

A Capstone Project

entitled

The Experiences of Reproductive Choices by Women with Terminal Degrees in
Roanoke, VA: A Qualitative Study

By

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Abstract

Women with terminal degrees are an understudied population in the extant literature on reproductive choices. Today, with more women pursuing terminal degrees than at any other time in history, understanding the influence of educational attainment is of particular interest when studying reproductive choices for women. This study addresses the gap in the literature by specifically investigating the lived experience of women of reproductive age who hold terminal degrees.

Objectives: This qualitative study investigates how women with terminal degrees in Roanoke, VA—specifically those who are employed at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion—describe what has and does influence their reproductive choices. The central research question for this study asks how women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices.

Methodology: Based on the theoretical model of the theory of reasoned action, the researcher obtained qualitative data through an electronic survey instrument created in Qualtrics and via one-on-one, semi-structured interviews conducted by Zoom audio call. The research team then transcribed interviews using Rev Transcription service and identified common themes using Dedoose qualitative software. An Inter-Rater reliability utilizing Cohen's Kappa efficient was established at $>.80$.

Results: Of the 20 women interviewed, 13 were between the ages of 32–38 years, six between the ages of 39–44 years, and one between the ages of 25–31 years. There were 16 who identified as White/Caucasian and one who identified as Black/African American; three identified as more than one race/ethnicity. Nine women held a PhD, six

an MD, two a DNP, one a DO, one a DPT, and one a PharmD. Of the participants, 14 had children and six did not. Of those who had children, nine had birthed or adopted their first child between the ages of 25–31 years and five had done so between the ages of 32–38 years. Of those who had children, five had one child, six had two children, two had three children, and one had more than three children. Seven participants indicated they would like to have children or more children, and 13 indicated they did not want any or any more children. There were 15 participants who were married and five who were not married (which included single, cohabitating, in a relationship, domestic partnership, engaged, and divorced). The overall themes that emerged from the interviews were balancing career and motherhood (N = 68), effects of a terminal degree on reproductive choices (N = 55), marital status (N = 51), finances (N = 50), challenges and barriers (N = 36), and suggestions (N = 48). These major themes aligned with the theory of reasoned action's constructs of behavioral beliefs, outcomes evaluation, normative beliefs, and motivation to comply.

Conclusion: The findings of this study align with the current literature on the reproductive choices of college-educated women. Considering there are no previous qualitative studies that examine the lived experiences of women specifically with terminal degrees, however, this study produced novel findings. Findings from this study may be extrapolated and applied to other universities, institutions, or other groups with similar populations to better understand the specific health needs and experiences of this group.

Keywords: women, terminal degree, reproductive choices, motherhood, Theory of Reasoned Action

Dedication

To my family and the beautiful souls I've lost during my doctoral studies.

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List of Abbreviations

CDC.....	Center for Disease Control and Prevention
DBA.....	Doctor of Business Administration
DHA.....	Doctor of Health Administration
DHSc.....	Doctor of Health Sciences
DNP.....	Doctor of Nursing Practice
DO.....	Doctor of Osteopathic Medicine
DOT.....	Doctor of Occupational Therapy
DPT.....	Doctor of Physical Therapy
DVM.....	Doctor of Veterinary Medicine
FBRI.....	Fralin Biomedical Research Institute
EdD.....	Doctor of Education
IRB.....	Institutional Review Board
IRR.....	Inter-Rater Reliability
IVF.....	In Vitro Fertilization
MD.....	Doctor of Medicine
OBGYN.....	Obstetrics and Gynecology
PharmD.....	Doctor of Pharmacy
PhD.....	Doctor of Philosophy
RUC.....	Radford University Carilion
SGM.....	Sexual and Gender Minorities
STEM.....	Science, Technology, Engineering, and Mathematics
TRA.....	Theory of Reasoned Action
VTC.....	Virginia Tech Carilion

Chapter One: Introduction

Educational Attainment & Reproductive Choices

Reproductive choice is an important and significant health topic, as the decision to become a mother is often wrought with various complex sociocultural pressures (Sevón, 2005). *Reproductive choice* is defined as having a safe and effective method with which women can plan or prevent pregnancy (i.e., contraception), and includes decisions such as whether or when to have children and how many children to have (Reichlin & Augeri, 2015). Reproductive choices are often driven by socioeconomic variables, such as educational attainment, income level, and marital status (Reichlin & Augeri, 2015). Education is of particular interest when examining reproductive choices, especially the role of attaining a *terminal degree*, which Nelson (2018) defines as the highest educational degree awarded in a given field of study.

For women in the United States, obtaining a college education is a choice that is associated with an increased income, better physical health, extra career advancement, improved access to healthcare, and more reproductive choices (Cutler & Lleras-Muney, 2006; Hershbein & Miller-Adams, 2018; Ross & Mirowsky, 2010; Zimmerman et al., 2015). Research that focuses on women who have obtained terminal degrees and are of child-bearing age (ages 24–44) is key to discovering and understanding what, if any, distinct differences exist among women with differing levels of educational attainment when it comes to the types of reproductive choices they make and their experiences with and attitudes toward motherhood.

Although a number of studies have focused on educational attainment and its association with women's reproductive choices, the question of how a specific segment

of women—those with terminal degrees—consider their reproductive choices has not been previously explored in any depth.

Statement of the Problem

While considerable research compares the lives and demographics of college-educated women to women without a college degree, typically the term *college-educated* includes bachelor's, master's, and doctoral degrees together. Existing research clearly shows that the more educated a woman is, the more likely she is to delay childbearing and to have fewer children (Brand & Davis, 2011; Ganguli et al., 2011; Neels et al., 2017; Reichlin & Augeri, 2015; Taylor et al., 2010; Zang, 2019). Yet, no specific studies were identified that investigated the lived experience of women with terminal degrees apropos of childbearing and reproductive choices. By focusing only on women with terminal degrees, we were able to discover what, if any, distinct differences exist among them and women with other, lower levels of educational attainment. Women with terminal degrees are typically found in higher concentrations in areas where there are more educational and technological institutions (Florida, 2019). One such area of interest that is suitable for specifically studying women with terminal degrees was Roanoke, VA. Roanoke is an urban area with a high saturation of both educational institutions and women with terminal degrees (*Roanoke, VA*, 2017).

Significance of the Problem

Many factors affect women's reproductive choices, but level of education, especially, has been shown to be a significant one (Neels et al., 2017). Relatedly, evidence suggests that having the ability to postpone pregnancy through prevention or planning affects women's decisions to invest in their educational attainment and career

(Ganguli et al., 2011; Reichlin & Augeri, 2015). Higher educational attainment is also correlated with increased access to contraceptives and having more reproductive choices (Reichlin & Augeri, 2015). Interestingly, women with a terminal degree comprise one of the highest percentages of women without children compared to all other educational attainment categories (i.e., high school, bachelor's, and master's degrees; Taylor et al., 2010). This is significant because more women are pursuing terminal degrees now than in previous years. According to Okahana and Zhou (2018), women have surpassed men in earning a terminal degree eight consecutive years in a row leading up to the 2016–2017 academic year. As of 2017, there were almost 79,000 terminal degrees awarded in the United States; of those, 53% were awarded to women (McCarthy, 2018; Okahana & Zhou, 2018).

The population of highly educated women, those with terminal degrees, is quickly growing in absolute numbers and in numbers relative to men who earn terminal degrees. Based on these numbers, the reproductive choices of these women will likely have a profound impact on the overall United States population in years to come. By investigating what influences these women's choices, this study may lead to a better understanding of the specific needs of women with terminal degrees who are balancing careers and motherhood. Additionally, this study may also contribute to a better understanding of how higher education attainment influences financial security, as well as this population's access to and use of family planning methods and reproductive health and choices.

Purpose of the Research

While previous research shows associations between certain socioeconomic determinants and reproductive choices, the researcher found no existing qualitative studies that explore how women with terminal degrees describe the factors that influence their reproductive choices. The purpose of this qualitative study was to investigate how women with terminal degrees in Roanoke, VA, describe what influences their reproductive choices. Findings from this study may be extrapolated to apply to other urban areas with higher concentrations of women with terminal degrees.

Research Questions

Question 1: How do women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices?

Expected Outcome 1: Recent literature discusses the benefits of higher education on women's reproductive choices, including access to birth control options, such as contraception, prenatal care and the option to delay childbirth (Brand & Davis, 2011; Shelton & Johnson, 2006; Taylor et al., 2010; Zang, 2019). This study examined how women with a *terminal degree*, specifically, described their beliefs, experiences, and choices regarding reproductive choices.

Question 2: What considerations do women make regarding their reproductive choices?

Expected Outcome 2: Recent literature explores the reproductive choices available to women, such as elective egg freezing, delayed childbearing, and contraceptives (Inhorn, et al., 2018; Petropanagos, 2010). Women also consider their careers and other financial complexities, such as childcare, raising a child, and the gender

wage gap, as determinants of reproductive choices (Gough & Noonan, 2018; Kittelstrom, 2010; Miller, 2011). This study examined the considerations that women with *terminal degrees*, specifically, make regarding reproductive choices.

Question 3: What role do sociocultural and socioeconomic determinants, such as marital status and income level, play in their choice of whether or not to become a mother?

