned. When I was young I associated my actual salary value was what success was. I think that I've certainly grown from that...I need a salary to take care of myself, but am I beating all my peers has become less important to me. (Susan, Interview 2)

At the beginning of career my definition of career success was all about promotion. Which level can you get to and how fast can you get to it. My definition really changed after about ten years. …at the company I worked at, it didn't take long to figure out that doing good work and making a real business contribution just got your name put in to the hat. It didn't get you selected, what got you selected was did your boss golf on Thursday night with the next manager up. Once I figured out what the game really was then I can go back and say, okay, is my view of success still what it was and is the success I thought I wanted worth doing what I need to do in order to get it now that I understand that more clearly. I've never been, even though I thought that professional success really was defined by what level you're at by what age, that was never a real driver for me. Does that make sense? Because that almost sounds, as I speak it, like a conflict. Because I was always more interested in the work I was doing than whether or not it was going to get me promoted. (Katherine, Interview 2)

Jan discussed learning that it's important to be happy with what you're doing:

> You know, at one point I was just coming into work and realized I was dreading and I didn't want to be there, why am I bothering, this is so stupid, I don't want to be here. I would say it is kind of like, why am I even feeling that way? And if I'm feeling that way, why am I still here? So I think that's a pretty good lesson that I learned because when the environment changed my attitude towards work changed as well. I think that was in key in realizing, yeah, you kind of have to be happy with what you're doing and who you're working with to be successful in what you're doing. (Jan, Interview 2)

Summary

Overall, there were many common themes and sub-themes among women's career development. Organizational and societal norms influenced these. This first theme included the sub-themes of Culture and Unequal Values at the organizational level and Family, Roles, Impact of Media, and Stereotypes at the societal level. Women discussed the roles they hold in society, how they are valued or not valued, coming to family decisions, pressure to have it all, how they feel about the impact of media on norms, and stereotypes. They also mentioned organizational systems, structures and cultures that support prevailing norms.

The second theme, Work Life Balance, included sub-themes of Balance, Family Support, Conflict with Roles, and Tough Choices. Women discussed experiences related to making choices regarding family and work, how they feel and about balance, the support of their spouses, and how they deal with the conflict that exists among roles.

The third theme, Women's Experiences at Work, included sub-themes of Social Capital and Discrimination. In this theme women discussed relationships with other women at work, camaraderie or standing out, feeling of isolation and using women's organizations or mentors to support them. There was also a great amount of discussion regarding discrimination both in an overt and covert manner.

The fourth theme, Career Progression, included sub-themes of Self-Selection and Gendered. Women mentioned career paths and career ladders, how they made career choices, and whether or not they envisioned career as a straight line. They also felt these were gendered choices.

The fifth theme, Occupational Choice, included sub-themes of Problem-Solving, Financial, Family, Self-Efficacy, and Social Approval. This theme was about making the choice of engineering as an occupation. Many women felt influences from family and approval from society impacted this choice. Women also discussed engineering as a problem-solving occupation that provided a broad range of options.

The sixth theme, Success, included sub-themes of Extrinsic, Intrinsic, and Evolution. This theme represented women's measures of success, both subjective and objective and how their measures of success have evolved over their lives.

The findings and interpretations resulting from these themes will be further explored in Chapter 5.

Chapter 5: Interpretations, Conclusions and Recommendations

Introduction

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an understanding of the career development of women in engineering. The guiding questions of this study were: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms? This chapter is organized as follows: first, interpretation of the findings is presented followed by how themes support each research question individually. Next, conclusions are presented and, finally, recommendations for future research and practice.

Interpretation of the Findings

Three major findings resulted from this study and will be presented in the following section. The first relates to women engineer's career development, the second highlights sensemaking and how women respond when faced with organizational and societal norms, and the third addresses social roles and their importance to participants' experiences.

Women Engineer's Career Development

Women's career development. Understandings of career and career development in today's organizations are shifting. As we shift from an understanding of career as a sequence of occupations to a "lifelong process of work-related activities"

(Hall, 2002 as cited in O'Neil & Bilimoria, 2005, p. 168), researchers began to think of career development as an individual's unique process of growth (Hite & McDonald, 2008) and not routine progression through a series of related jobs (White, 1995). Recent literature defines career development as an individual's "on-going series of stages characterized by unique concerns, themes and tasks" (O'Neil & Bilimoria, 2005, p. 168). Traditional career development theories, based on the needs of white males, do not sufficiently account for the career development of women (Alfred, 2001; Bierema, 1998; Leung, 2005). Women's careers are often nonlinear, less predictable as women negotiate balance between work and non-work responsibilities, and success is defined subjectively rather than objectively (Dries, 2011; Dyke & Murphy, 2006; Wilson, 1998). The first finding of the present study supports existing research that traditional career development theory does not sufficiently account for women's career development in today's organizations. Participants' career patterns and definitions of success supported existing research.

Women's career patterns have been described as nonlinear and nontraditional. Women have been said to 'opt-out' and have snakelike or disorderly career development (Hewlett & Luce, 2005; O'Neil & Bilimoria, 2005). Participants in the present study experienced a wide range of career progression and paths. Women felt that their careers did not follow a straight line, that they did not climb a career ladder (or want to climb a ladder), were not motivated to always seek out advancement or promotion opportunities, and have questions about the next steps in their career because of lack of clear path. Participants made lateral moves within and outside their organizations, chose jobs because they better supported their lifestyle, and planned careers around responsibilities

at home. While participants did not 'opt-out' in the way described in popular media or have significant gaps or breaks, their careers would still be described as nontraditional and nonlinear when compared to prevailing norms about career development thus supporting existing research on women's career development.

Scholars have found that women define success using subjective measures of success, rather than objective measures such as promotions and advancement through a hierarchy (Dyke & Murphy, 2006; Enache et al., 2011; O'Neil et al., 2008). Women in the present study primarily defined success subjectively thereby supporting existing research on this topic. Subjective measures included having an impact at work, adding value to their organizations, and the importance of family relationships.

Women in engineering. Scholars have found that women in engineering face discrimination and a male dominated and gendered culture (Bilimoria et al., 2008; Buse et al., 2013; Hatmaker, 2013; Lewinter, 2013; Roton, 2011); however, much of the existing research occurs within the context of academia and not within in organizations. The present study explored the career development of professional women within organizations. While participants in the present study discussed positive work experiences, many also discussed facing discrimination and what it means to be a woman in engineering.

Research exists on the discrimination faced by women in engineering. Women in engineering have been found to accept gender discrimination as a coping strategy (Powell et al., 2009) and have been found to be discriminated against in organizations where cultural norms support engineering as a male environment (Hersh, 2000; Lewinter, 2013; Martin & Barnard, 2013). Covert discrimination has been found to uphold gender bias in

male-dominated occupations (Martin & Barnard, 2013). As a result of the dearth of women in engineering, the Athena Factor project examined career trajectories of women in engineering and other science fields and found that women's attrition rates increase ten years into their careers (Hewlett et al., 2008). Ely et al. (2014) found that women were not leaving for childcare responsibilities but "reluctantly and as a last resort, because they find themselves in unfulfilling roles with dim prospects for advancement" (p. 105). Studying male-dominated fields in particular, Cha (2013) found that mothers are less likely to maintain careers in these fields because of norms regarding overwork (the common trend of working long hours).

Participants in the present study supported the findings of existing research and faced either covert or overt discrimination, felt isolated or as though they stood out because they were women, and noted a departure of women from the occupation that took place after women worked approximately ten to fifteen years. Several participants noted a shift from the overt discrimination they faced early in their engineering careers to a more covert discrimination in today's workplaces thus making discrimination against women harder to identify, harder to address, and harder to deal with. Women also discussed what it means to be a woman in engineering. They expressed sticking out, feeling isolated, or being different as a woman in engineering. One participant noted, "...while it could be good to be a female, it can have some downsides because a lot of times I am the only female in the room. Most of the time doesn't make a difference but in certain situations you can kind of feel a little bit isolated or left out" (Jan, Interview 1). Paradoxically, this was viewed both positively and negatively as it could make women a target for discrimination or make women stand out in a unique way. Being a woman in

engineering could also have positive meaning and serve to strengthen relationships among women when camaraderie develops among groups of women.

Participants also noted the attrition of women from the field and attributed that to responsibilities at home such as childbearing and raising children. Research in engineering in which a feminist perspective has been taken has identified that cultural practices and attitudes towards women engineers have been resistant to change (Ingram, 2006). The present study supports this finding and existing research on women in engineering based on the discrimination participants are experiencing in today's organizations.

This study's findings on women's career development and women in engineering both confirms and adds to existing research on these topics. Career development research has traditionally been based on the hierarchical, linear careers of white males (Enache et al., 2011). Existing research on the career development of women has found that women's career patterns and definitions of success are components that are different from men and, thus, not supported by traditional career development theories (Bierema, 1998; Hewlett & Luce, 2005; Sullivan & Arthur, 2006; Wilson, 1998). Contemporary theories such as protean and boundaryless careers are attempting to address the career development of today's workplace but more empirical work is needed to support them as they are critiqued for not addressing the careers of underrepresented populations (Alfred, 2001; Sullivan & Baruch, 2009). The present study confirms existing research on women's career development and adds to this body of research through an understanding of contemporary career development from the perspective and voice of women. Additionally, existing engineering research has focused on women in academia (Buse et

al., 2013), thus this study expands existing research through a focus on women in organizations. Finally, pursing this work utilizing a feminist lens allowed the researcher to add to existing engineering research that utilized a feminist framework by offering work from the perspectives of women, challenging gendered norms, and considering the voices of women in contemporary career development research. In the next section, the study's second finding on organizational and societal norms and sensemaking will be presented.

Organizational and Societal Norms and Sensemaking

The career development of women engineers in this study and the evolution of career are highly influenced by organizational and societal norms, which have not changed as significantly as the conversation about them has. When faced with organizational and societal norms women conform, deviate, or negotiate. Women make sense of these actions through a process of 'sensemaking' (Weick, 1995). In this section sensemaking will be discussed and followed by how women in the present study conformed, deviated, or negotiated when confronted with organizational and societal norms.

In 1979, Karl Weick argued that "organizing is a process in which individuals interactively undertake action (enactment), the results of which they subsequently confront as their environment, which they then seek to make sense of by retrospectively chopping their lived experiences into meaningful chunks, labeling them, and connecting them (i.e., selection)" (as cited in Sandberg & Tsoukas, 2014, p. S8). Sensemaking, in its early conceptualizations, was understood as a cognitive process whereby sense is made in an individual's mind (Sandberg & Tsoukas, 2014; Weick, 1995). Individuals organized

when their cognitive understandings come together (Sandberg & Tsoukas, 2014; Weick, 1995).

Weick has refined sensemaking since that time and situated it within a social constructivist perspective (Sandberg & Tsoukas, 2014). In his 1995 publication 'Sensemaking in Organizations', sensemaking is understood as constructive and not purely cognitive. Sandberg and Tsoukas (2014) argued that viewed through this perspective "sensemaking is social, retrospective, grounded on identity, narrative, and enactive" (p. S8). Weick (1995) argued, "To engage in sensemaking is to construct, filter, frame, create facticity, and render the subjective into something more tangible" (p. 14). Individuals live in their reality and act out their lives in relation to a wider reality in order to rationalize what they are doing (Weick, 1995). They do so by seeking patterns of meaning (Weick, 1995). Women in the present study make meaning and sense out of ambiguous situations (Sandberg & Tsoukas, 2014). In doing so, they are sensemaking.

Weick indicates that sensemaking is understood as a process that is grounded in identity construction, retrospective, enactive of sensible environments, social, ongoing, focused on and by extracted cues, and driven by plausibility rather than accuracy (Weick, 1995, p. 17). Weick (1995) describes these characteristics as a guideline "for inquiry into sensemaking in the sense that they suggest what sensemaking is, how it works, and where it can fail" (p. 18). Weick uses the analogy of the recipe "how can I know what I think until I see what I say?" (p. 61) to further explain how these characteristics of sensemaking are best understood. Table 5.1. displays these explanations.