Expected Outcome 3: Current research describes a number of perceived and actual constraints and pressures that women face, such as the expectation to have children; the societal perceived age at which a woman should have a child; the perception and expectation of a traditional family dynamic; the challenges of balancing work and personal life; socioeconomic determinants, such as marital status and income level; and the sociocultural perception of women in the workplace and how this affects raising children and workplace performance (Ganguli et al., 2011; Gough & Noonan, 2018; Kittelstrom, 2010; Shelton & Johnson, 2006). Women may consider not having children or having fewer children than they once originally anticipated because of their salary or marital status. This study explored which and how socioeconomic determinants affected the choices of women with *terminal degrees*, specifically, of whether or not to become a mother.

Theoretical Foundation

The research objectives are based on the model of the theory of reasoned action, which suggests that the health behavior of an individual is determined by the intention and objective of performing that behavior (*Theory of Reasoned Action/Planned Behavior*, n.d.). The intention to perform a behavior is determined by one's attitude toward the

behavior and the subjective, societal, and environmental norms associated with the behavior, as well as the individual's perception of control over the health behavior (*Theory of Reasoned Action/Planned Behavior*, n.d.). The theory of reasoned action provides the theoretical foundation to explore how perceived societal norms, subjective beliefs, and personal values and priorities influence women's decisions about reproductive choices. Within this framework, the health behavior in question is having children or not, and the subjective, societal, and environmental norms associated with the behavior are the perceived and actual constraints and pressures that women face, as identified in the previous section.

Study Approach

The theory-based research study design for this project used qualitative, semi-structured interviews. A good proxy for the target population was women with terminal degrees who are employed in the Roanoke, VA, region. Roanoke is a regional hub for higher education and scientific research (*Regional Overview*, 2021; *Roanoke, Virginia Population 2021*, 2021). Of Roanoke's population over the age of 25 years, 9% has obtained a graduate degree, and, interestingly, more female residents than male residents have obtained a graduate degree (*Roanoke, Virginia Population, 2021*, 2021). Furthermore, within a 60-mile radius of the Roanoke Valley, there are 21 higher education institutions (*Roanoke Colleges and Universities*, 2020). Roanoke's population was ideal for this study, considering the saturation of women with terminal degrees in the area.

The study interviewed women between the ages of 24 and 44 years who held a terminal degree and who were employed at Fralin Biomedical Research Institute at

Virginia Tech Carilion (VTC), Virginia Tech Carilion School of Medicine, and Radford University Carilion in Roanoke, VA. Based on the theory of reasoned action, this study explored how women with terminal degrees in Roanoke, VA, experienced their reproductive choices.

A deeper exploration of the evolution of women's educational attainment in the United States, the benefits of higher educational attainment, and the general ways in which a college education affects women's reproductive choices is important to better understand in order to determine how obtaining a terminal degree, specifically, affected women's reproductive choices.

The researcher found no published study that explored the complex relationship between obtaining a terminal degree and the reproductive choices women must make regarding motherhood. This study provides novel insights into the lived experiences, health behaviors, and reproductive choices of women with terminal degrees.

Chapter Two: Review of the Literature

Women's educational attainment in the United States is a multifaceted issue that includes social, economic, and psychological factors. Although this is a complex issue that spans multiple disciplines, this literature review discusses the following main themes: career advancement and income; social, mental, and physical health; the domestic consequences of higher educational attainment; and the effect of educational attainment on reproductive choices. Although the scientific literature presents these themes in a variety of contexts, this research will focus primarily on their application in the context of women's reproductive choices.

Evolution of Women's Higher Educational Attainment in the United States

Over the last century, higher educational attainment by women has become more commonplace in the United States. The fight for equality in higher education challenged the existing domestic establishment of women within society (Dentith, 2016). Some of the most notable pioneers who fought for women's higher education rights were Mary Wollstonecraft, Frances Wright, and Margaret Fuller. Wollstonecraft, author of *A Vindication of the Rights of Woman* (1791–92), believed that obtaining a college education made women better wives and mothers, as well as better members of society (Dentith, 2016). Wright advocated for educational equality and the right for women to utilize birth control; she also spoke against slavery, capitalism, and organized religion (Dentith, 2016). Fuller, the first woman to be accepted into Harvard University, is considered the first American feminist. A teacher, activist, and journalist, Fuller is best known for her series of women's continuing education seminars held in Boston in the mid-1800s (Dentith, 2016). The first woman in the United States to obtain a bachelor's

degree was Catherine Brewer Benson from Wesleyan College in Macon, Georgia, in 1849 (*Historic Firsts*, 2009). Also in 1849, Elizabeth Blackwell was the first woman to graduate from medical school in the United States (*Historic Firsts*, 2009). Later, in 1877, Helen Magill became the first woman to obtain a PhD, in Greek Studies, at Boston University (*Historic Firsts*, 2009).

Before the mid-nineteenth century, higher education was only for the elite and wealthy (Dentith, 2016). The life patterns of women changed substantially once they began furthering their education (Dentith, 2016). Women began having career aspirations versus solely working as a caregiver or having a job but not a career with longevity (*Women, Marriage, Education and Occupation*, 2016). Additionally, the length between girlhood and womanhood—and therefore marriage—increased as women began to pursue higher education. Although many still considered marriage the ultimate goal, women began marrying later in life due to pursuing higher education and the subsequent opportunities that arose from a college education (Dentith, 2016).

Contemporary Landscape of Women's Educational Choices

Since the 1800s, women have advocated for their educational rights and equality, as well as for the socioeconomic opportunities that educational attainment provides (Eschbach, 2016; Lewis, 2019). Carnevale and Smith (2014) stated that women continue to fight to reduce the gender wage gap and, currently, the gender wage gap is at 18.4%, with the ratio of women to men's median full-time annual earnings at 81.7% (Hegewisch et al., 2019). Carnevale and Smith (2014) also noted that, on average, a woman with a master's degree earns around the same amount as a man with a bachelor's degree. If the pace of the gender gap ratio continues at the same rate that it has since 1960, it would

take until year 2059 for women and men to reach pay equality (Hegewisch et al., 2019). Relatedly, Carnevale and Smith (2014) noted that one reason for this may be that women are still pursuing higher education and formal training in fields that tend to pay less, such as education and psychology. Meanwhile, the better-paying STEM (i.e., science, technology, engineering, and math) fields are still male dominated. In 1979, women made up only 1% of engineering majors, but since then has seen only an increase to 17% (Bidwell, 2018; Carnevale & Smith, 2014). Nursing and teaching careers remain the top professions among women, and these positions are generally less lucrative than the traditionally male professions (Blau & Khan, 2017, Parker, 2015, and Berg, 2019, as cited in Jaschik, 2020, p. 1). Blau and Khan (2017) determined that when women were employed in traditionally male professions, such as managerial careers, the gender wage gap decreases. For example, from 1981 to 2011, the male wage gap advantage decreased from 12% to 2% when more women began working in managerial professions (Blau & Khan, 2017). Thus, as women work in male-dominated careers, the gender wage gap decreases and women's representation in high-level professions increases.

Factors of Women's Educational and Career Choices

Notably, Carnevale and Smith (2014) claimed that women do not choose their majors and careers based simply on interest, but rather also on factors such as college debt and other sociocultural factors. Compared to men, a woman's career choice and the decision to pursue higher education are often influenced by more complex social and cultural expectations (Carnevale & Smith, 2014). Women consider the influence and opinions of their family, friends, and peers on issues like fulfilling their gender expectations of motherhood and homemaking, as well as the pressures to tend to the

domestic work predominantly undertaken by women, such as childcare, housework, or the care of elderly family members, all of which are completed without pay (Carnevale & Smith, 2014). Additionally, motherhood without paid maternity leave as well as affordable childcare are considerable burdens that affect women's earnings and career choices (Bidwell, 2018; Carnevale & Smith, 2014).

Human Capital Theory & Gender Theory

To understand the factors of women's educational and career choices requires viewing those choices through the lens of both human capital theory, which is the established relationship between the expected lifetime participation in the workforce and the incentive to obtain training and education (Ganguli et al., 2011), and gender theory. Defined as understanding behavior in various social contexts and how those behaviors are understood to be either feminine or masculine (Jule, 2014), gender theory explores the ways women have overcome gender stereotypes and their motivations for establishing a presence in both the professional workforce and academic settings. Gender identity has played an important role in many aspects of education, such as the choice to pursue higher education, the choice of major, and the choice of which courses to take (Patton et al., 2016). For example, the choice and motivation to pursue higher education as a female varies from those of a male's (Kimmel et al., 2014). In comparison to men, women are motivated to pursue higher education due to more complex factors, such as the desire to be a role model for their children and the opportunity for career advancement (Kimmel et al., 2014). Women worry more about acquiring student loans and, if they have children, the lack of childcare access as major reasons not to pursue higher education, whereas men worry more about the time obtaining a degree would take away from their jobs

(Kimmel et al., 2014). Gender theory plays an important role in one's identity and individual sense of importance and place within society. According to Kupczynski et al. (2014), there is a direct relationship between a student's identity and the actualization of educational goals.

Evolution of the Sociocultural Landscape: Marriage, Homemaking, and Educational Attainment

Parker (2015) and Giele (2008) argued that a woman's desire to obtain a college education was once scrutinized by those who believed that educating women would destroy their roles as wives, mothers, and homemakers, while others believed that it would strengthen those roles and considered educational attainment a liberating experience, one that would develop general equality among men and women, particularly in marriages. Women pursuing higher education also affected the structural dynamic of marriage. Traditionally, the husband was the breadwinner, provider, and ultimate authority, whereas in the present day, there is a new ethic of gender equality within marriages (Giele, 2008). There is a more level power balance within marriages because of the emerging gender equality in educational attainment and women marrying later (Giele, 2008).