Table 5.1

Guideline for Inquiry Into Sensemaking

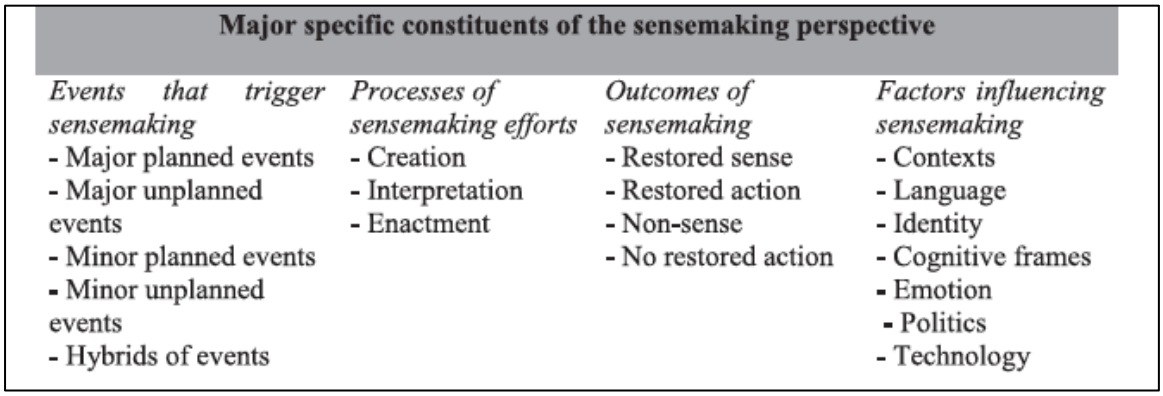
Characteristic	Question
Identity	The recipe is a question about who I am as indicated by discovery of who and what I think.
Retrospect	To learn what I think, I look back over what I said earlier.
Enactment	I create the object to be seen and inspected when I say or do something.
Social	What I say and single out and conclude are determined by who socialized me and how I was socialized, as well by the audience I anticipate will audit the conclusions I reach.
Ongoing	My talking is spread across time, competes for attention with other ongoing projects, and is reflected on after it is finished, which means my interests may have already changed.
Extracted cues	The "what" that I single out and embellish as the content of the thought is only a small portion of the utterance that becomes salient because of context and personal dispositions.
Plausibility	I need to know enough about what I think to get on with my projects, but no more, which means sufficiency and plausibility take precedence over accuracy.

Note. Adapted from *Sensemaking in organizations*, p. 61-62, by K. E. Weick, 1995, Thousand Oaks, CA: Sage.

Each characteristic is important to sensemaking and, for purposes of the present study, aided in the researcher's determination that sensemaking was an ongoing process for her participants.

Weick (1995) also indicated that something is an instance of sensemaking when someone notices something discrepant when looking back over elapsed experiences and offers suppositions to explain. These outcomes "develop prior definitions of the situation" (Weick, 1995, p. 11). Sensemaking is a way to deal with uncertainty in situations where experiences are different than perceptions (Weick, Sutcliffe, & Obstfeld, 2005). Sandberg and Tsoukas (2014) identify five elements of sensemaking: "sensemaking (i) is confined to specific episodes, (ii) is triggered by ambiguous events, (iii) occurs through specific processes, (iv) generates particular outcomes, and (v) is

influenced by specific situational factors" (p. S11). Figure 5.1 summarizes these elements.



Major specific constituents of the sensemaking perspective			
Events that trigger sensemaking	*Processes of sensemaking efforts*	*Outcomes of sensemaking*	*Factors influencing sensemaking*
- Major planned events - Major unplanned events - Minor planned events - Minor unplanned events - Hybrids of events	- Creation - Interpretation - Enactment	- Restored sense - Restored action - Non-sense - No restored action	- Contexts - Language - Identity - Cognitive frames - Emotion - Politics - Technology

Figure 5.1 Five Elements of Sensemaking. Reprinted from "Making sense of the sensemaking perspective: Its constituents, limitations, and opportunities for further development," by J. Sandberg & H. Tsoukas, 2015, *Journal of Organizational Behavior, 36*(S1), p. S12.

Weick, Sutcliffe, and Obstfeld (2005) argue "sensemaking involves turning circumstances into a situation that is comprehended explicitly in words and that serves as a springboard into action" (p. 409). When confronted with organizational and societal norms, women engineers in the present study turned their circumstances into actions and conformed, deviated, or negotiated. They made sense and meaning of these actions through sensemaking. Sensemaking is where meanings emerge that shape action (Mills, 2003). Meaning is brought into existence through the question "now what should I do"; meaning that individuals hope is stable enough to act upon (Weick et al., 2005). People seek to organize and make sense of their experiences and "enact this sense back into the world to make the world more orderly" (Weick et al., 2005, p. 410). Conforming occurred when women's actions comply with prevailing organizational or societal norms (Philippe & Durand, 2011); deviation occurred when women's actions were in contrast

to, or in violation of, prevailing organizational or societal norms (Yagil & Luria, 2014); and negotiation occurred when there was an interplay between actions according to prevailing organizational or societal norms (Porter, 2012). Table 5.2 presents examples of actions taken by participants that conformed, deviated, or negotiated with prevailing organizational and societal norms.

In their interviews, participants discussed these actions retrospectively. They did not talk about norms and how they decided to take direct action as a result of those norms. Instead, they reflected on how they felt they had done things the same or differently than others and what that may have meant. Thus, participants followed Weick's (1995) guidelines whereby they noticed something discrepant when reflecting and speculated about meaning. Weick (1995) indicates the retrospective nature of sensemaking "captures the reality that people can know what they are doing only after they have done it" (p. 24). As participants responded to interview questions they actively reflected on the actions they took, noted their discrepancy as compared to prevailing norms, and offered suppositions to explain. For example, noting that she never defined success as climbing a corporate ladder, Carol speculated that this was due to her parents. She never spoke with her parents about career success, she never had a picture like other people of ambition from her parents, and she learned it was important to do things that you find interesting. She indicated, "I just don't have a family history of expectations of career success meaning climbing the ladder" (Interview 2). In reflecting through the interview she was reconstructing the past retrospectively. According to Weick's (1995) recipe analogy, she learned what she thought by looking back over earlier actions.

Table 5.2

Examples of Conformity, Deviation, and Negotiation

Examples of Conformity	**Examples of Deviation**	**Examples of Negotiation**
• Working long hours • Making a trade off between family and career or vice versa • Not having children because of potential career impact • Despite not yet having children, knowing that career will be impacted • Decision not to take participate in or take advantage of work life balance programs due to potential negative impact to career • Objective measures of career success such as: climbing the career ladder and providing for self and/or family financially	• Not following a traditional, linear career path • Believing a squiggly line represents women's career path and a straight line represents men's career path • Mass exodus of women from workplace ten to fifteen years after career begins • Belief that work should fit life, not that life should fit work • Having a spouse that followed her career and stayed at home to care for children thus allowing her to continue on her career path • Subjective measures of career success such as: adding value, making an impact, being happy, and not climbing the ladder	• Not wanting to be a high-level manager • Having fewer children on purpose because of career impact • Making purposeful career decisions in order to have jobs with more flexible hours, more control over time, and more control in general • Feeling as though a spouse that equally shared responsibilities for childcare and household responsibilities contributed to balance • Belief that work life balance is individually defined, based on an assessment of individual priorities, fleeting, or nonexistent • Feeling that balance is working hard at work in order to have time for your family • Feeling that balance is what you make of it

Sensemaking research thus far has focused on the situational factors that influence sensemaking, specifically the context, language, emotion and technology factors, during major planned or unplanned events (Sandberg & Tsoukas, 2014). In the present study, women engineers turned their circumstances into actions and conformed, deviated, or negotiated in response to organizational and societal norms. This finding adds to

sensemaking literature through its focus on actions and meaning making for participants rather than solely on the situational factors that influence the process. Understanding women's career development through sensemaking offers a different perspective with which to view the impact of organizational and societal norms.

Women engineers in the present study were impacted by organizational and societal norms. While there is a great deal of conversation around women in organizations and policy changes have been made to better support the needs of women, organizational assumptions and perceptions have not kept pace and organizational and societal norms do not support the more contemporary career development needs of women (Enache et al., 2011; Glass, 2004; Kelly et al., 2010; Ryan & Kossek, 2008). Scholars have found that despite organizational attempts to put new policies in place to support women, organizational norms do no support the participation in or use of these programs and they often only pay lip-service to women's career development (Dyke & Murphy, 2006). Findings in the present study support existing research on organizational and societal norms and their impact on women's career development. Women took action regarding career choices, decisions about family and work life balance, and success based on prevailing norms and in doing so were either conforming, deviating, or negotiating to norms. Women understood this through sensemaking.

Prevailing norms regarding career choices indicate that careers should follow a traditional, linear model of development and advancement (Hertneky, 2013) and that workers should conform to the image of the 'ideal worker' as one who is not involved in caregiving and other non-work roles (Kossek et al., 2010). Women in the present study, when faced with norms regarding career choices, discussed many choices that they made

based on assumptions and expectations of themselves and of work. Women conformed, deviated, and negotiated with prevailing norms. Participants discussed the fact that people are working more hours are this is impacting women's choices; that there are not enough women in high-level positions or that they don't want to be high-level managers; that they have chosen not to follow a traditional, linear career path; or that a women's career path is visually represented by a squiggly line and that luck was an important factor in their career development. Several participants spoke of a mass exodus of women from the workplace around ten to fifteen years into their career. One participant discussed her belief that career choices should be about how work fits life, not how life fits work.

Prevailing norms regarding family decisions and work life balance surround women's caregiving role-related responsibilities and a male model of work where employees put work first and have no other life areas which conflict with work (Callan, 2007; Cha, 2013; Ely et al., 2014; Lewis, 1997; Thomas, 2005). Women in the present study, when faced with norms regarding family choices, discussed being faced with many difficult choices and conformed, deviated, and negotiated with prevailing norms. Several participants indicated trading family for career or vice versa. Women's decisions on having children and how many children to have were impacted by norms. Women had fewer children on purpose because of potential career impact; didn't have children; or despite not yet having children, believe that having children would impact theirs careers. Women made purposeful career decisions in order to have flexibility with their hours. Married participants felt the support of their husbands was critical to their career success; had spouse's that equally shared responsibilities at home and with children and felt that contributed her balance; and one participant's husband stayed at home with their children

which allowed her to continue on her career path. When discussing work life balance, women also discussed making choices and decisions. Participants mentioned assessing their priorities, defining balance individually, that there is no such thing, balance is fleeting, that balance is working hard while at work in order to have time for family, or that balance is what you make of it. Several women also discussed formalized programs that support work life balance such as flextime or teleworking, however, participants also discussed either not having these programs available to them or not taking advantage of them despite their existence. One participant in particular mentioned the negative career impact that women have when even taking maternity leave, which they are permitted to take. Her career would be negatively impacted though when a male colleague has a health issue everyone in the office helps out and takes care of his work.

Prevailing norms regarding success dictate that success is defined objectively using promotions, increases in salary, and advancements through a hierarchy as measures of success (Dyke & Murphy, 2006). Scholars have found that women define success differently using more subjective measures of success (Dyke & Murphy, 2006; Enache et al., 2011; O'Neil et al., 2008). Women in the present study primarily defined success subjectively thereby deviating from prevailing norms. Women discussed having an impact at work; adding value to their organizations; being happy; not climbing the ladder; and the importance of family, kids, and relationships. Those participants that defined success more objectively and conformed to existing norms discussed climbing the ladder and supporting themselves or their family financially.

Necessary to consider in sensemaking is the direction of the relationship between meaning making and action. While it may be the case that people make sense and

meaning and then take action, more often the opposite is the case and action develops meaning and sensemaking (Weick, 1995). Weick (1995) argued, "Actors in the course of a career of actions, discover the nature of the situations in which they are acting…the actor's own actions are first order determinants of the sense that situations have, in which, literally speaking, actors find themselves" (p. 11). Figure 5.2 was developed to visually represent sensemaking for participants in the present study.

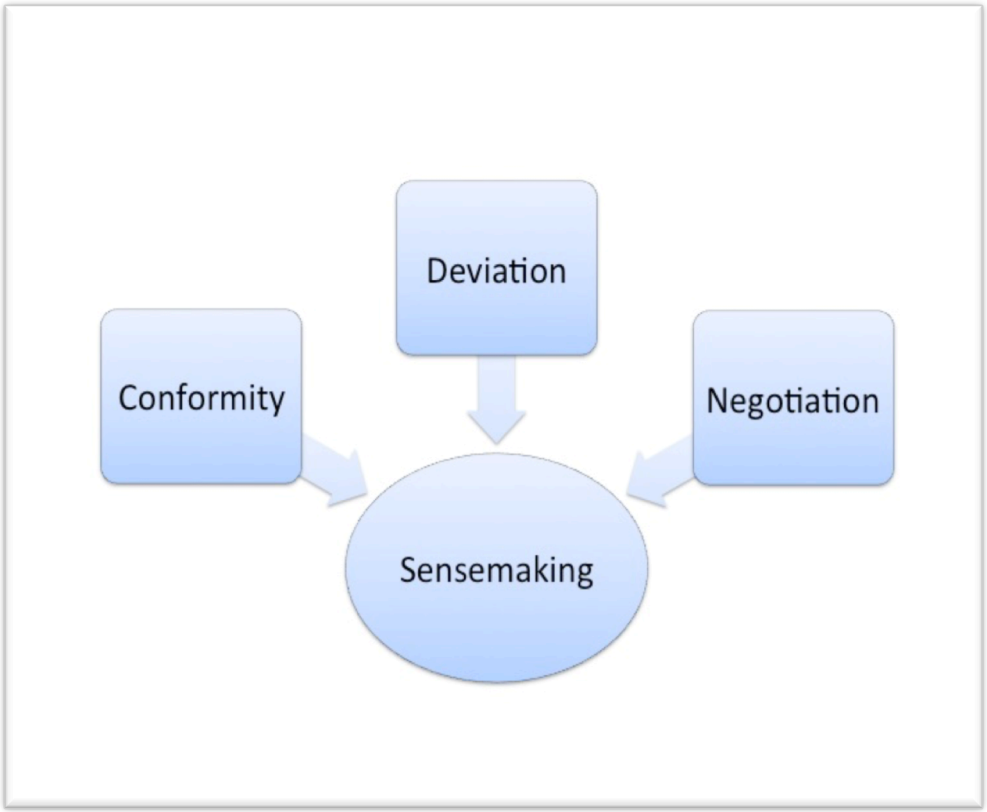


Figure 5.2 Visual Representation of Participants' Sensemaking in Present Study

When confronted with organizational and societal norms, women engineers in the present study turned their circumstances into actions and conformed, deviated, or negotiated. Participants, in retrospect, made sense of those actions. This is represented by

the direction of the arrow from the conformity, deviation, and negotiation boxes to the sensemaking circle. While there is potential for bi-directionality of these arrows, as Weick (1995) notes it may be the case that humans make sense and then take action, data in the present study only supported one direction. Also, while the visual does not depict a relationship between conformity, deviation, and negotiation there is potential for a relationship to exist. Sensemaking can be contradictory and individuals can have multiple understandings of the same situation therefore sensemaking can be different or inconsistent (Foldy, 2006). Data in the present study did not support a relationship between conformity, deviation, and negotiation for participants, but given the possibility for multiple understandings there is potential for a relationship to exist.

This study's findings on organizational and societal norms add to existing research on the topic. Sensemaking research has focused on situational factors that influence sensemaking, specifically the context, language, emotion, and technology factors, during major planned or unplanned events (Sandberg & Tsoukas, 2014). Also in decision making research and research on group and organizational change (Brown, Colville, & Pye, 2015). This study confirms existing research indicating that gendered norms are pervasive within organizations (Damaske, 2011) and impact the career development of women, particularly women in the engineering occupation and adds to research with it's multi-level analysis (individual, organizational and societal) of norms (Britton, 1990; Ridgeway & Correll, 2005). Findings in the present study support research that indicates that organizational and societal norms have not changed as much as the conversation on the topic would lead one to believe. Understanding women's

career development through sensemaking offers a different perspective with which to view the impact of organizational and societal norms.

Social Roles

Social role theory developed during the 1980s as a gender-related theory by Eagly (Dulin, 2007). Social role theory "focuses on interactions between and among individuals, groups, societies, and economic systems as developed by social systems in which people live" (Dulin, 2007, p. 104). Social role theory states that women and men have a social role based on their gender. Social roles are formed by social norms that apply to people in a certain category or social position (Dulin, 2007). Norms become internalized and part of an individual's self-concept and personality (Eagly, 1997). Women and men then form traits consistent with social roles and inhabit occupational roles consistent with norms. In this way, social constructions of gender are also present in organizations and can serve to support difference and inequality (Acker, 2006, p. 444; Martin & Barnard, 2013).

As it pertains to engineering, women face many challenges in occupations that are historically male-dominated (Bobbitt-Zeher, 2011; Martin & Barnard, 2013). Traditional gender hierarchies and norms prevail in society and, despite attempts for gender equality, in society males are often still viewed as the dominant gender (Martin & Barnard, 2013). These role expectations subsequently influence organizational policy, structures and work roles (Bobbitt-Zeher, 2011; Cha, 2013). Martin and Barnard (2013) argue this is to the detriment of gender equality in male-dominated occupations.

Women may experience conflict among roles. As dictated by social norms, women frequently remain the primary caregivers at home and balance work

responsibilities thus may experience role overload and role conflicts (Bible & Hill, 2007; Cha, 2013). This burden is heavier for women in male-dominated occupations because of norms regarding the ideal worker who is dedicated to work and whose time is not subject to responsibilities outside of work (Cha, 2013; Harris & Giuffre, 2010; Watts, 2009). Bobbitt-Zeher (2011) found that women workers faced gender discrimination at work because they are viewed as 'women first, workers second' suggesting that "women's personal lives and roles as wives and mothers make them less invested and less reliable workers" (p. 771).

The present study aligned with social role theory. Participants discussed women's roles in society, norms that uphold these roles, and how these roles are then reflected in organizations thus supporting existing research on the theory. Women's roles emerged as a source of conflict for participants and work life balance issues were also apparent.

When discussing women's roles in society, participants spoke about multiple roles that women hold. They are caretakers, mothers, workers, and family members with responsibilities at work and home and that women and men have different roles based on their gender. Women discussed their roles as caretakers in society; that there is room for growth and equality; and that women are critical to the operation, more than biologically. In a positive light, women also discussed the potential for roles to be shifting and for change to occur as new generations emerge.

Several participants spoke of norms that uphold these roles. Participants noted women's social roles translating to organizations. Specifically, norms regarding women's roles as caretakers impacts women's roles in organizations. Prevailing norms and assumptions about women lead to women being pigeon holed in administrative positions

or in departments such as human resources. As a result of being thought of as the caretaker women are also often the ones to play the mother role and care for the team. There is pressure for women to have it all and 'lean in'. Several participants mentioned the role of media and specifically of Sheryl Sandberg's 'Lean In' concept as it related to pressure to have it all and norms regarding roles. It should be noted that the tragic loss of Sandberg's husband was prominent in the news at the time of data collection and could have prompted participants to speak specifically of her books and concepts. One participant noted the misrepresentation of women in engineering in media and that her real life experiences were quite different than in a popular film.

Social roles and norms are further reflected in organizations through expectations and perceptions of women at work. Participants noted having a stigma to overcome as a woman in engineering, having to overcome challenges of how she looked and acted, and a variety of behavioral traits she either had to display or shouldn't display as a woman. When asked about behaviors, characteristics, or visuals that come to mind when asked about women in engineering women discussed a variety of ideas. These ideas are visually represented in Figure 5.3. The word cloud visually displays the ideas expressed by participants. Larger words in the word cloud were mentioned by more participants. These ideas support many of the realities women expressed when discussing traits and stereotypes of women engineers in organizations and, thus, the impact of social roles.

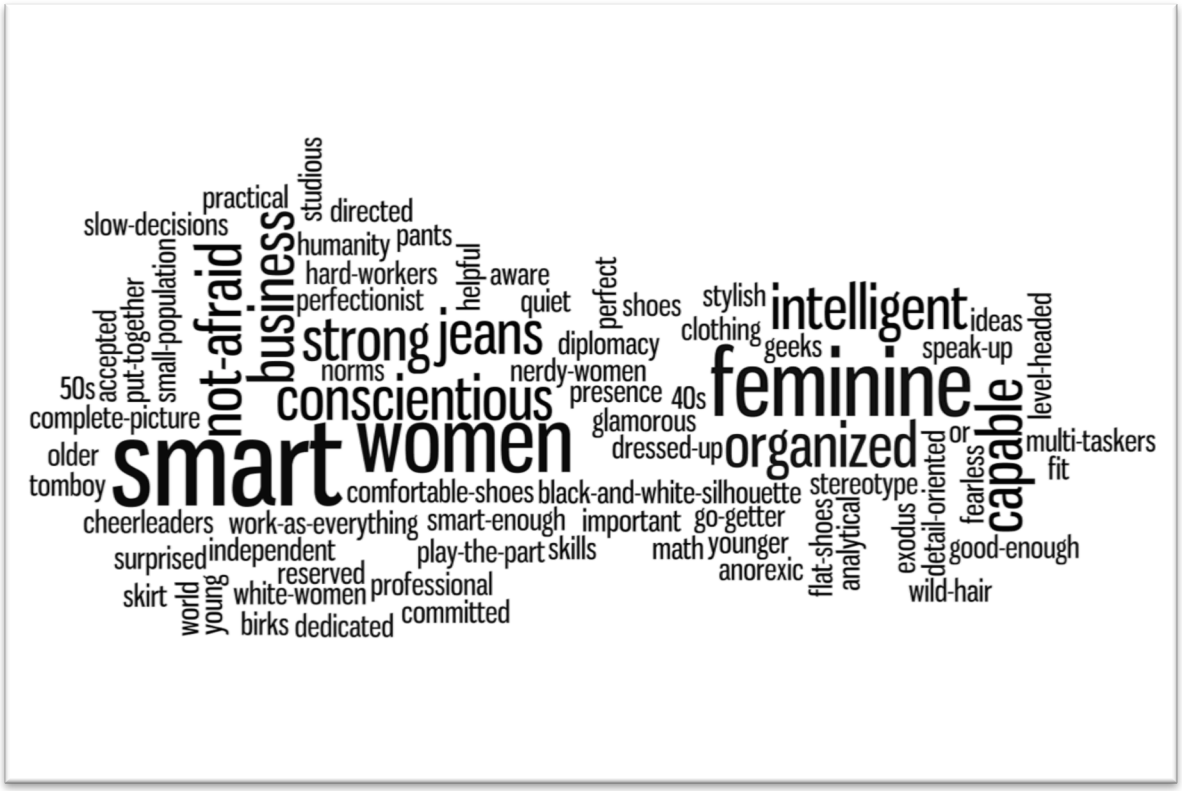


Figure 5.3 Visual Representation of Behaviors, Characteristics, and Visuals of Women in Engineering

Participants spoke of making tough choices with regard to conflict among roles and of career impacts when facing conflict. Participants' career development was reflective of the conflict they felt. As noted by scholars, women have multiple roles which do not occur in isolation, often conflict, and have varying levels of salience at a given time (Diekman & Schneider, 2010). Tullos (2005) found that women selected a particular occupation based on gender roles and because it would provide a flexible work schedule in order for women to balance their roles at work and at home. In the present study, participants noted trading family for career or vice versa. That as women they felt they had to make choices about following traditional, linear career paths or following a path that better supported their family responsibilities. Several participants noted that they did not follow a traditional, linear path or have interest in climbing a ladder and they

knew these decisions were contrary to what they were 'supposed' to do.