For almost four decades, most college-educated adults have been women, who currently account for more than half of the college-educated workforce in the United States (Matias, 2019). As of 2019, more than 36% of women in the United States have obtained at least a bachelor's degree, which is an astonishing increase from the 3.8% of women with at least a bachelor's degree in 1940 (Duffin, 2020). The sociocultural landscape of the United States has evolved considerably since 1940 and now provides

women the opportunity for educational attainment, and therefore more freedom regarding their career and marrying and having children later in life (Giele, 2008). Educational attainment has increased for all races, including Asian, White/Non-Hispanic, Black, and Hispanic; for the last 10 years, women of all mentioned races are more likely to have a college degree than men of those same races (Ryan & Bauman, 2016).

The Socioeconomic Benefits of Women's Educational Attainment

Women experience socioeconomic and health benefits from obtaining a college education, including career advancement, higher income, larger social network, and better physical and mental health (Ross & Mirowsky, 2010; *Why Education Matters*, 2015; Zimmerman et al., 2015). With a decreased workplace gender gap in the United States, higher educational attainment has allowed women to better market themselves in the workplace and enjoy a better quality of life.

Career Advancement and Higher Income

Career advancement through increased income, promotions, and workplace networking are all proven benefits of obtaining a college education for women (Ross & Mirowsky, 2010; *Why Education Matters*, 2015; Zimmerman et al., 2015). As of 2017, over the course of a lifetime, individuals who have obtained a bachelor's degree are expected to earn a salary twice as high as those with only a high school diploma (Schanzenbach et al., 2017). Obtaining a college education has also provided women with an opportunity to increase their labor force participation in labor markets (Ganguli et al., 2011; Ortiz-Ospina & Tzvetkova, 2017) while additionally paving the way to plan for long-term careers.

For women, the opportunity to plan a career decreases the likelihood of hindering professional goals. Additionally, women are less likely to remain the secondary income-earner of a family household (Ganguli et al., 2011). There were traditionally few incentives for women to obtain a college education because of a woman's shorter labor force participation expectation. With human capital theory, which establishes a relationship between one's expected workplace participation over a lifetime and the incentive and motivation for obtaining higher education and training, researchers are able to determine that women who obtained higher education and training benefited within the workplace through increased salary from increased productivity (Ganguli et al., 2011). Additionally, due to factors such as workplace financial incentives, reproductive technological advances, and the ability to control pregnancies, there has been an increased presence of women in the workplace (Ganguli et al., 2011).

Larger Social Network

While men and women may demonstrate dispositional differences in that women tend to be more social (Brashears et al., 2016; Hofstra et al., 2020), research has also shown that women of higher educational attainment are involved in a broader range of social and leisure activities and interests. Those who are engaged in a wide range of social activities are more likely to be afforded opportunities to befriend more individuals compared to someone with a lower educational attainment status (Hofstra et al., 2020). Furthermore, Moore (1990), Bastani (2007), Hampton et al. (2011), and Van Tubergen (2014) explained that women with higher educational attainment levels are generally part of larger social networks than are men, and Marsden (1987) and Van Tubergen (2014) stated those social network groups are comprised of relatives and kin (as cited in Hofstra

et al., 2020, p. 7). Researchers attribute this phenomenon to women's cognitive abilities (Hofstra et al., 2020).

Better Physical and Mental Health

Obtaining a college education plays an important role in one's overall health, especially for women. Individuals are considered unhealthy if they lack basic knowledge, ability to reason, coping skills, and an ability to emotionally regulate themselves (Hahn & Truman, 2015). Overall, college-educated women are living healthier lifestyles than are women who do not have a college degree (Ross & Mirowsky, 2010). Ross and Mirowsky (2010) discovered that through obtaining a college education, the gender gap between men's and women's physical health is essentially bridged. For example, women with a college education will experience fewer physical impairments over their lifetimes than do men with the same level of educational attainment. A college education affords women the opportunity to experience fewer healthcare disparities by way of increased access to and utilization of preventative care, due to a higher likelihood of having employer health insurance and an overall better understanding of the United States healthcare system (Zimmerman et al., 2015). Zimmerman et al. (2015) investigated college education and health benefits by using a socioeconomic model of health on both an individual and a community level. They discovered that having a college education is associated with a healthier lifestyle, including better nutrition and an increase in exercise, as well as a decrease in mortality rates. Zimmerman and colleagues (2015) additionally found that when more higher-educated individuals make up a community, the prevalence of healthcare disparities decreases within that community.

In addition to an improved health status, a college education is correlated with an increase in lifespan variation as well as life expectancy (Sasson, 2016). As societies have seen an increase in life expectancy, lifespan variation is another measure of mortality progress (Alexander, 2018). Lifespan variation studies the possible variation of death at various ages (Alexander, 2018). It is argued that educational attainment is just as much of an indicator, if not a more influential one, of life expectancy than other demographic determinants, such as gender and race (Sasson, 2016). Similarly, Cutler and Lleras-Muney (2006) discovered through data from the National Health Interview Survey that higher-educated individuals have lower mortality rates from chronic and common acute diseases, including diabetes, asthma, and strokes. The Virginia Commonwealth University Center on Society and Health report similar findings of increased quality of life being correlated with obtaining a college education (*Why Education Matters*, 2015). Those who have obtained a college education are more likely to experience better physical and mental functioning and are less likely to suffer from depression and anxiety (Cutler & Lleras-Muney, 2006; *Why Education Matters*, 2015). Additionally, a college education is associated with a decrease in health-risk behaviors, including the use of illegal drugs, drinking, and smoking (Cutler & Lleras-Muney, 2006; *Why Education Matters*, 2015).

Domestic Consequences of Women's Educational Attainment

As more women have obtained a college education and entered the workforce, the traditional expectations of women within a family have shifted away from the more traditional, neoclassical family dynamics and expectations, in which women tend to the home and raise children rather than pursuing their own education and careers, to the more

gender-neutral family dynamic of the present day (Ganguli et al., 2011). The shifting family dynamics and closing of the gender gap among families with college-educated women have been associated with the increase in divorce rates and reduction in average family size (Ganguli et al., 2011).

Delaying Motherhood

Along with changing gender roles and family dynamics, more women are delaying motherhood. Researchers have argued that while young mothers indicate physical health advantages to childbearing at an earlier age, older mothers express feeling more psychologically prepared as the most rewarding advantaged to delaying motherhood (Dion, 1995; Shelton & Johnson, 2006). Research has also demonstrated that older mothers are more likely to be richer mothers in the sense that they feel fulfilled by their career and more confident to raise a child. Additionally, in a study conducted by Welch (1992), older mothers report that they feel less resentful toward the obstacles that motherhood can present to maintaining aspects of one's lifestyle. Older women may cite advantages to delaying childbirth, but some research suggests that although older women feel more mature and prepared to deal with parenthood demands, the established control an older woman has over her life prior to motherhood may pose a source of stress once she becomes a mother, as parenthood is unpredictable and disruptive (Shelton & Johnson, 2006). As argued by Mirowsky and Ross (2002) and Raeff (1996), there is also a concern that because older women have experienced independence and established their own life, they may develop feelings of isolation and being trapped (as cited in Shelton & Johnson, 2006, p. 318).

Women's Education and Reproductive Choices

Along with shifting gender and marital roles and an increase in financial and professional independence, women's reproductive choices are also influenced by their educational attainment. Existing research has proven that the more educated a woman is, the more likely she is to delay childbearing and to have fewer children (Brand & Davis, 2011; Ganguli et al., 2011; Neels et al., 2017; Reichlin & Augeri, 2015; Taylor et al., 2010; Zang, 2019).

Elective Egg Freezing

In a study spanning 2 years, Inhorn and colleagues (2018) found that delaying childbearing, not being in a committed relationship during childbearing years, and not finding a suitable mate were all reasons women identified as motivations to consider elective egg freezing as an appealing reproductive option. Egg freezing is a viable reproductive choice among women who are focusing on their career during pivotal childbearing years (Inhorn et al., 2018). Similarly, Petropanagos (2010) discussed social egg freezing, which is often used for the preservation of a cancer patient's fertility. Petropanagos discovered several reasons why women choose to freeze their eggs: increased cost of living and therefore not being able to afford children at the current stage in life; challenges with finding a long-term partner; obtaining higher education; and prioritizing career advancement (2010). Petropanagos also noted that although more women are delaying motherhood, sometimes it is not an intentional choice to delay childbearing, but simply the course of how a woman's life has unfolded.

Life Goals & Fulfillment

Using data from the National Longitudinal Survey of Youth 1979, Brand and Davis (2011) concluded that socially advantaged, college-educated women viewed obtaining an education as a life goal, whereas non-educated women from socioeconomically disadvantaged backgrounds viewed childbearing as a life goal that would provide a social identity and achievement. College-educated women are more likely to find fulfillment in other components of life, such as having obtained a college education, than non-college-educated women, who view motherhood as one of their main achievements for personal fulfillment (Brand & Davis, 2011).