Women in engineering could be seen as contradicting social role theory based on the fact that they inhabit occupational roles that are inconsistent with norms; however, women in the present study discussed the difficulties they faced as women in engineering at individual, organizational, and societal levels thus supporting scholar's argument that while social role theory may spark a revised role, it may not be able to bring about significant change in how we view men and women's roles in society (Leuptow, Garovich, & Leuptow, 1995 as cited in Eagly, 1997). It should be noted that several participants, when discussing what they like best about being a woman in engineering, felt as though the engineering occupation was viewed positively in our society. That as a woman in engineering people felt she was smart, commanded more respect, or received a stamp of approval in a man's world. This also supports scholar's argument about social role theory as participants were viewed positively as engineers but still faced difficulties in organizations. These findings also support the alignment of a feminist perspective with social role theory in the present study in that participants did discuss women's changing roles but, again, significant change has not taken place.

The study's findings on social role theory support existing research on the topic. Participants discussed women's roles in society, norms that uphold these roles, and how these roles are then reflected in organizations. Women's roles emerged as a source of conflict among participants and work life balance issues were also apparent. The career development and career choices of women in the present study demonstrate the presence of social constructions of gender and support the use of social role theory in this study.

In summary, findings in this study added to and confirmed previous work on women's career development, organizational and societal norms, and social roles. The study's findings added to existing research through an understanding of career development from the perspective and voice of women and a focus on women engineers in organizations. Additionally, the study expanded existing research through its use of a feminist lens to challenge gendered norms, understand women's unique experiences and perspectives, and to share that perspective from the voice of women. The study supported existing research on organizational and societal norms but added to sensemaking research through a use of sensemaking as a way to view women's career development. Findings also supported existing research on social role theory in that social roles were found to be formed by social norms and subsequently transferred to organizations thus support differences and inequalities (Acker, 2006, p. 444; Martin & Barnard, 2013). This is especially pertinent in male-dominated occupations. The next section will address each research question individually and will be followed by conclusions and recommendations for future research and practice.

Addressing the Research Questions

The guiding questions of this study were: *what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?* In the previous chapter themes were presented that emerged through data analysis. This section will address how themes respond to each research question individually.

Research Question One

Research question one asked *what are the career development experiences of women engineers?* Two themes specifically address aspects of research question one: Career Progression and Success.

Traditionally career development has been defined as predictable tasks at predictable stages. In recent years, scholars have considered today's organizations, which are being reshaped by increased workforce diversity (Enache et al., 2011) and the changing nature of careers and redefined career development. Career development has been defined as an "on-going series of stages characterized by unique concerns, themes and tasks" (O'Neil and Bilimoria, 2005, p. 168). Women, held to prevailing organizational and societal norms, make individual career decisions in their efforts to balance work and non-work responsibilities. Despite not following the traditional linear, hierarchical career path described in most career development theories, women's careers do develop and findings in the present study support this assertion.

The theme Career Progression encompassed the career development shared by the women in this study. Covered within this theme were women's experiences and feelings on career choices, career path, and climbing the career ladder as well as on the gendered nature of their career progression. Women's career development was nonlinear and nonhierarchical. Participants discussed how following a career path was not necessarily a goal, how they did not climb career ladders, how a straight line may have been the model but wasn't what happened, and how they made career choices that better supported their lives.

The theme Success also contributes to addressing this research question. Covered within this theme were women's experiences and feelings on intrinsic measure of success, extrinsic measures of success, and the evolution of women's definitions of success. Women's career development was shaped by how they defined success and how that definition evolved over time. Women in the present study primarily defined success subjectively as described in the sub-theme Intrinsic. Participants discussed measures such as social approval, making an impact, and adding value. Defining success in this way led women to make career choices and have career development reflective of these definitions. A second sub-theme relevant to this research question and contained within the Success theme is Evolution. Evolution included women's experiences and feelings on how their definitions of success have changed over their lives. This is important as women's career development was shaped by how they defined success and how they defined success changed over time as they had more life and career experiences.

Research Question Two

Research question two asked *how do women engineers' careers evolve?* Two themes specifically address aspects of research question two: Work Life Balance and Women's Experiences at Work.

Because of the prevailing norms regarding women's caregiving role-related responsibilities, women engineers' work life balance impacts their how their careers evolve. Scholars suggest that family-friendly policies, work-life flexibility, and mentoring programs that are made available to employees may introduce alternate work practices but represent a deviation from the norm (Kelly et al., 2010). Women may not even participate in these programs for fear that their careers will be negatively impacted

(Mennino, Rubin, & Brayfield, 2005; Shapiro et al., 2008). Thus, despite organizations' attempts to create environments that are more supportive of the contemporary career development needs of women, work life balance and experiences at work both impact how women engineers' careers evolve.

The theme Work Life Balance contributes to addressing research question two. Covered within this theme were women's feelings on balance and their experiences making tough choices, experiences when conflict arises between roles, and the support their family provides. Each of these aspects impact how women engineers' careers evolved. Participants made lateral moves within and outside their organizations; made career decisions based on family, balance, or conflict with roles; chose jobs because they better supported their lifestyle; and planned careers around responsibilities at home.

The theme Women's Experiences at Work also contributes to addressing research question two. Covered within this theme were the social capital women rely upon at work and the discrimination they face. Both of these sub-themes, and the overarching theme of Women's Experiences at Work, impacts how women engineers' careers evolve. Women's present work experiences and their perceptions of future work experiences impact how they learn about career paths, how they come to decisions on climbing the career ladder, and how they feel about their progression. Participants' career evolution was impacted by discrimination they faced and women developed or displayed certain behaviors or traits in order to cope with discrimination. Career evolution was also impacted by the relationships women engineers built with others.

Research Question Three

Research question three asked *how is the evolution of career influenced by organizational and societal norms?* One theme specifically addresses research question three: Organizational and Societal Norms.

Norms are expected standards of behavior and beliefs about the social acceptability of that behavior (Koller, 2014; Minkov, Blagoev, & Hofstede, 2013). Organizational norms can represent and depict societal norms. Deep-seated and implicit beliefs about women and their societal roles can be carried into organizations and are difficult to change (Ridgeway & Correll, 2004).

The theme Organizational and Societal Norms contributes to addressing research question three. Participants discussed societal norms related to family, roles, media, and stereotypes. They also discussed norms related to organizational culture and values. Both societal and organizational norms influenced the evolution of women engineers' careers.

Roles such as being the mother, being the caregiver, and being a family member while balancing responsibilities at work and home impact the evolution of careers. Women made career decisions based on balancing these roles and discussed feelings and meanings of those decisions as it related to their own career development. Several participants noted a trade-off between career and family or making decisions career decisions based on what was best for their family and not solely on what was best for their own careers.

Participants also discussed norms that uphold these roles and how women's roles translate to organizations. Specifically, norms regarding women's roles as caretakers impacts women's roles in organizations. Participants discussed women being pigeon

holed in administrative positions or in departments such as human resources. As a result of being thought of as the caretaker women are also often the ones to play the mother role and care for the team. Additionally, women felt pressure to have it all. As a result of this pressure, they feel they face tough choices and conflict while trying to balance their many roles and responsibilities.

Societal norms are further reflected in organizations through expectations and perceptions of women at work. Participants noted having a stigma to overcome as a woman in engineering, having to overcome challenges of how she looked and acted, and a variety of behavioral traits she either had to display or shouldn't display as a woman. Norms regarding expectations and perceptions of women at work impact the evolution of career. Women engineers' live with these gendered norms and consider them as they make their own career development decisions.

Research questions in the present study were addressed by the themes that emerged through data analysis. In the next section conclusions are presented.

Conclusions

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an understanding of the career development of women in engineering. Overall the study's findings both added to and confirmed existing research and indicate that more work can be done to support contemporary theories of career development that better address women's needs. Three major conclusions are presented.

To begin, women in the present study conformed, deviated, or negotiated with norms and understood this through a process of sensemaking. Understanding women's career development through sensemaking offers a different perspective with which to view the impact of organizational and societal norms. This work, and the explication of women's conforming, deviating, or negotiating actions, provides career development theorists a new understanding of how women interpret their own experiences. In practice, organizations that are aware of the impact of organizational and societal norms will have the ability to create and implement career development processes that more adequately address the needs of women. Women make choices that conform, deviate, or negotiate with norms; thus, women's career development needs are better addressed with an understanding of underlying norms. In particular, organizations should understand that women make career choices based on gender-based norms and the assumptions and expectations they have of themselves and of work.

Next, women engineers defined career development in a variety of ways. Career development is: "a defined ladder of steps and promotions" (Sue Ellen, Interview 2); the "activities that you do that keep you on the path to getting where you want to get career-wise" (Carol, Interview 2); something "you need to be doing on your own" (Jan, Interview 2); and "training" (Clara, Interview 2). Having a diversity of individual perspectives is important because contemporary career development theories reflect a belief that the person, not the career, drives career choices (Hall, 1996). It is important to assess careers from the perspective of the careerist themself (Enache, 2011). If organizations are to successfully design and implement career development processes, individual differences must be taken into account and a diversity of needs addressed.

Career development practices and work-life balance policies should be designed and implemented with a consideration of the needs of many household structures and organizations need to have a "contemporary framing of life" (Özbilgin et al., 2011, p. 190) if they are to be effective. If policies and practices continue to serve the needs of traditional households their underutilization will endure.

Finally, this study serves to support future researchers adopting a feminist perspective. Women face gender-based norms in organizations. In the present study, models of work, perspectives of workers, and assumptions about careers and career development were found to support gender inequities. Women engineers offer a perspective that counters traditional career development theory and offers more support to contemporary career development theory. As careers have become more complex it is important to challenge gendered norms if career development initiatives are to be effective. This is especially true in male-dominated occupations such as engineering.

In the last section recommendations for future research and practice will be presented.

Recommendations

Recommendations for Research

Are women just spinning their wheels? Although research exists on feminist movements and the advances women have made (Eagly & Wood, 2011) participants in the present study spoke of discrimination in college and in the workplace. Participants felt as though the issues that existed when they first entered the workplace were issues still being faced today. Future research could focus more narrowly on discrimination in the workplace and the experiences of women engineers.

Future research could also consider a case study analysis of women engineers in one organization. As the present work sought maximum variation, participants worked in several industries and organizations. Focusing on one organization would allow a much more focused evaluation of the norms that exist within that organization and how they are impacted by relevant societal norms. Also, because participants were solicited primarily through a women's professional organization there may be commonalities among how participants feel about women at work or the value that women place on work. While the researcher in the present study did not note this as a challenge or subjectivity, a case study could offer greater variety.

Future research on sensemaking could further explore findings of the present study regarding conforming, deviating, or negotiating in response to norms. Do women know they are conforming, deviating, or negotiating? Organizations may be able to increase their capacity to make sense of issues with more of an understanding of how employees react (Sonenshein, 2007). Additionally, sensemaking research could consider the potential for bi-directionality and relationships between conforming, deviating, and negotiating.

Future career development research could also further explore findings of the present study regarding conforming, deviating, or negotiating in response to norms. As careers continue to become more complex and career development processes need to address a wider range of employee needs, research could explore these actions in other contexts. Do women in other male-dominated occupations, women in female-dominated occupations, or men respond in the same way to organizational and societal norms? If so, does contemporary career development theory adequately address how women interpret

their own experiences? Could contemporary theories, which believe that the person drives her own career, better account for how these careers may develop?

Finally, future research should continue to use feminism as a lens with which to view career development. Despite making progress, women are still being held to gendered norms. Terms such as 'opt-out' and 'off-ramp' are still being used, have a negative connotation, and reflect that the only way to succeed is through an organizational hierarchy (O'Neil et al., 2008). This language also suggests that women are impacting, perhaps negatively, their career development by following nonlinear career paths. Women's careers should not have to be described as nontraditional. Research of this nature should continue to be done from the perspective and voice of women.

Recommendations for Practice

Organizations should consider organizational and societal norms when trying to address the more contemporary career development needs of women. Before implementing career development processes, organizations should first examine underlying norms that exist. This may allow organizations to identify potential barriers or challenges to successful utilization of career development processes. Without an examination of underlying norms, organizations may implement processes that do not support contemporary career development needs and are therefore not utilized. Organizations that change traditional norms and adopt policies that align with women's needs deeply will be better able to attract and retain women (Hewlett & Luce, 2005; Shapiro et al., 2008). Organizations that shift the discussion from women opting out to a focus on how policies and culture can provide boundless career options will be more

successful (Shapiro et al., 2008). In addition, organizations that "understand, recognize and support women's career and relationship priorities" will be able to retain talented women (O'Neil & Bilimoria, 2005, p. 185).

Organizations that implement work-life policies, mentoring programs, and offer more flexible jobs need to also consider organizational and societal norms. Because organizational assumptions and perceptions about women have not kept up with policy changes (Kelly, Ammons, Chermack, & Moen, 2010; O'Neil et al., 2008), programs are only paying lip service to women's career development (Dyke & Murphy, 2006). Additionally, findings in the present study support the assertion that work life balance is defined individually. As such, organizations should refrain from placing workers in a box when it comes to the type of work life balance programs offered. A review of current policies aimed at women, with a focus on the prevailing norms that exist within the organization and society, is required (Martin & Barnard, 2013).

Finally, organizations attempting to attract women into male-dominated occupations and retain their employment should not take culture for granted or assume that women will acculturate easily (Martin & Barnard, 2013). Organizations with male-dominated occupations should be cognizant of culture and socialization and how they may or may not be conducive to women.

Summary

The purpose of this qualitative study was to explore the career development of professional women engineers. Specifically, this study sought to understand the career development of women in organizations and how it is influenced by organizational and societal norms. The study sought to contribute to research and practice through an

understanding of the career development of women in engineering. The guiding questions of this study were: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

Six themes emerged from interviews with ten women who are either currently engineers or previously engineers working in the United States: Organizational and Societal Norms, Work Life Balance, Women's Experiences at Work, Career Progression, Occupational Choice, and Success. Findings regarding women engineers' career development, sensemaking and norms, and social roles both add to and contribute to existing research on these topics. From these findings, conclusions are made and recommendations for both research and practice are provided.

The present work sought to understand the meanings women construct "without resorting to essentializing differences between men and women and with attention to the contextual forces that shape those differences" (Diekman & Schneider, 2010, p. 495). The researcher hoped to enhance the way in which organizations support women's career development choices. Most importantly, the researcher aimed to include voices of women in career development theories and models. It is through this work she aspired to positively impact what Orenstein (2000) described as a half-changed world where women are working but not on equal terms.

References

Acker, J. (2006). Inequality regimes: Gender, class and race in organizations. *Gender & Society, 20*(4), 441-464.

Alfred, M. V. (2001). Expanding theories of career development: Adding the voices of African american women in the white academy. *Adult Education Quarterly, 51*(2), 108-127.

Arthur, M. B., & Rousseau, D. M. (Eds.). (1996). *The boundaryless career:A new employment principle for a new organizational era*. New York, NY: Oxford University Press.

Beddoes, K. (2013). Feminist methodologies and engineering education research. *European Journal Of Engineering Education*, *38*(1), 107-118.

Beddoes, K., & Borrego, M. (2011). Feminist theory in three engineering education journals: 1995-2008. *Journal of Engineering Education, 100*(2), 281-303.

Beeson, J., & Valerio, A. (2012). The executive leadership imperative: A new perspective on how companies and executives can accelerate the development of women leaders. *Business Horizons, 55*(5), 417-425.

Bible, D., & Hill, K. L. (2007). Discrimination: Women in business. *Journal of Organizational Culture, Communication and Conflict, 11*(1), 65.

Bierema, L. L. (1994). *How executive businesswomen develop and function in male-dominated organizational culture*. (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses. (9422696)

Bierema, L. L. (1996). How executive women learn corporate culture. *Human Resource Development Quarterly, 7*(2), 145-145.

Bierema, L. L. (1998). A synthesis of women's career development issues. *New Directions for Adult and Continuing Education,* 80, 95-103.

Bierema, L. L., & Cseh, M. (2003). Evaluating AHRD research using a feminist research framework. *Human Resource Development Quarterly, 14*(1), 5-26.

Bilimoria, D., Joy, S. and Liang, X. (2008), Breaking barriers and creating inclusiveness: lessons of organizational transformation to advance women faculty in academic science and engineering. *Human Resource Management, 47*(3), 423-441.

Bobbitt-Zeher, D. (2011). Gender discrimination at work: connecting gender stereotypes, institutional policies and gender composition of the workplace. *Gender & Society, 25*(6), 764–786.

Briscoe, J. P., & Hall, D. T. (2006). The interplay of boundaryless and protean careers: Combinations and implications. *Journal of Vocational Behavior, 69*, 4-18.

Britton, D. M. (2000). The epistemology of the gendered organization. *Gender and Society, 14*(3), 418-434.

Brown, A. D., Colville, I., & Pye, A. (2015). Making sense of sensemaking in organization studies. *Organization Studies, 36*(2), 265-277.

Brown, D. (2002). *Career choice and development*. San Francisco, CA: Jossey-Bass.

Buse, K., Bilimoria, D., & Perelli, S. (2013). Why they stay: Women persisting in US engineering careers. *Career Development International, 18*(2), 139-154.

Butler, J. (1999). *Gender trouble: Feminism and the subversion of identity*. New York, NY: Routledge.

Cacoullos, A. R. (2001). American feminist theory. *American Studies International, 39*(1), 72-117.

Callan, S. (2007). Implications of family-friendly policies for organizational culture: Findings from two case studies. *Work, Employment and Society, 21*(4), 673-691.

Catalyst. (2014). *Women CEOs of the fortune 1000*. Retrieved from http://http://www.catalyst.org/knowledge/us-women-business.

Cha, Y. (2013). Overwork and the persistence of gender segregation in occupations. *Gender & Society, 27*(2), 158-184.

Coogan, P. A., & Chen, C. P. (2007). Career development and counseling for women: Connecting theories to practice. *Counseling Psychology Quarterly, 20*(2), 191-204.

Cook, E. P., Heppner, M. J., & O'Brien, K. M. (2002). Career development of women of color and white women: Assumptions, conceptualization, and interventions from an ecological perspective. *The Career Development Quarterly, 50*(4), 291-305.

Cooke, D. K. (1994). Measuring career stage. *Human Resource Management Review, 4*(4), 383-398.

Corbin, J. & Strauss, A. (2008). *Basics of Qualitative Research* (3rd ed.). Thousand Oaks, CA: Sage.

Correll, S. J. (2004). Constaints into preferences: Gender, status, and emerging career aspirations. *American Sociological Review, 69*(1), 93-113.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage.

Crotty, M. (2010). *The foundations of social research: Meaning and perspective in the research process*. Thousand Oaks, CA: Sage.

Cummings, T. G., & Worley, C. G. (2005). *Organization development and change* (8th ed.). Mason, OH: South-Western College Publishing.

Damaske, S. (2011). A "major career woman"?: How women develop early expectations about work. *Gender & Society, 25*(4), 490-430.

Denzin, N. K., & Lincoln, Y. S. (2005). Introduction: The discipline and practice of qualitative research. In N. Denzin, & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.) (pp.1-32). Thousand Oaks, CA: Sage.

Diekman, A. B., & Schneider, M. C. (2010). A social role theory perspective on gender gaps in political attitudes. *Psychology of Women Quarterly, 34*, 486-497.

Dries, N. (2011). The meaning of career success: Avoiding reification through a closer inspection of historical, cultural and ideological context. *Career Development International, 16*(4), 364-384.

Dulin, A. M., (2007). A lesson on social role theory: An example of human behavior in the social environment theory. *Advances in Social Work, 8*(1), 104-112.

Dyke, L. S., & Murphy, S. A. (2006). How we define success: A qualitative study of what matters most to women and men. *Sex Roles, 55*, 357-371.

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

Eagly, A. H. (1997). Sex differences in social behavior. Comparing social role theory and evolutionary psychology. *American Psychologist, 52*(12), 1380-1383.

Eagly, A. H., & Koenig, A. M. (2014). Evidence for the social role theory of stereotype content: Observations of groups' roles shape stereotypes. *Journal of Personality and Social Psychology, 107*(3), 371-392.

Eagly, A. H., & Wood, W. (2011). Feminism and the exploration of sex differences and similarities. *Sex Roles, 64*, 758-767.

Egan, T. M., Upton, M. G., & Lynham, S. A. (2006). Career development: Load-bearing wall or window dressing? Exploring definitions, theories, and prospects for HRD-related theory building. *Human Resource Development Review, 5*(4), 442-477.

Ely, R. J., Stone, P., & Ammerman, C. (2014). Rethink what you "know" about high-achieving women. *Harvard Business Review, 92*(12), 100-109.

Enache, M., Sallan, J. M., Simo, P., & Fernandez, V. (2011). Career attitudes and subjective career success: tackling gender differences. *Gender in Management: An International Journal, 26*(3), 234-250.

England, P. (2010). The gender revolution: Uneven and stalled. *Gender & Society*, 24, 149-66.

Ferree, M. M., & Martin, P. Y. (1995). Doing the work of the movement: Feminist organizations. In M. Ferree, & P. Martin (Eds.), *Feminist organizations: Harvest of the new women's movement (women in the political economy)* (pp. 3-23). Philadelphia, PA: Temple University Press.

Fletcher, J. K. (1999). *Disappearing acts: Gender, power, and relational practice at work.* Cambridge, MA: MIT Press.

Foldy, E. G. (2006). Dueling schemata: Dialectical sensemaking about gender. *The Journal of Applied Behavioral Science, 42*(3), 350-372.

Freedman, E. (2002). *No turning back*. New York, NY: Ballantine Books.

Gamble, S. (2002). *The routledge companion to feminism and postfeminism (routledge companions)* (2nd ed.). New York, NY: Routledge.

Gedro, J., & Mizzi, R. C. (2014). Feminist theory and queer theory: Implications for HRD research and practice. *Advances in Developing Human Resources*, *16*(4), 445–456.

Glass, A. (2004). Blessing or curse?: Work-family polices and mother's wage growth over time. *Work and Occupations, 31*(3), p. 367-394.

Gottfredson, L. S. (2002). Gottfredson's theory of circumscription, compromise, and self-creation. In D. Brown & Associate (Eds.), *Career choice and development* (4th ed., pp. 85-148). San Francisco, CA: Jossey-Bass.

Gur-Ze'ev, I. (2005). Feminist critical pedagogy and critical theory today. *Journal of Thought, 40*(2), 55-72,117.

Hatmaker, D. M. (2013). Engineering identity: Gender and professional identity negotiation among women engineers. *Gender, Work & Organization, 20*, 382–396.

Hall, D. T. (1996). Protean careers of the 21st century. *The Academy of Management Executive, 10*(4), 8-16.

Hall, D. T. (2002). Careers in and out of organizations. Thousand Oaks, CA: Sage Publications.

Harris, D. A., & Giuffre, P. (2010). "The price you pay": How female professional chefs negotiate work and family. *Gender Issues, 27*(1-2), 27-52.

Hellawell, D. (2006). Inside-out: Analysis of the insider-outsider concept as a heuristic device to develop reflexivity in students doing qualitative research. *Teaching in Higher Education, 11*(4), 483-494.