The Motherhood Penalty

In addition to educational attainment as an influence on reproductive choices, several studies have explored the expectations of motherhood and the challenges women face as mothers and in their careers. A concern for some mothers is the “motherhood penalty,” a well-established phenomenon that refers to how, on average, mothers earn lower wages than women without children (Gough & Noonan, 2013). Research suggests that although work history and hours worked may account for the wage gap between mothers and women without children, other factors may include differences in productivity, work effort, and commitment (Gough & Noonan, 2013). Many gender inequality scholars, such as Waldfogel (1998) and England (2005), argued that the critical factor that accounts for the remaining gender gap is motherhood (as cited in Gough & Noonan, 2013, p. 328). Relatedly, Miller (2011) explored the effects that motherhood has on the timing of a woman’s career path, noting that for every year she delays motherhood, a woman sees a 10% increase in career earnings. Furthermore, Leung,

Groes, and Santaaulalia-Llopis (2016) discovered that lifetime income earnings are lower for women who have their first child at age 30 and younger, and non-educated women who have their first child before age 25 see the greatest decline in lifetime earnings. Additionally, Leung et al. (2016) found that the largest lifetime income gain was observed in the first 3 years of childbirth delay. For example, if a college educated woman delayed childbearing from age 25–27 years to age 28–30 years, there is a 5.4% increase in lifetime income earnings (as cited in Krishnamurthy, 2016, p. 1).

Academic Careers & Motherhood

There are special considerations when it comes to the challenges faced by mothers who choose careers in the academic tenure system. Some women who have obtained a terminal degree and pursued academic careers face the challenge of navigating motherhood while holding their own amid the demands of academia, which include attending conferences, publishing, teaching, and researching. The childbearing and early motherhood years typically coincide with when a woman is likely to face these demands, as these years are the most important for developing an academic career (Kittelstrom, 2010). Wilson (1995) discovered that most women in the higher education sector are asking for a delay in tenure track decisions, delaying childbearing, or juggling between family and career accommodations.

Terminal Degrees

As previously mentioned, a terminal degree is defined as the highest level of degree in a field of study (Nelson, 2018). The number of individuals who have obtained a doctoral degree in the last two decades has doubled (U.S. Census Bureau, 2019). As of 2018, there are 4.5 million individuals who have obtained a terminal degree in the United

States (U.S. Census Bureau, 2019). Of the 4.5 million, 53% of them were women (Perry, 2019). Women with terminal degrees outnumber men with terminal degrees in the fields of arts and humanities, biological and agricultural sciences, education, health and medical sciences, public administration, social and behavioral science, and other fields (Perry, 2019). However, men are still outnumbering women in business, engineering, mathematics, computer sciences, and physical and earth sciences (Perry, 2019). There are several reasons why women obtain a terminal degree, including income earning potential, career flexibility and security, scholarly respect, leadership benefits, and contributing to society as an expert of unrivaled understanding in a specific field (Cascio, 2016). The existing research lacks studies specifically targeting the experiences of women with terminal degrees, and how pursuing and obtaining a terminal degree influences women's reproductive decisions.

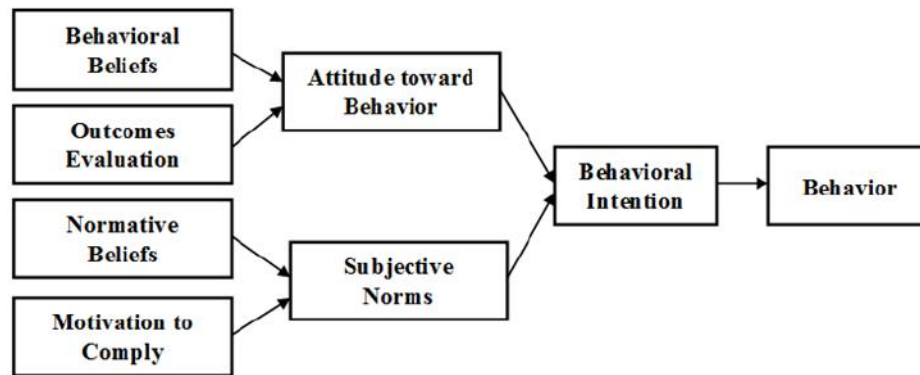
As evidenced by the current literature, women are influenced by societal norms and expectations established by peers. Additionally, women's reproductive and childbearing choices are affected by the intention and motivation to make those choices. These determinants are constructs in a behavioral model, known as the theory of reasoned action, which were used to formulate a theoretical basis for many research studies that examine health behaviors and reproductive choices.

Theory of Reasoned Action

Developed by Fishbein and Ajzen (1975; Ajzen & Fishbein, 1980), the theory of reasoned action (TRA) focuses on an individual's behavior and the intention behind that behavior. Additionally, Ajzen and Fishbein stated that TRA examines potential factors that limit an individual's behavioral intention or attitudes about the behavior (Ajzen &

Fishbein, 1980; Benoit, n.d.; Fishbein & Ajzen, 1975). TRA utilizes the elements of attitudes and norms to predict the intention of a behavior, where norms include the expectations set out by one's peers. Fishbein and Ajzen developed TRA to suggest that when an individual's attitude steers them in one direction, but the subjective and relevant norms suggest another direction, both factors of attitude and norms influence the intent of behavior (Ajzen & Fishbein, 1980; Benoit, n.d.; Fishbein & Ajzen, 1975; see Figure 1).

Figure 1: Theory of Reasoned Action (Fishbein & Ajzen, 1975)



Note: Theory of Reasoned Action aims to identify an individual's intention to perform a behavior, while also considering subjective norms and the motivation to comply with those norms. By taking together the attitude about a behavior and the subjective norms, an individual's behavioral intention can be identified.

While there are no existing studies that utilize the constructs of TRA to discuss the relationship between women obtaining a terminal degree and their reproductive choices, there have been studies that have explored various health behaviors using TRA, including studies designed to understand the behavioral intentions of using birth control and emergency contraceptives, and becoming pregnant.

TRA guided the cross-sectional study conducted by Sable et al. (2007) regarding physician intention to prescribe emergency contraception to patients. Using a cross-sectional survey of faculty physicians, 42% of the respondents prescribed emergency contraceptives to teenagers and 65% to 77% prescribed to all other specified groups of women: those who experienced rape or incest, had unprotected sex, asked for emergency contraception, or had an issue with another birth control option (Sable et al., 2007). The study confirmed a high intention of prescribing emergency contraception when there was a positive associated attitude toward emergency contraception, in addition to the perceived support of other colleagues who support prescribing emergency contraception (Sable et al., 2007).

Baker et al. (1996) used TRA to examine the intention to use condoms as a method of birth control in an STD clinic population of 703 heterosexual clients. The results varied based on whether the individual was sexually active with committed partners or casual partners. Social norms and attitudes toward condom use were the most significant predictions for the intention for both men and women when with committed partners. Whereas attitude was the major predictor for men, social norms was the major predictor for women with casual sexual partners (Baker et al., 1996).

Dippel et al. (2017) applied TRA to understand the attitudes about teen pregnancy among Native American communities. Through focus groups, Native American parents and non-parents ages 16 to 24 years were interviewed. The attitude and perception of teen pregnancy differed between non-parents and parents. Negative feelings toward teen pregnancy were more prevalent among Native American parents, and participants

perceived teen pregnancy as having a greater impact on female parents than on male parents (Dippel et al., 2017).

Relatedly, Wesley et al. (2010) discovered several themes from utilizing TRA to study the reproductive decision-making process for mothers with HIV-1. Using open-ended questions, 25 HIV-1 positive mothers participated in the study (Wesley et al., 2010). The major themes that emerged from the interviews included the positive feelings around motherhood and the joy and sense of meeting one's needs that it provides, the concern for the well-being of children born to HIV-1 mothers, and the perceived minor role that the mothers believe HIV has in their lives (Wesley et al., 2010). The interviewed mothers also indicated negative feelings and reactions towards healthcare providers that exclusively focused on the HIV-1 diagnosis versus the woman and life choices in their entirety (Wesley et al., 2010).

According to TRA, subjective norms—i.e., the opinions of others and a person's motivation to comply with an expected behavior—is an important construct related to intentional human behavior. For the purposes of the study, the health behavior in question is having children or not, and the subjective, societal, and environmental norms associated with the behavior are the perceived and actual constraints and pressures that women face. Using constructs from TRA could also be useful when discussing women's motivations for obtaining a terminal degree, especially as regards understanding how the subjective norms have influenced, if at all, their reasons for obtaining a terminal degree, and in turn, if these influenced their reproductive choices, including motivations for childbearing and delayed motherhood.

Significance of Roanoke, VA, as a Suitable Research Area for Higher Educational Attainment of Women

Women with terminal degrees are typically found in higher concentrations where there are more educational and technological institutions (Florida, 2019), such as Roanoke, VA. Roanoke is an urban area with a high saturation of both educational institutions and women with terminal degrees (*Roanoke, VA, 2017; Roanoke, 2012*).