Henwood, K., & Pidgeon, N. (1995). Remaking the link: Qualitative research and

feminist standpoint theory. *Feminism & Psychology, 5*(1), 7-30.

Hertneky, R. P. (2012). Composing our lives – as women and as leaders. *Advances in Developing Human Resources, 14*(2), 140-155.

Heugens, P. M, & Lander, M. W. (2009). Structure! Agency! (And other quarrels): A meta-analysis of institutional theories of organization. *Academy of Management Journal, 52*(1), 61-85.

Hewlett, S. A., & Luce, C. B. (2005). Off-ramps and on-ramps: Keeping talented women on the road to success. *Harvard Business Review, 83*(3), 43-54.

Hite, L. M., & McDonald, K. S. (2008). A new era for career development and HRD. *Advances in Developing Human Resources, 10*(1), 3-7.

Hochschild, A. R. (1989). *The second shift.* New York, NY: Penguin Books.

hooks, b. (2000). *Feminism is for everybody*. Cambridge, MA: South End Press.

Ingram, S. (2006). Women engineering graduates from the 1970s, 80s and 90s: Constraints and possibilities of a non-traditional career path. *International Journal of Engineering Education, 22*(2), 290-299.

Jawitz, J., & Case, J. (2002). Women in Engineering: Beyond the stats. *International Journal of Engineering Education, 18*(4), 390-391.

Johnson, R. B. (1997). Examining the validity structure of qualitative research. *Education. 118*(2), 282 – 292.

Kats, M. M., Van Emmerik, H. I., Blenkinsopp, J., & Khapova, S. N. (2010). Exploring the associations of culture with careers and the mediating role of HR practices. *Career Development International, 15*(4), 401-418.

Kelly, E. L., Ammons, S. K., Chermack, K., & Moen, P. (2010). Gendered challenge,

gendered response: Confronting the ideal worker norm in a white-collar organization. *Gender & Society, 24*(3), 281-303.

Koller, P. (2014). On the Nature of Norms. *Ratio Juris*, 27, 155–175.

Kossek, E. E., Lewis, S., & Hammer, L. B. (2010). Work-life intiatives and organizational change: Overcoming mixed messages to move from the margin to the mainstream. *Human Relations, 63*(1), 3-19.

Krefting, L. (1991). Rigor in qualitative research: The assessment of trustworthiness. *The American Journal of Occupational Therapy*, *(45*)3, p. 214-222.

Kuperberg, A. & Stone, P. (2008). The media depiction of women who opt out. *Gender and Society, 22*(4), 497-517.

Kushner, K., & Morrow, R. (2003). Grounded theory, feminist theory, critical theory: Toward theoretical triangulation. *Advances in Nursing Science, 26*(1), 30-43.

Laud, R. L., & Johnson, M. (2013). Journey to the top: Are there really gender differences in the selection and utilization of career tactics? *Journal of Organizational Culture, Communications and Conflict, 17*(1), 51-68.

Leung, S. A. (1995). The big five career theories. In J. A. Athanasou & R. v. Esbroeck (Eds.), *International Handbook of Career Guidance* (pp. 115-132). New York, NY: Springer.

Lewinter, J. M. (2013). *Factors that support women in being successful in engineering professions: Identity as a lens.* (Doctoral Dissertation). Retrieved from ProQuest Dissertation & Theses. (3590108)

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage.

Marlow, N. D., Marlow, E. K., & Arnold, V. A. (1995). Career development and women managers: Does one size fit all? *Human Resource Planning, 18*(2), 38-49.

Marsiglio, W. (n.d.). "Qualification criteria for the interviewer." Adapted from: Kvale, S. (1996). Interviews: An introduction to qualitative research interviewing. Thousand Oaks, CA: Sage, pp. 148-149.

Martin, P., & Barnard, A. (2013). The experience of women in male-dominated occupations: A constructivist grounded theory inquiry. *South African Journal of Industrial Psychology, 39*(2), 1.

Martin, P. Y., & Collinson, D., (2002). Over the pond and across the water: Developing the field of gendered organization. *Gender, Work and Organization, 9*(3), 244-265.

Maxwell, J. (2005). *Qualitative research design: An interactive approach.* Thousand Oaks, CA: Sage.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implemtation*. San Francisco, CA: Jossey-Bass.

Mennino, S. F., Rubin, B. A., & Brayfield, A. (2005). Home-to-job and job-to-home spillover: The impact of company policies and workplace culture. *The Sociological Quarterly, 46*, 107-135.

Meyerson, D. E., & Fletcher, J. K. (2000). A modest manifesto for shattering the glass ceiling. *Harvard Business Review, 78*(1), 126-136.

Miles, M.B., & Huberman, A. M. (1994). *Qualitative Data Analysis: An expanded source book (2nd Edition)*. Thousand Oaks, CA: Sage

Miller, J. (2010). Feminist theories. In C. Kridel (Ed.), *Encyclopedia of curriculum studies.* (pp. 372-377). Thousand Oaks, CA: Sage.

Mills, J. H. (2003). *Making sense of organizational change*. London, UK: Routledge.

Minkov, M., Blagoev, V., & Hofstede, G. (2013). The boundaries of culture: Do questions about societal norms reveal cultural differences? *Journal of Cross-Cultural Psychology, 44*(7), 1094-1106.

Özbilgin, M. F., Beauregard, T. A., Tatli, A., & Bell, M. P. (2011). Work–life, diversity and intersectionality: A critical review and research agenda. *International Journal of Management Reviews,13,* 177–198.

O'Neil, D. A., & Bilimoria, D. (2005). Women's career development phases: Idealism, endurance, and reinvention. *Career Development International, 10*(3), 168-189.

O'Neil, D. A., Hopkins, M. M., & Bilimoria, D. (2008). Women's careers at the start of the 21st century: Patterns and paradoxes. *Journal of Business Ethics*, *80*(4), 727-743.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage Publications.

Patton, M. Q. (2015). *Qualitative evaluation and research methods* (4th ed.). Thousand Oaks, CA: Sage Publications.

Philippe, D., & Durand, R. (2011). The impact of norm-conforming behaviors on firm reputation. *Strategic Management Journal, 32*(9), 969-993

Porter, F. (2012). Negotiating gender equality in development organizations: The role of agency in the institutionalization of new norms and practices. *Progress in Development Studies, 12*(4), 301-314.

Risman, B. J., Atkinson, M. P., & Blackwelder, S. P. (1999). Understanding the juggling act: Gendered preferences and social structural constraints. *Sociological Forum, 14*(2), 319-344.

Ralston, E. S., (2010). Deviance or norm? Exploring corporate social responsibility. *European Business Review, 22*(4), 397-410.

Ridgeway, C., & Correll, S. (2004). Unpacking the gender system: A theoretical perspective on gender beliefs and social relations. *Gender & Society,* 18, 510-531.

Rhoton, L. A. (2011). Distancing as a gendered barrier: Understanding women scientists' gender practices. *Gender & Society, 25*(6), 696 - 716.

Ryan, A. M., & Kossek, E. E. (2008). Work-life policy, implementation, breaking down or creating barriers to inclusiveness. *Human Resource Management,* 47, 295-310.

Salamone, P. R. (1996). Tracing super's theory of vocational development: a 40-year retrospective. *Journal of Career Development, 22*(3), 167-184.

Sandberg, J., & Tsoukas, H. (2015). Making sense of the sensemaking perspective: Its constituents, limitations, and opportunities for further development. *Journal of Organizational Behavior, 36*(S1), S6-S32.

Savickas, M. L. (2002). Career construction: A developmental theory of vocational behavior. In D. Brown & Associate (Eds.), *Career choice and development* (4th ed., pp. 149–205). San Francisco, CA: Jossey-Bass.

Savickas, M. L., Nota, L., Rossier, J., Dauwalder, J., Duarte, M. E., Guichard, J., van Vianen, M. (2009). Life designing: A paradigm for career construction in the 21st century. *Journal of Vocational Behavior, 75*, 239-250.

Savickas, M. L. (2011). New questions for vocational psychology: Premises, paradigms, and practices. *Journal of Career Assessment, 19*(3), 251-258.

Schein, E. M. (1999). *The corporate culture survival guide.* San Francisco, CA: Jossey-Bass.

Schein, E. M. (2010). *Organizational culture and leadership.* San Francisco, CA: Jossey-Bass.

Schreuders, P. D., Mannon, S. E., & Rutherford, B. (2009). Pipeline or personal preference: Women in engineering. *European Journal Of Engineering Education*, *34*(1), 97-112.

Seidman, I. (2013). *Interviewing as qualitative research: A guide for researchers in education and the social sciences.* (4th ed.). New York: Teacher's College Press.

Sengupta, S. S., & Sinha, J. B. P. (2005). Perceived dimensions of societal and organizational cultures and their impact on managerial work behavior. *Journal of Management Research, 5*(3), 143-172.

Shapiro, M., Ingols, C., & Black-Beard, S. (2008). Confronting career double blinds: Implications for women, organizations, and career practitioners. *Journal of Career Development, 34*(3), 309-333.

Spokane, A. R., Luchetta, E. J., & Richwine, M. H. (2002). Holland's theory of personalities in work environments. In D. Brown & Associate (Eds.), *Career choice and development* (4th ed., pp. 373-426). San Francisco, CA: Jossey-Bass.

Stanley, L. & Wise, S. (1983). *Breaking out: Feminist Consciousness and feminist research*. London: Routledge & Kegan Paul Books.

Sullivan, S. E., & Arthur, M. B. (2006). The evolution of the boundaryless career concept: Examining physical and psychological mobility. *Journal of Vocational Behavior, 69*, 19-29.

Sullivan, S. E., & Baruch, Y. (2009). Advances in career theory and research: A critical review and agenda for future exploration. *Journal of Management, 35*(6), 1542-1571.

Sullivan, S. E., & Mainiero, L. (2008). Using the kaleidoscope career model to understand the changing patterns of women's careers: Designing HRD programs that attract and retain women. *Advances in Developing Human Resources, 10*(1), 32-49.

Super, D. W. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior, 16*, 282–298.

Swanson, R. A. & Holton, E. F. (2001). *Foundations of human resource development.* San Francisco, CA: Berrett-Koehler.

Thomas, S. P. (2005). *The career development of women in executive-level positions in information technology*. (Doctoral Dissertation). Retrieved from ProQuest Dissertation & Theses. (3182396)

Tong, R. (1995). *Feminist thought: A comprehensive introduction.* London: Routledge.

Tullos, K. C. (2011). *Educators who work in science: The narratives of women negotiating careers in academic science*. (Doctoral dissertation). Retrieved from ProQuest Dissertation & Theses. (3463733)

U. S. Department of Labor, Bureau of Labor Statistics. (2014a). *Highlight of women's earnings in 2013*. Retrieved from http://www.bls.gov/opub/reports/cps/highlights-of-womens-earnings-in-2013.pdf.

U. S. Department of Labor, Bureau of Labor Statistics. (2014b). *Current population survey table 3*. Retrieved from http://http://www.bls.gov/cps/cpsaat03.htm.

U. S. Department of Labor, Bureau of Labor Statistics. (2014c). *Current population survey table 9.* Retrieved from http://http://www.bls.gov/cps/cpsaat09.htm.

U. S. Department of Labor, Bureau of Labor Statistics. (2014d). *Current population survey table 11.* Retrieved from http://http://www.bls.gov/cps/cpsaat11.htm.

U. S. Department of Labor, Bureau of Labor Statistics. (2014e). *Women in the labor force: A databook*. Retreived from http://www.bls.gov/opub/reports/cps/women-in-the-labor-force-a-databook-2014.pdf.

Vogel, D. L., Wester, S. R., Heesacker, M., & Madon, Stephanie. (2003). Confirming gender stereotypes: A social role perspective. *Sex Roles, 48*(11/12), 519-528.

Walker, R. (2011, May 25). Feminist infighting. *Huffington Post.* Retrieved from http://www.huffingtonpost.com/rebecca-walker/feminist-infighting_b_89339.html.