With a population of almost 100,000 in Roanoke, and 325,000 residents in the Roanoke, VA region, this area is the largest metropolitan area in Western Virginia and is considered the region's commercial and cultural hub (*Regional Overview, 2021; Roanoke, Virginia Population 2021, 2021*). Of those who live in Roanoke and are older than the age of 25 years, 9% hold a graduate degree (*Roanoke, Virginia Population 2021, 2021*). Interestingly, there are more female than male residents who have obtained a graduate degree (*Roanoke, Virginia Population 2021, 2021*). Furthermore, Roanoke's concentration of undergraduates per capita is higher than much larger and more populated cities, such as the Raleigh-Durham-Chapel Hill area and Boston-Cambridge (*Roanoke Colleges and Universities, 2020*). Within a 60-mile radius of the Roanoke Valley, there are 21 higher education institutions (*Roanoke Colleges and Universities, 2020*). In addition to having a saturation of higher education institutions, Roanoke is also home to Carilion Clinic, a nonprofit healthcare organization that provides healthcare to more than a million Virginians and has contributed more than \$3.2 billion to Roanoke Valley's economy (*Economic Impact, 2020*). Carilion Clinic is the largest employer in Roanoke Valley (*Roanoke Valley's 25 Largest Employers, 2020*).

By combining the presence of higher education institutions and the considerable contributions of Carilion Clinic, Roanoke has evolved into a significant healthcare and educational region. Healthcare and educational services comprise the top three employers in Roanoke, earning more than \$400 million in revenue and employing 37,000 people (*Earnings by Industry, 2015; Employment by Industry, 2015*). Roanoke is also a regional hub for higher education and scientific research. This blended presence of healthcare and higher education made Roanoke's population interesting to study because of the saturation of women with terminal degrees who are currently employed in either a healthcare or research organization. Furthermore, the average income for women with graduate degrees in Roanoke is almost double that of women with high school diplomas (*World Population Review: Roanoke, Virginia Population 2019, 2019*), which could be another factor in how the income and educational gap in Roanoke affects female residents in other facets of life.

Gaps in the Literature

Research clearly shows that the more educated a woman is, the more likely she is to delay childbearing and to have fewer children (Brand & Davis, 2011; Ganguli et al., 2011; Neels et al., 2017; Reichlin & Augeri, 2015; Taylor et al., 2010; Zang, 2019). Despite existing research that demonstrates the correlation between educational attainment and delayed motherhood, there have been no specific studies to investigate the lived experience of women with terminal degrees apropos of childbearing and reproductive choices. Given the existing research on the relationship between educational attainment and reproductive choices, there was a clear need to study women with terminal degrees, specifically, and to explore how pursuing and obtaining a terminal

degree influences their reproductive choices and decisions. While there is considerable research that compares the lives and demographics of college-educated women to women without a college degree, typically the term *college-educated* commingles bachelor's, master's, and terminal degrees together. By focusing only on women with terminal degrees, we were able to discover what distinct differences exist among women with other levels of educational attainment.

Relatedly, while previous research shows associations between certain socioeconomic determinants and reproductive choices, there were no existing qualitative studies that specifically explored and investigated the lived experiences of women with terminal degrees and how women with terminal degrees described the influence of education on their reproductive choices. Findings from this study may be extrapolated and applied to other urban areas with higher concentrations of women with terminal degrees.

Chapter Three: Methodology

Based on the theoretical model of theory of reasoned action, this study aimed to discover what influence obtaining a terminal degree has on a woman's reproductive choices compared to other levels of education. This study explored the influence of educational attainment on the experience of motherhood and other specific, related factors, such as desired number of children, a woman's age when first child was born, and methods of family planning used.

Study Design

The study design for this project used qualitative, one-on-one, semi-structured interviews, conducted via audio calls with Zoom (Zoom, 2020), a teleconferencing and audio conferencing software product with recording capabilities, with women who met the study population criteria stated below. The interviews took place over the course of 2 weeks. Interviewees selected an interview appointment time based on their availability, as well as the availability of the researcher during the 2 weeks. The study included 20 interviews, each lasting between approximately 15 and 45 minutes.

Study participants were recruited by working in collaboration with Virginia Tech and Radford University. To obtain a pool of prospective interview subjects, a novel electronic survey instrument was created using Qualtrics software (Qualtrics XM, 2020) and distributed via email to invite female employees from Radford University Carilion, Fralin Biomedical Research Institute at Virginia Tech Carilion (VTC), and Virginia Tech Carilion School of Medicine who met the inclusion criteria. The survey link included primary demographic questions, such as gender, race, and income level. The survey also included an invitation to qualified participants to indicate their interest in scheduling an

interview. A follow-up was then sent via the participant's email address to confirm the interview date and time.

One-on-One Interviews

Obtaining qualitative data through one-on-one interviews provides a human element to the research. In qualitative research, the goal of the researcher is to assess the feelings and thoughts of the interview participants (Sutton & Austin, 2015; Wu et al., 2016). Interviews offer an opportunity to dig deeper into the research and explore the “why” of personal experiences through a human element of conversational discussions. Interviews provide a space to discuss experiences and subject matter that may be personal, vulnerable, and potentially difficult (Sutton & Austin, 2015). Considering the subject of this study, some participants re-lived sensitive or painful experiences regarding reproductive choices and motherhood, or these thoughts and feelings were fresh on the forefront of the participant's mind. The main focus was to provide a safeguard for participants and the experiences (i.e., data) they share (Sutton & Austin, 2015).

The main topics of the interviews were reproductive choices and obtaining terminal degrees. Other topics included the ways in which marital status, income level, and age influence reproductive choices. Additional topics included motherhood, self-fulfillment, personal life, balancing career and motherhood, and how COVID-19 has affected life. The goal of the interviews was to understand the lived experience of women with terminal degrees and what informed their decisions about whether or when to have children. The interviews were designed to provide an opportunity for the participants to describe and elaborate on the important and meaningful influences on the reproductive choices they have made throughout their lives and careers. Interviews were conducted as

exploratory, semi-structured conversations to allow the interviewees to feel relaxed, understood, and comfortable enough to explore themes, discussions, and interesting ideas in their own words (DeJonckheere & Vaughn, 2019; Sewell, n.d.).

Target Population (Participants)

The target population for the study was women with terminal degrees. Since a proxy for this population can be found in the Roanoke, VA, area, given the high density per capita of women with terminal degrees, the sampling frame was women who were currently employed at Radford University Carilion, Fralin Biomedical Research Institute at VTC, and Virginia Tech Carilion School of Medicine; who possessed a terminal degree; and who were of childbearing age. For the purposes of this study, women between the ages of 24 and 44 years were considered. Options of terminal degree for the purposes of this study were PhD, MD, DNP, DHSc, EdD, and DVM, with the option of entering another type of terminal degree not mentioned as “Other.”

Sampling

The sampling strategy was convenience sampling. Convenience sampling is considered a non-probability sampling method in which sample elements are chosen based on convenient accessibility, proximity, and availability (Elfil & Negida, 2017; Martinez-Mesa et al., 2016). The survey was sent to individuals who met the requirements of the identified targeted population as outlined above, including educational attainment level and workplace location. By unmarking the survey retake option in Qualtrics, the survey was only able to be taken once. The interviews were scheduled with those who were included in the targeted population, educational

attainment level, and workplace location, and who indicated an interest in participating in an interview.

Inclusion.

To be included in this study, the participant must have identified as a woman who was within the required age range, possessed a terminal degree, and be employed at Fralin Biomedical Research Institute at VTC, or Virginia Tech Carilion School of Medicine, or Radford University Carilion in Roanoke, VA.

Exclusion.

Exclusions of the survey included men, women not within the required age range, women who did not possess a terminal degree, and women who were not employed by one of the organizations stated above.

Sample Size.

The sample size for this qualitative study was 20 interviews, when data reached saturation.

Recruitment of Subjects

The researcher sent an email to various female employees at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion. Email addresses of prospective subjects were obtained by visiting the public employee directories of Fralin Biomedical Research Institute at VTC and Radford University Carilion. Women with terminal degrees from both organizations were emailed to invite prospective subjects to complete the short survey and schedule an interview. The Senior Dean of Faculty Affairs at Virginia Tech Carilion School of Medicine sent a mass distributed email to female-identifying VTCSOM faculty and staff on behalf of the

researcher. The email contained the same invitation to complete the short survey and schedule an interview. The list of email addresses from all organizations were kept confidential on a password protected computer of which the researcher had and still has possession. After a period of 6 months, the lists of email addresses will be confiscated and destroyed.

Instrumentation

Email Development

A very short email with the research topic, a brief overview of the study goals, and a link to the survey with an opportunity to indicate interest in a one-on-one interview (see Appendix A) was sent to various women with terminal degrees at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion. Each employer organization enforced their own protocols regarding mass email distribution.

Fralin Biomedical Research Institute at VTC

With the assistance of the Director of Communications, a list of women currently employed at Fralin Biomedical Research Institute at VTC who possessed a terminal degree was compiled utilizing the public employee registry from the Fralin Biomedical Research Institute at VTC's website (<https://fbri.vtc.vt.edu/people-directory.html>). The Director of Communications provided approval to send the email and survey link to the targeted population.

Virginia Tech Carilion School of Medicine

The email and survey link were sent by the Senior Dean of Faculty Affairs to female-identifying medical school staff and faculty (310 individuals). Considering this

listserv included all female-identifying medical school staff and faculty, the mass distribution of the email and survey was likely to have been submitted to individuals who did not meet all of the inclusion criteria. However, through the initial screening of the survey link, the survey submissions from those individuals who do not qualify were disregarded for the purpose of the survey.