Watts, J. H. (2009). 'Allowed into a man's world' meanings of work-life balance: Perspectives of women civil engineers as 'minority' workers in construction. *Gender, Work and Organization, 16*(1), 37-57.

Weick, K. E. (1995). *Sensemaking in organizations*. Thousand Oaks, CA: Sage.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science, 16*(4), 409-421.

Wentling, R. M., & Thomas, S. (2009). Workplace culture that hinders and assists the career development of women in information technology. *Information Technology, Learning, and Performance Journal, 25*(1), 25-42.

White, B. (1995). The career development of successful women. *Women in Management Review, 10*(3), 4-15.

Whitmarsh, L., & Wentworth, D. K. (2012). Gender similarity or gender difference? Contemporary women's and men's career patterns. *The Career Development Quarterly, 60*, 47-64.

Wilson, E. M. (1998). Gendered career paths. *Personnel Review, 27*(5), 296-411.

Yagil, D., & Luria, G. (2014). Being difficult: Customers' sensemaking of their deviant behavior. *Deviant Behavior, 35*(11), 921-937.

Yardley, I. & Neal, D. J. (2007). Understanding the leadership and culture dynamic within a military context: Applying theory to an operational and business context. *Defence Studies, 7*(1), 21-41.

Yin, R. K. (2009). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.

Appendix A: Pre-Interview Questionnaire

This pre-interview questionnaire is for a dissertation being completed at the George Washington University Graduate School of Education and Human Development. The purpose of this study is to explore the experiences of professional women engineers as these relate to their career development choices they make within organizations. How women interpret and make meaning of their career development experiences is the study's focus. Your completion of this pre-interview questionnaire is voluntary and you may discontinue it at any time. The pre-interview questionnaire is a requirement for participation in this research study. No known risks are associated with this pre-interview questionnaire. Any information you provide will be confidential and used only to inform the present study. By completing this pre-interview questionnaire, you are consenting to the use of this information.

Please respond to the following questions related to your career development experiences:

1. What is your current occupation? If not currently employed in an organization or pursuing paid employment, please indicate as such and complete using your most recent paid employment or engineering job.

2. If different from occupation, what is your current job title?

3. What are your usual activities or duties in this position?

4. What industry do you work in?

5. Please indicate your current career phase:

   _____ Career Phase 1: Growth phase associated with matching abilities and interests to an occupation. Developing attitudes and needs towards work.

_____ Career Phase 2: Exploration phase associated with occupational exploration and tentative career choices.

_____ Career Phase 3: Establishment phase associated with skill building and developing in an occupation to be successful.

_____ Career Phase 4: Maintenance phase associated with maintaining skills and updating accomplishments in an occupation.

_____ Career Phase 5: Decline phase associated with preparation for retirement and withdrawal from work.

6. Please provide a brief explanation as to why you selected your career phase in the previous question.

7. How many years have you been working?

8. How many years have you been working in engineering?

9. Have there been any significant gaps in your career path? If yes, please describe.

10. Have you worked in occupations other than engineering? If yes, please describe.

11. Have you worked as an engineer for companies other than your current company? If yes, what made you change?

12. What, if any, professional networks or societies are you affiliated with?

Please respond to the following demographic questions:

1. What is your age?

2. What level of education have you completed?

3. What is your marital status?

4. Are you a parent? If yes, what are the ages of your children?

5. Other than children, are you responsible for the caregiving of anyone else? If yes, please describe.

Please provide your contact information for follow-up purposes. This information will not be shared.

Name: _____

Email Address: _____

Phone Number: _____

Best time of day to reach you (or best time not to call): _____

Geographic Location (city/state): _____

Appendix B: Call for Participants

Invitation to Participate in Dissertation Research Study

Good morning! Please see email from Kelly below regarding this opportunity to participate in a research study.

My name is Kelly Pumroy and I am a doctoral candidate at The George Washington University in Washington, D. C and am currently living in Colorado Springs. I am working on my dissertation exploring the career development of women engineers and am seeking participants for my study. I have reached out to your SWE section in the hope of finding participants.

The purpose of this study is to explore the experiences of professional women engineers as these relate to their career development choices they make within organizations. How women interpret and make meaning of their career development experiences is the study's focus.

Participation in the study involves completion of a pre-interview questionnaire, two 90-minute interviews (conducted in person, over the phone, or by Skype), and two 15-minute follow-up conversations. The interviews will be recorded with the consent of participants, although may be declined if the participant wishes.

If you are interested in participating, please email me at **ellypumroy@yahoo.com**. I have a questionnaire for participants to fill out.

The primary investigator of this study is Shaista E. Khilji, PhD, Professor of Human and Organizational Learning at the Graduate School of Education and Human Development, The George Washington University. The IRB # for the study is 031509.

I really appreciate your consideration of this study and look forward to hearing from anyone interested in participating. If you have any questions please let me know and I would be happy to speak with you.

Thank you in advance!!

Kelly Pumroy
kellypumroy@yahoo.com
732.299.4732

Appendix C: Maximum Variation of Participants

Name	Occupation	Industry	Career Phase	Years Working	Years in Engineering	Other Occupations	Age	Education	Currently married	Children
Ann	Supervisor	Government	3 – Establishment	14	14	No	33	BS	No	No
Jan	Regional Environmental Manager	Metals Recycling	2 - Exploration	12	12	No	34	BS	Yes	Yes
Lakshmi	Marketing Director/Sales Engineer	Design and Development	3 – Establishment	10	6	Yes	36	BS	Yes	No
Katherine	Owner	Consulting	3.75	30	30	Yes	54	BS, MS	Yes	Yes
Carol	Staff Engineer	Industrial Engine and Generator Controls	5 - Decline	35	28	Yes	63	BS, MS, PhD	No	Yes
Sue Ellen	Principal Engineer	Biotech Pharma	4 – Maintenance	33	33	No	55	BS	Yes	No
Clara	CEO	Women's Org	None of the Above	39	38	Yes	60	BS, MBA	Yes	No
Susan	Process Engineer	Energy	2 - Exploration	9	9	Yes	30	BS	Yes	No
Angela	EVP and CFO	Electric Utility	4 – Maintenance	25	9	Yes	46	BS, MBA	Yes	Yes
Quinn	Wealth Management Advisor	Financial	1 - Growth	15	7	Yes	39	BS, MBA	Yes	No

Appendix D: Interview Guide (Interview 1)

Research Questions: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

Time of interview:

Date:

Place:

Interviewee:

To begin: *First, let me begin by thanking you for participating in this research study. Today's interview is for a dissertation being completed at the George Washington University Graduate School of Education and Human Development. You have been asked to participate in this interview because you are viewed as a woman in engineering based in the United States. Understanding your experiences can help give guidance to women as well as inform programs that aim to develop women's careers.*

The purpose of this study is to explore the experiences of professional women engineers as these relate to their career development choices they make within organizations. How women interpret and make meaning of their career development experiences is the study's focus. The contents of our interview will be kept confidential and all identifiers, including your name, organizational affiliation and any specifics about your role will be removed when transcribed.

Today, I am interested in hearing about your career experience as an engineer. As a reminder, I will interview you two times (including today). There are no right or wrong answers. If at anytime you feel uncomfortable answering a question, please let me know; we can skip it and move on.

As a reminder, a pseudonym will be used, and your responses will be kept confidential. With your permission, this interview will be tape recorded for the purposes of transcribing and analyzing the data for use in my dissertation. You can stop the interview at any time for any reason. Please feel free to also let me know if you would like to go off the record at anytime when responding. During this time, if it is okay with you, in addition to recording I will take hand-written notes, to later paraphrase the ideas you shared. Do you have any questions about the purpose of this study?

I'd like to start by asking about your career and being an engineer.

1. From your pre-interview questionnaire, I saw that you work as [insert current occupation]. Can you tell me more about your career?
2. Tell me more, if you will, about your choice of engineering. [Prompt, if needed: How did your choice of engineering relate to your personal goals? To your professional goals? Influences from family or community?]

1. What do you like best about being an engineer? What about being a woman in engineering? Why?
2. What do you like least about being an engineer? And least about being a woman in engineering? Why?
3. Can you describe a time when you've been happy or elated going into the office?
4. How about a time when you've been unhappy going into the office?
5. When I say "woman in engineering," what behaviors, characteristics or visuals come to mind?
6. From your pre-interview questionnaire, I saw you [insert marital status, children, or other caregiving responsibility provided]. How has that impacted your career?

I'd like to continue by hearing more about your career choices.

1. If applicable: From your pre-interview questionnaire, you mentioned that you have worked in an occupation other than engineering. Can you tell me about that? [Prompt, if needed: What influenced your decision to change occupations?]
2. You mentioned earlier [insert career path details, for example, change in organization or a change from full- to part-time] about your career path. Tell me more about the motivation for these changes.
3. You mentioned [insert career path detail]. Do you think your male counterparts would have had similar experiences?
4. Do you think you would have had similar experiences in other organizations?

Let's talk more about your current job.

If currently employed in an organization:

1. Tell me more, if you will, about your decision to work for your current organization.
2. How do you feel going into work everyday?
3. How do you feel about how your career has progressed with this organization?
4. Do you think the organization you work for has influenced your career choices?
5. Suppose I was new to your organization. What would you tell me about career development? Are there any practices or policies in place pertaining to career development?
6. Are there any practices or policies in place to support work-life balance? If so, can you tell me more about them? Have you used them? If so, call you tell me more about that experience?
7. Is there anything else that has impacted your career choices that we have not talked about today? Anything outside your organization?

If not currently employed in an organization:

1. Tell me more, if you will, about your decision to not work in an organization.
2. What are your feelings when you wake up and don't have to go into the office everyday?
3. Can you tell me about your career progression/career path?
4. How do you feel about your career progression/career path?
5. Why do you think it has progressed/not progressed in this way?
6. If applicable: You mentioned earlier that you worked for [insert organization] but are not currently working there. What influenced your decision to leave?

We're just about done.

1. That covers everything I wanted to ask, anything you care to add?
2. Is there anything I should have asked but didn't?
3. Out of all the things we've talked about-or maybe some we've missed-what should I pay most attention to? Anything you think I should think about when I read your interview?

In the upcoming weeks, I will send you a copy of the interview transcript for your review for accuracy. In the meantime, please feel free to contact me if you have any questions. Thank you again for participating in this interview.

Appendix E: Interview Guide (Interview 2)

Research Questions: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

Time of interview:

Date:

Place:

Interviewee:

To begin: *Let me begin by again thanking you for participating in this research study. Today's interview is for a dissertation being completed at the George Washington University Graduate School of Education and Human Development. The purpose of this study is to explore the experiences of professional women engineers as these relate to their career development choices they make within organizations. How women interpret and make meaning of their career development experiences is the study's focus. The contents of our interview will be kept confidential and all identifiers, including your name, organizational affiliation and any specifics about your role will be removed when transcribed.*

In the first interview, we talked about your career experiences as an engineer. In this interview, I want to ask you more about some of those experiences, about career success, women's roles and the meaning you assign to these experiences. There are no right or wrong answers. If at anytime you feel uncomfortable answering a question, please let me know; we can skip it and move on.

As a reminder, a pseudonym will be used, and your responses will be kept confidential. With your permission, this interview will be tape recorded for the purposes of transcribing and analyzing the data for use in my dissertation. You can stop the interview at any time for any reason. Please feel free to also let me know if you would like to go off the record at anytime when responding. During this time, if it is okay with you, in addition to recording I will take hand-written notes, to later paraphrase the ideas you shared.

Before we begin with today's interview, do you have any questions or concerns about the first interview?

Today I'd like to talk more in detail about some of the experiences you shared in our first discussion.

1. How, if at all, has being a woman impacted your experiences? [Follow-up: Has being a woman ever been a challenge for you professionally?]
2. You mentioned [insert career path detail such as a break or gap in employment, if applicable]. What did that mean to you? How did you feel?