Radford University Carilion

With the approval from the Director of University Relations at Radford University Carilion, the email and survey link was sent to Radford University Carilion's public faculty and staff directory (<https://www.radford.edu/content/radfordcore/home/directory.html>). As with Virginia Tech Carilion School of Medicine, considering that the directory did not include educational credentials at the time of email distribution, the email was likely to have been submitted to individuals who did not meet all of the inclusion criteria. However, through the initial screening of the survey link, the survey submission from those individuals who did not qualify were disregarded for the purpose of the study.

Survey Development

A 13-question survey (see Appendix B) used in this study is an electronic survey that was created using Qualtrics software and distributed via email to the above organizations. The purpose of the survey is to determine whether the participant met inclusion criteria and was qualified to schedule an interview. The survey included closed (i.e., yes/no) and ordinal questions. The survey questions were organized into categories, including educational attainment, reproductive choices, and demographic information. The survey provided the participants with an opportunity to indicate interest in a one-on-

one interview. The survey was confidential, de-identifiable, and anonymous unless the participants indicated interest in a one-on-one interview, in which case they provided their first name and email address. The survey was de-identifiable and anonymous because the survey entry did not include participant identifiable information. Contact information was not recorded, with the exception of an email address if the participant indicated interest in scheduling an interview.

Development of Interview Guide

The purpose of the interview guide was to establish an outline for the researcher to follow when interviewing participants. The interview guide provided instructions and outlined expectations to assist the participant and researcher in the interview process. The interview guide (see Appendix D) consisted of seven semi-structured interview questions and four probes (if needed) that were developed based on the theory of reasoned action (see Appendix E) and Michael Quinn Patton's six types of qualitative interview questions (2002). Semi-structured interview questions are the type used most often in qualitative research and are frequently used in research regarding health services (DeJonckheere & Vaughn, 2019). The interview questions provided a framework to establish themes associated with women obtaining a terminal degree and their reproductive choices and experiences. The questions aimed to be open-ended and exploratory in nature, with probing questions provided as needed. Utilizing Patton's types of interview questions, the interview questions related to behavior or experience, opinion or belief, feelings, and background or demographic information (Patton, 2002).

Data Collection

Qualtrics

Data was collected from the electronic survey and the interviews. The electronic survey, created by Qualtrics software (*Qualtrics XM*, 2020), was distributed via a link located in the body of the email sent to the organizations previously mentioned.

Qualtrics, the electronic survey creation tool, was chosen for its intuitive approach and survey logic. Qualtrics allowed a researcher to force a response from a survey question and to create a timeframe in which the survey link remained active. Additionally, the survey participants were able to revisit the survey by opening up the link in the same browser without deleting computer cookies. All electronic survey questions were designed with forced logic to eliminate unanswered questions. The survey link was accessible via mobile device as well as desktop computer. The survey participants chose “next” on the screen to continue to the next page of the survey until receiving the end of survey acknowledgement message. This notified the participants that their answers were saved and submitted. The Qualtrics survey responses were non-identifiable; however, if the participants agreed to be interviewed, they were prompted to provide their first name and email address to the researcher to follow up with the participants and schedule an interview.

Email Pilot Test

With the approval of the primary contacts from Fralin Biomedical Research Institute at VTC, Radford University Carilion, and Virginia Tech Carilion School of Medicine, the researcher sent a test email with the survey link to ensure that the primary contacts were able to follow the link and complete the survey as a pilot test. The pilot test

occurred over one day with all primary contacts responding the same day. When the researcher confirmed that the email sent successfully and the survey link was active and functioning correctly, the email with the survey link was sent to all three organizations in separate emails (i.e., two sent by the researcher and one sent on behalf of the researcher).

Active Survey

The survey link remained open and active for a duration of 2 weeks from the initial distribution of the email and survey link to each organization. Radford University's cover letter for internet research consent form (see Appendix C) was included at the beginning of the survey; once read, the participant was required to indicate consent to participate under the guidelines noted in the cover letter.

A reminder email was sent after one week, which reminded the recipients to complete the survey to indicate interest in an interview. The survey expired at 11:59 PM EST on the final day. The survey was not timed, which allowed the participant unlimited time within the 2 week's duration to complete the survey. If a participant attempted to complete the survey after it had expired, an error message appeared, informing the participant that the survey had expired and was no longer available for completion. After the interested participants had completed the survey and the link had expired, the data remained housed in Qualtrics.

Scheduling Interviews

Once the researcher determined which participants met the inclusion criteria and were interested in one-on-one interviews, the researcher compiled and organized the demographic and contact information of those participants within an Excel spreadsheet (*Excel*, 2020). The researcher then used the randomizing feature to assign each

participant a random number (between 1–100). The list was then organized from lowest number to highest number, and the participants were contacted in that order. The researcher contacted those interested in scheduling an interview as soon as information was organized. Each participant was sent one initial email reaching out to request the completion of a Doodle poll to schedule an interview time, and then a reminder email one week later (*Doodle*, 2021). A Doodle poll was created due to its nature of organizing multiple participants' availability at once; however, participants were not able to see other participant's availability. If the researcher did not hear back from the participant after sending the initial and reminder emails, the researcher moved on to the next participant on the Excel spreadsheet.

Conducting Interviews

Once 20 interviews were successfully scheduled, the researcher sent to each participant a calendar invitation and Zoom link with video services selected "off" to join an audio call (*Zoom*, 2020). The interviews were scheduled in one-hour intervals, allowing for a time buffer in case of back-to-back scheduling of interviews. The researcher scheduled interviews using the Radford Zoom website. The researcher then began conducting interviews via a phone call recorded on Zoom. The interviews were scheduled over a span of 2 weeks.

Recording and Transcription of Interviews

The audio files of the interviews were recorded using Zoom. Each interview began with the researcher reading the instructions to the participants. Once the researcher received an acknowledgement of consent from the participant, the researcher asked the participant if she had any questions prior to the interview starting, and then began

recording the audio of the interview. A signature of consent was not required by the participant. The interviews were recorded for the purpose of creating a transcription, to be provided by a transcription service, which was then analyzed. At the conclusion of the interview, the researcher allocated time for the participant to provide any additional information related to the interview purpose and subject matter. Once the interview was finished and had been recorded in its entirety, the researcher converted the audio interview to an mp4 file format via a feature in Zoom. The mp4 file of the interviews were sent to Rev, a transcription service (Rev, 2020) chosen by the researcher, to be transcribed verbatim. Upon receipt of the transcriptions, the researcher uploaded the interview media into Dedoose, a qualitative web-based platform, in order to decipher themes and meaning units.

Data Saturation

The researcher did not have to reference other survey participants that did not meet all of the inclusion criteria in order to meet the adequate number of participants to be interviewed. The researcher conducted 20 interviews, when the interview data had reached saturation for the purpose of this study.

Data Analysis

Once the interviews had been recorded and converted to mp4 files, the interviews were transcribed verbatim using Rev Transcription service to facilitate analysis. Upon receipt of the verbatim interview transcriptions, data analysis began. The transcribed interviews were uploaded in the web-based qualitative data software, Dedoose (Dedoose, 2021).

Dedoose Analysis Software

Dedoose was chosen because of its web-based application with confidentiality and security features, and it is Radford University's primary qualitative data software application. Through the use of Dedoose, the researcher and a second coder reviewed the transcriptions to identify common themes, categories, and meaning units to facilitate deductive research analysis. Common themes that emerged from the data were balancing career and motherhood, effects of a terminal degree on reproductive choices, finances, marital status, challenges and barriers, and suggestions for women obtaining a terminal degree and motherhood.

The researcher and second coder met weekly for a duration of 2 months for Dedoose training and to establish inter-rater reliability (IRR), as well as to discuss, validate, and confirm findings. To ensure rigor of research and IRR, Cohen's Kappa coefficient was used and tested, which resulted in an inter-rater reliability score of .875. This score surpassed the goal inter-rater reliability score of .80.

Institutional Review Board

Institutional Review Board (IRB) approval was obtained by Radford University by completing an IRB research project application and the required subsequent steps. IRB approval was required for the mass distribution of the email and survey link and conducting of interviews because the participants were human subjects. Per the IRB protocols, all documents and data have been password protected and backed up on an external hard drive on a password-protected laptop. All files related to research will be kept for 3 years and then destroyed. The IRB reference number for this study is: 2020-

278/FY20-146. All documentation associated with IRB approval is included in Appendix F.

Chapter Four: Results

Sample

The sample for this study was individuals who identify as female; who are employed at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, or Radford University Carilion, who possess a terminal degree; and are between the ages of 24–44 years at the time of the study.

Demographic Data

There were 123 survey responses, with 23 considered incomplete, which left 100 participants having completed the initial survey in which demographic information and interview interest was collected. Of those participants, most were age 45 years and older (54 participants), followed by those between the ages of 32–38 years (27 participants). In regards to terminal degrees, most participants possessed a Doctor of Medicine (MD; 39 participants) and a Doctor of Philosophy (PhD; 38 participants). There were 77 participants who had children, 22 participants who did not have biological children, and one who did not have biological children but had adopted or fostered children. Of the participants, the major identified as White (86 participants). In regards to household income, 94% of the participants indicated \$95,000 and above (94 participants). Detailed demographic information on the 100 participants is presented in Table 1.

Table 1*Summary of Demographic Data of All Survey Participants*

Demographics	Number of Participants	Percentage of Participants (%)
Age (in years)		
25–31	2	2.0
32–38	27	27.0
39–44	17	17.0
45+	54	54.0
Type of Terminal Degree		
Doctor of Philosophy (PhD)	38	38.0
Doctor of Medicine (MD)	39	39.0
Doctor of Education (EdD)	4	4.0
Doctor of Nursing Practice (DNP)	4	4.0
Doctor of Osteopathic Medicine (DO)	3	3.0
Doctor of Physical Therapy (DPT)	3	3.0
Doctor of Pharmacy (PharmD)	2	2.0
Dual degrees (PhD/DVM)	2	2.0
Doctor of Occupational Therapy (DOT)	1	1.0
Doctor of Business Administration (DBA)	1	1.0
Doctor of Health Administration (DHA)	1	1.0
Masters of Genetic Counseling	1	1.0
Masters of Science (general, unspecified)	1	1.0
Child Status		
Has children	77	77.0
Does not have children	22	22.0
Has no biological children, but has adopted/fostered children	1	1.0
Race/Ethnicity		
White/Caucasian	86	86.0
More than one race	4	4.0
Asian	3	3.0
Black/African American	3	3.0
Other	2	2.0
Prefer not to answer	2	2.0
Household Income		
\$35,000–\$54,999	3	3.0
\$55,000–\$74,999	1	1.0
\$75,000–\$94,999	2	2.0
\$95,000 and above	94	94.0

There were 66 participants who indicated interest in scheduling an interview, 32 of which were qualified according to the inclusion criteria of ages between 24–44 years. After reaching out to those interested in scheduling an interview, the researcher was able to confirm 20 participants for one-on-one interviews spanning over the duration of 2 weeks.

Of the 20 participants with confirmed scheduled interviews, most were between the ages of 32–38 years (13 participants) and 39–44 years old (six participants). In regards to terminal degrees, Doctor of Philosophy (PhD) was the most represented with nine participants, followed by Doctor of Medicine (MD) with six participants. Of those interviewed, 14 had children and six did not have children. In regards to race/ethnicity, 13 identified as White, three as more than one race, and one as Black/African American. Most women reported having a household income of \$95,000 or more, and 75% of the women interviewed were married. Detailed demographic information for the 20 interviewed participants is presented in Table 2.

Table 2*Summary of Demographic Data of 20 Interviewed Participants*

Demographics	Number of Participants	Percentage of Participants (%)
Age (in years)		
25–31	1	5.0
32–38	13	65.0
39–44	6	30.0
Type of Terminal Degree		
Doctor of Philosophy (PhD)	9	45.0
Doctor of Medicine (MD)	6	30.0
Doctor of Nursing Practice (DNP)	2	10.0
Doctor of Osteopathic Medicine (DO)	1	5.0
Doctor of Physical Therapy (DPT)	1	5.0
Doctor of Pharmacy (PharmD)	1	5.0
Child Status		
Has children	14	70.0
Does not have children	6	30.0
Race/Ethnicity		
White/Caucasian	13	65.0
More than one race	3	15.0
Black/African American	1	30.0
Household Income		
\$35,000–\$54,999	1	5.0
\$55,000–\$74,999	1	5.0
\$75,000–\$94,999	2	10.0
\$95,000 and above	16	80.0
Marital Status		
Married	15	75.0
Not Married	5	25.0

Results of the Study*Overall Study Themes*

From the 20 interviews completed, 38 codes, 524 excerpts, and 720 code applications were noted. The major themes that emerged from the interviews were balancing career and motherhood ($N = 68$), effects of a terminal degree on reproductive

choices ($N = 55$), marital status ($N = 51$), finances ($N = 50$), challenges and barriers ($N = 36$), and suggestions ($N = 48$). A summary of the major themes with corresponding categories, if applicable, and meaning units can be found in Table 3.

Table 3

Summary of Major Themes and Categories

Theme	Category (if applicable)	Meaning Units
Balancing career and motherhood ($N = 68$)	Academic career	$n = 17$
	Effects on career	$n = 51$
	Work/life balance	$n = 25$
Effects of a terminal degree on reproductive choices ($N = 55$) Marital Status ($N = 51$) Finances ($N = 50$)	When during educational journey did participant have first child/timing of children	$n = 34$
Challenges and Barriers ($N = 36$)	Childcare	$n = 4$
	Having a partner	$n = 2$
	Healthcare	$n = 8$
Suggestions ($N = 48$)		

Themes that did not produce the most meaning units but that will be discussed in more detail are support, such as support from other women in the workplace, support to have children and care for a child, the role of the primary breadwinner, and the importance of a mentor, as well workplace discrimination and the challenge of motherhood during a pandemic.

Balancing Career and Motherhood

The theme of balancing career and motherhood produced the greatest number of codes ($N = 68$). Within this theme, effects on career ($n = 51$), academic career ($n = 17$), and work–life balance ($n = 25$) were reported. The participants were asked what they prioritize or personally value regarding balancing career and motherhood, what are their beliefs and experiences regarding balancing career and motherhood, and whether their expectations about balancing career and motherhood aligned with their realities. The participants mentioned the ways that motherhood affected their career and ways that work–life balance is often a challenge. Additionally, discussion on the pros and cons of an academic career on work–life balance and schedule emerged. Although some of the participants did not have children, those participants answered these questions as a hypothetical, anticipatory reflection on what balancing career with motherhood may look like.

Table 4 shows illustrative quotes associated with each category. A positive and negative illustrative quote, when applicable, is provided to show the opposing view regarding the corresponding theme. As previously mentioned, most participants stated that balancing career and motherhood is challenging and strenuous. A few participants, however, mentioned a positive viewpoint regarding balancing a career with motherhood when it came to their academic careers or the effects on their careers. The illustrative quotes are used to better understand the lived experiences of the study participants.

Table 4*Summary of Balancing Career and Motherhood Theme*

Category	Illustrative Quotes	
	Positive Experience	Negative Experience
Academic career ($n = 17$)	<p>"It helps me balance because I don't feel like I have to shut everything off all the time and that if my daughter needs me I can go and that's the best thing about academia, but if my daughter needs me, I can, you know, go be with her, and if my lab needs me than I can, I can deal with them, and they both you know, know about the other."</p>	<p>"I feel that there's this important bias that also in some way affects me, because I believe that it's something that is inherent to academic that also affects women. I think that also women think this way. I don't think it's a problem of male thinking that way. I think it's a problem of how everyone thinks in academic, and the proof of that is that I didn't want to have children, because I really believed that that was going to prevent me from pursuing my career as I wanted."</p>
Effects on career ($n = 51$)	<p>"...it's a daily battle I think I play in my head between the two... I try my best to balance between the two...as well as I can. If I was put into a position to choose between my family and my kids and my career, I would choose my family every time.... There's always a choice there...do you take this meeting, or do you go to this thing for your family or the kids..."</p>	<p>"At least here, now that that's been, that's been fixed, which is great, um, but, you know it is something that I think some people consider of like... getting your name changed when you get married. It's just, "Oh great, now my license and my medical school diploma and all of that, it's gonna affect credentialing."</p>
Work-life balance ($n = 25$)	<p>"...My work's important, but also my family is very important. And I need to make an effort and take some time to actively try and make time and room for that, because I think especially once you have a terminal degree, and especially in science, it's very easy for you to have your work and have your science consume all of your life..."</p>	<p>"I envision zero balance to be honest. I hate that term, work-life balance. I think it's completely ridiculous for people who are at this level of education. I'm not saying that in a pretentious way...Nobody works 40 hours a week when you have a terminal degree. You don't punch in, punch out."</p>

Effects of a Terminal Degree on Reproductive Choices

There was much discussion about whether a terminal degree had any effect on the participants' reproductive choices ($N = 55$), as this was the second-most-coded theme from the interviews. While most women indicated that obtaining a terminal degree affected their reproductive choices in some way, a few participants indicated that it had very little effect on their decision to become a mother or when they decided to have children. Having obtained a terminal degree, while an influence on reproductive choices, was not the only influence on their deciding whether and when to become a mother. Other factors, such as age, marital status, religious beliefs, and finances, also affected reproductive choices.

Table 5 presents illustrative quotes that show both the beliefs of those participants who thought having a terminal degree did affect their reproductive choices and the beliefs of those who said having a terminal degree did not affect their reproductive choices. Additionally, illustrative quotes are provided for the category of when during the educational journey did each participant have her first child.

Table 5*Summary of Effects of a Terminal Degree on Reproductive Choices Theme*

Theme/Category	Illustrative Quotes	
	A terminal degree does not affect reproductive choices:	A terminal degree does affect reproductive choices:
Theme: Effects of a terminal degree on reproductive choices (<i>N</i> = 55)	“I really highly value family and I’m relatively conservative, so I was planning on having several children, really, no matter what.”	“I think being in medical school as long as you are, it just kinda was a little bit too much, I thought, to have a child during medical school or training, and then it’s just kinda like life gets away from you. You’re in school and you’re working hard and then before you know it, you’re in a high-risk group. So, it delays everything by a number of years, for sure. Now I’m at the point where I’m not sure that I wanna take the risk.”
Category: When during educational journey did participant have first child/timing of children (<i>n</i> = 34)	“I don't think that having my degree necessarily made me...think about that differently. Certainly not thinking that because I obtained an MD that I would have more resources to spread among more children...Conversely, though, I did have my second child at 38 and my kids are three years apart...If I continue to space them two to three years apart, I would be over 40 and in that way both my training and my delayed start and my knowledge base about medicine has impacted... I don't think I would want to take the risk of having a pregnancy over 40...All those things about my degree, my timing, and my particular knowledge base I think did impact the decision that I'm not looking to have a third child.”	“I knew that pursuing medicine, I would not really be having children on the early side...” “I can honestly say that I had my children probably later than I would have, had I not stayed and got my PhD.”