Let's continue by talking about career success.

1. Can you describe a time, or more than one time, when you've felt successful in your career?
2. What does success mean to you?
3. What does career success mean to you?
4. Do you think you've achieved success in your career? Why or why not?
5. How has your definition of career success been shaped by your experiences?
6. Suppose we could look into your future, what would be happening in your career? In other areas of your life?

Let's talk more broadly about women's roles.

1. We've discussed a lot about your experiences in engineering and your own career development. How do you feel about women's career development overall?
2. What has the choice of engineering meant in the context of your life? What has it meant in terms of how you define or see yourself as a woman?
3. What do you think about women's roles in organizations? What about women in society?
4. Can you tell me about any working relationships you've had with others in your occupation? In your organization? What did those mean to you?

We're just about done. As in interview one, I'd like to close by asking:

1. Is there anything you care to add to anything we've discussed today?
2. Is there anything I should have asked but didn't?
3. Out of all the things we've talked about-or maybe some we've missed-what should I pay most attention to? Anything you think I should think about when I read your interview?

This concludes the end of the second interview. In the upcoming weeks, I will send you a copy of the interview transcript for your review for accuracy. In the meantime, please feel free to contact me if you have any questions. Thank you again for participating in this interview.

Appendix F: Interview Purpose and Questions

Research Questions: what are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?

INTERVIEW 1

PURPOSE: Seidman's (2013) interview one is focused on life history and learning about the participant's experiences. Therefore, in the present work, I want to focus on the participant's career development experiences, both historical and current, about the details of those experiences, and about being an engineer.

Question	Purpose
Topic 1: On career and being an engineer (addresses research question 1)	
1. From your pre-interview questionnaire, I saw that you work as [insert current occupation]. Can you tell me more about your career? 2. Tell me more, if you will, about your choice of engineering. [Prompt, if needed: How did your choice of engineering relate to your personal goals? To your professional goals? Influences from family or community?] 3. What do you like best about being an engineer? What about being a woman in engineering? Why? 4. What do you like least about being an engineer? And least about being a woman in engineering? Why? 5. Can you describe a time when you've been happy or elated going into the office? 6. How about a time when you've been unhappy going into the office? 7. When I say "woman in engineering", what behaviors, characteristics or visuals come to mind? 8. From your pre-interview questionnaire, I saw you [insert marital status, children, or other caregiving responsibility provided]. How has that impacted your career?	Questions 1-4 and 8: Gathering information, life history, and focusing on experiences. All questions with this purpose. Question 5-6: To draw out feelings Question 7: serves to gather initial thoughts on women and help provide foundation for interview 2.
Topic 2: Career Choices (addresses research question 1)	
1. If applicable: From your pre-interview questionnaire, you mentioned that you have	Question 1: Want to understand what it is about engineering as an occupation

worked in an occupation other than engineering. Can you tell me about that? [Prompt, if needed: What influenced your decision to change occupations?] 2. You mentioned earlier [insert career path details, for example, change in organization or a change from full- to part-time] about your career path. Tell me more about the motivation for these changes. 3. You mentioned [insert career path detail]. Do you think your male counterparts would have had similar experiences? 4. Do you think you would have had similar experiences in other organizations?	Question 2: Want to understand life or career experiences and NORMS Question 3: Difference between men and women's career development Question 4: Organizational influences
Topic 3: On current job (addresses research questions 2 and 3)	
If currently employed in an organization:	
1. Tell me more, if you will, about your decision to work for your current organization. 2. How do you feel going into work everyday? 3. How do you feel about how your career has progressed with this organization? 4. Do you think the organization you work for has influenced your career choices? 5. Suppose I was new to your organization. What would you tell me about career development? Are there any practices or policies in place pertaining to career development? 6. Are there any practices or policies in place to support work-life balance? If so, can you tell me more about them? Have you used them? If so, call you tell me more about that experience? 7. Is there anything else that has impacted your career choices that we have not talked about today? Anything outside your organization?	Question 1: Is it organization specific? Question 2: To draw out feelings Question 3: Non traditional nature of career development Question 4: Norms Questions 5-7: Mentoring, flexible jobs, W/L and FF policies all impact career development and norms have been found to prevent use. Want to know more about this for individual women.
If not currently employed in an organization:	
1. Tell me more, if you will, about your decision to not work in an organization. 2. What are your feelings when you wake up and don't have to go into the office everyday?	Question 1: Norms Question 2: To draw out feelings Question 3-4: Nontraditional and meaning

3. Can you tell me about your career progression/career path? 4. How do you feel about your career progression/career path? 5. Why do you think it has progressed/not progressed in this way? 6. If applicable: You mentioned earlier that you worked for [insert organization] but are not currently working there. What influenced your decision to leave?	Question 5: Meaning Question 6: Other norms?

INTERVIEW 2

PURPOSE: Seidman's (2013) interview two and three focus on the details of participant's lived experiences and asks participants to reflect on the meaning of experiences. Therefore, in the present work, I want to focus on follow-up questions about experiences, the meaning of those experiences, and of career success and women's roles.

Question	Purpose
Topic 1: Detail related to experiences from Interview 1 and Being a woman (addresses research question 1, 2, and 3)	
1. How, if at all, has being a woman impacted your experiences? [Follow-up: Has being a woman ever been a challenge for you professionally?] 2. You mentioned [insert career path detail such as a break or gap in employment, if applicable]. What did that mean to you? How did you feel?	Purpose: detailed experiences and reflection on meaning. Question 1: Feminist theory and privileging voice of women engineers in organizations Question 2: Deeper meaning
Topic 2: Career Success (addresses research question 2 and 3)	
1. Can you describe a time, or more than one time, when you've felt successful in your career? 2. What does success mean to you? What does career success mean to you? 3. Do you think you've achieved success in your career? Why or why not? 4. How has your definition of career success been shaped by your experiences? 5. Suppose we could look into your future, what would be happening in your career? In other areas of your life?	Most existing research relies upon male-based, traditional definitions of success so want to understand how these women define success. Also helps with context of other decisions/career choices discussed.
Topic 3: Women's roles (addresses research questions 2 and 3)	
1. We've discussed a lot about your	Question 1: Feminist theory – adding women's

experiences in engineering and your own career development. How do you feel about women's career development overall? 2. What has the choice of engineering meant in the context of your life? What has it meant in terms of how you define or see yourself as a woman? 3. What do you think about women's roles in organizations? What about women in society? 4. Can you tell me about any working relationships you've had with others in your occupation? In your organization? What did those mean to you?	voices Question 2: Feminist theory – women's roles specifically in the engineering occupation Question 3: Social role theory Question 4: Mentoring, peer relationships and networking found to help women in organizations. However, in engineering women are still under-represented so is this happening? Also, MEANING.

Appendix G: Informed Consent Form

Research Consent Form

A Qualitative Study of the Identity of Women's Career Development Experiences

IRB #

Principal Investigator: Shaista E. Khilji, PhD, 202-994-1146
Doctoral Candidate: Kelly H. Pumroy, 732-299-4732

INTRODUCTION

You are invited to take part in a research study conducted by Kelly H. Pumroy under the direction of Dr. Shaista E. Khilji of the Department of Human and Organizational Learning in the Graduate School of Education and Human Development at The George Washington University.

Taking part in this research is entirely voluntary. You may choose not to take part, or you may withdraw from this study at any time. You will receive no benefit from taking part in this study. This research may give us knowledge about the career development experiences of women and it may inform future research and practice. Before you decide to take part, please take as much time as you need to ask any questions and discuss this study with colleagues, family or friends.

ABOUT THE RESEARCH

You are being asked to take part in this study because you are viewed as a woman working in engineering based in the United States.

The purpose of this study is to explore the experiences of professional women as these relate to their career development choices they make within organizations. How women interpret and make meaning of their career development experiences is the study's focus. The main research questions guiding this study are:

- *What are the career development experiences of women engineers? How do women engineers' careers evolve? How is the evolution of career influenced by organizational and societal norms?*

The research will be conducted through interviews with you either at an office location convenient for you or via telephone or Skype in whichever manner and location that provides a quiet, comfortable place for you. An estimate of 10-12 participants will be interviewed for this study.

WHAT IS INVOLVED IN THIS STUDY?

If you chose to take part in this study, the total amount of time you will spend in connection with this study is approximately 3 hours and 30 minutes. Approximately 3 hours of that time will be spent in the interviews. A possible additional 30 minutes of time may be spent in follow-up by phone or e-mail to discuss findings and questions with you. The follow-up contact would be within two months of your interview.

If you choose to take part in this study, this is what will happen.

The Interviews:

- You will participate in two 1 ½ hour interviews about your experiences as a woman in engineering.
- The interview will be audio-recorded only with your permission. You will be asked again at the time of the interview to give your verbal permission to participate in the study and to be taped. Your permission will be recorded in response to the statement "Please state 'yes' if you are comfortable with this interview being tape recorded."
- Please do not identify yourself by name during the interview. You will be asked to provide a pseudonym of your choice at the time of the interview to remove any identification of your voice with your name.
- The audio files will be kept in a secure place and will be destroyed after the end of the study.
- If you do not feel comfortable with the interview being taped, the interviewer will take notes.

The Follow-Up:

- Not everyone will be contacted for a follow-up conversation.
- If you do not wish to have any follow-up contact, just let the researcher know and you will not be contacted.
- It is estimated that follow-up conversations will take no more than 15 minutes.
- You may choose whether you would like to be contacted by telephone or by e-mail for follow-up.
- The purpose of the follow-up contact is to discuss aspects of your interview with you or the findings in general after conducting several other interviews.

You may refuse to answer any of the questions and you may stop your participation in this study at any time.

WHAT ARE THE RISKS OF THE STUDY?

The study has the following risks.

Given the nature of the interview questions, it is not likely that you will feel any stress or discomfort during the interview. You are free to skip any questions or stop the interview at any point.

Every effort will be made to keep your information confidential, however, this can not be guaranteed. There is a small chance that someone not on our research team could find out that you took part in the study or somehow connect your name with the information we collect about you, however the following steps are being taken to reduce that risk.

- As described above, a pseudonym will be used in the interview and therefore in the transcription of the interview as well. A hardcopy only (no computer file) key linking your name and the pseudonym as well as the audio files will be locked in a secure location separate from the research materials (transcriptions, data encoding and analysis).
- All computers used for the project will be password protected as will the software.
- When results of this research study are reported in journals or at scientific meetings, the people who take part are not named or identified. Direct quotes may be published from the research and if so, the quotes will be cited with the participant's chosen pseudonym.
- GWU will not release any information about your research involvement without your written permission, unless required by law.
- At the end of the project all material with identifiable data will be destroyed.

ARE THERE BENEFITS TO TAKING PART IN THE STUDY?

The benefits to science and humankind that might result from this study are: an increased understanding of how women interpret their career development experiences and the personal satisfaction of helping a student with her dissertation research.

WHAT ARE MY OTHER OPTIONS?

You do not have to be in this study if you do not want to.

WHAT IF I CHANGE MY MIND?

You may stop taking part in the study at any time.

WILL I RECEIVE PAYMENT FOR BEING IN THIS STUDY?

You will not receive payment for taking part in this study.

WHAT ARE THE COSTS FOR TAKING PART IN THIS STUDY?

Besides the use of your time, taking part in this study will not lead to added costs for you.

PROBLEMS OR QUESTIONS

Research specific questions should be addressed to the principal investigator, Dr. Shaista E. Khilji, at telephone number (202) 994-1146 or e-mail address sekhilji@gwu.edu. The Office of Human Research of The George Washington University can provide further information about your rights as a research subject: (202) 994-2715.

DOCUMENTATION OF INFORMED CONSENT

If you agree to participate in this study, please sign below.

After you sign this Consent form, the research team will provide you with a copy for your files.

_____	_____
Participant—Name Printed and Signature	Date