Marital Status

The theme of marital status ($N = 51$) was another highly discussed topic among the interviewees. Most women indicated that their marital status played an important role in determining whether or not they wanted to become a mother. A few women interpreted marital status as the act of being married, and they indicated that being married did not affect their choice to become a mother or not. For most, the changed viewpoint of not needing to be married prior to childbearing came about because of the COVID-19 pandemic and the delay that the pandemic protocols have put on marriages and weddings throughout 2020–2021. Marital status was defined as married or not married. Not married included all other options, such as single, divorced, in a relationship, domestic partnership, engaged, and cohabitating.

Illustrative quotes from selected participants are displayed in Table 6. The quotes are organized by women who indicated that marital status has affected their childbearing choices and women who said that marital status did not affect their childbearing choices.

Table 6

Summary of Marital Status Theme

Theme	Illustrative Quotes	
	Marital status does affect choice to become mother:	Marital status does not affect choice to become mother:
Marital Status (N = 51)	<p>“Oh yeah, that’s probably the number one reason. That greatly impacted my decisions.”</p> <p>“I got married in residency. I guess it's a little unfair, because I definitely never thought particularly long or hard about becoming a mom before I got married.”</p> <p>“If I did not have, if somebody in our relationship was, did not have a feasible schedule in those first three formative years of my son’s life, I truly don’t know what I would’ve done. It allowed me to keep my job and that allowed my son to also be cared for.”</p>	<p>“In some way I believed I owed him having a child...My husband is super supportive with my career, and he’s very supportive with motherhood and parenthood. He is the one who’s the primary caregiver right now...I think there’s still some part of guilt that I felt and sometimes I still feel that came from my marital status.”</p> <p>“My marital status hasn’t impacted it, obviously because I said I’m going to have a baby now before marriage. The relationship, the quality, the stability, the partner. That has significantly influenced it...I needed to be with someone who... had a good emotional intelligence, who I respected, and I know he’s going to be a good father.”</p>

Finances

As shown in Table 7, when asked about finances (N = 50), most women indicated that financial status played a determining factor in whether and when to become a mother. This theme was of particular interest regarding women who possess a Doctor of Medicine (MD), as many of the interviewees with MDs emphasized the financial strain

that children would have caused during medical school and residency. Similarly, women who possess a Doctor of Philosophy (PhD), and specifically those who are involved in a science-related career, discussed the financial strain of being a graduate student living off of a stipend. Although most women expressed that finances were an influencing factor of their reproductive choices, some women stated that finances were not a top determining factor for them or even a factor at all, as they would have had children regardless.

Table 7*Summary of Finances Theme*

Theme	Illustrative Quotes		
	Finances do not affect choice to become a mother:	Finances do affect choice to become a mother:	Additional Quotes
Finances (<i>N</i> = 50)	<p>"I'm very lucky to have compensation that does not make how many children or the timing of my children too much of a financial decision. I will say that I didn't think it was stress-free to try to have a child on a resident's salary."</p> <p>"I'd say to a much lesser extent, of course it had some role, but I grew up in a...I'm a first-generation college student, and so I grew up in a family that, wasn't entirely well off... If I didn't have a job... and I was in massive amounts of debt. So, in a small way, it did, but at the same time, I didn't have to... achieve anything financially more than what I already had in order to say 'I'm ready for a baby.'"</p>	<p>"I would have had children earlier, but it's very challenging to do in medical school, because you don't have any money."</p> <p>"I definitely believed it played a role. We waited, until we were both done with school and had our jobs and had started our careers before we had even really talked about it seriously. For both of us, being financially stable was an important component of the decision to start a family."</p>	<p>"We made the very conscious decision not to have any more children because of my job progression with the terminal degree, and the fact that having one child without the terminal degree was hard enough financially, that in order for us to move forward...I am the breadwinner of the family, and to take time off and to do all of that, it just, it wasn't possible. It was very financially difficult...we were living paycheck to paycheck, hands down."</p> <p>"I have always said, 'Okay, I want to be financially stable when we decide to have kids, because I don't wanna struggle like my parents.'"</p>

Challenges and Barriers

One interview question explored the challenges and barriers that participants feel women with terminal degrees face regarding making their reproductive choices, such as

perceived sociocultural constraints or pressures. The theme of challenges and barriers ($N = 36$) yielded categories, including childcare ($n = 4$), having a partner ($n = 2$), and healthcare ($n = 8$). Discussion regarding challenges and barriers ranged from experiences related to the opinions of peers and friends, to when to have children, to the perception of whether or not women will continue to be successful at their careers once they have children. Additionally, discussion surrounding residency (for MDs) and academic mentor support was mentioned. Illustrative quotes reflecting participants' experiences can be found in Table 8.

Table 8*Summary of Challenges and Barriers Theme*

Theme	Illustrative Quotes
Challenges and Barriers (<i>N</i> = 36)	<p>“I think the biggest is a time commitment and dedication, because having a new baby or an adoptee in your home should be your priority. And when you’re getting a terminal degree or after you’ve achieved it, assuming you’re planning to use that degree in your career, they’re both very conflicting opportunities, to perhaps balance both at the same time unless you have resources that are not available to the general population.”</p> <p>“I think that the hardest thing was just wanting to get back to science and do the things that I loved...I think I struggled a lot with...the logistics of being a mother, but also just...that confidence and...the identity of being a mother that...I can do both. I am both now, so I need to figure out how to make both work and there’s very little to kind of help you with that.”</p> <p>“I think high-achieving women tend to overthink these decisions, and so they agonize and worry over when and how and which timing would be best, etc., when reality is...however it happens to happen, you'll figure out a way to make it work, because that's what high-achieving women do.”</p> <p>“The demands of being in lab, and my biggest concern even with starting a family in graduate school, was if I’m pregnant and I work with all of these dangerous chemicals, there’s no way for me to get anything done. If I get pregnant, then I would have to delay my degree because I wouldn’t be able to do the experiments I need to do.”</p>

Suggestions

The final major theme that emerged from the interviews was suggestions (*N* = 48). The researcher asked participants what suggestions they have for other women regarding motherhood and obtaining a terminal degree, such as timing, decision-making, or overcoming challenges and barriers. As illustrated in Table 9, the influence of social

media and peers, ensuring a support system, working a career around motherhood instead of vice versa, and advocating for oneself all emerged in the discussion.

Table 9

Summary of Suggestions Theme

Theme	Illustrative Quotes
Suggestions ($N = 48$)	<p>“I would first say ensure that you have an appropriate support network before you achieve either of those, because both of them are quite demanding on your emotional health, your body, and the academic rigor is significant for your terminal degree.”</p> <p>“I think they definitely do not need to be influenced by social media and what their friends over yonder are doing with their lives and their babies.”</p> <p>“I think as far as timing, if you want to be a mother, just do it, and figure out work on the other side of it. It shouldn’t be trying to figure out motherhood in relationship to when does motherhood fit well with work. We should be saying when does work fit in well with motherhood.”</p> <p>“The first thing that I think needs to happen is you have to be an advocate for yourself. And if it’s important to you to start a family, then the best time to do that is when you have the support that you need to do that.”</p>

Other Themes of Discussion

Although the following topics of discussion did not produce a large amount of excerpts, these themes may be of importance for future studies. Further, they acknowledge the specific timeframe in which this study was conducted—namely, during the COVID-19 pandemic.

Workplace Discrimination

Interestingly, workplace discrimination was mentioned much more than the researcher anticipated. Participants shared stories relating to ideas such as perception of

gender inequality in regards to promotions, perception of peers at the workplace and ability to perform duties once becoming a mother, and differences among societal expectations for women versus men in the workplace as well as at home. For the purpose of data analysis, workplace discrimination was included under the theme of support, as a consideration for the lack thereof. A few illustrative quotes regarding workplace discrimination are included in Table 10.

Table 10

Summary of Workplace Discrimination Theme

Theme	Illustrative Quotes
Workplace Discrimination	<p>“I remember sitting on hiring committees and people applauded the men who moved so quickly up their career and then questioned why the women were taking longer, and it never once crossed their mind, well maybe they popped a kid out or two.”</p> <p>“One of my older female mentors said that she actually was lactating while in the OR, soaking through her scrub gown, and they wouldn’t let her scrub out. You know, it’s like, do I really wanna have to deal with all of those social, I mean, embarrassments like that?”</p>

Support

The importance of support while obtaining a terminal degree and motherhood presented itself as a theme during the interviews. Additional categories that emerged were support to have children, support to care for a child, support from other women in the workplace (including a mentor), and the role of some of the interviewees as their household’s primary breadwinner. A few illustrative quotes regarding support are provided in Table 11.

Table 11*Summary of Support Theme*

Theme	Illustrative Quotes
Support	<p>“I was practically hiding my pregnancy to my friends until I was almost five months pregnant because I don’t want them to perceive me as a mom. I want them to perceive me still as a professional person.”</p> <p>“We don’t have any support system here. We don’t have any family, we don’t have anyone that is helping us with anything. We don’t have any friends that help us with anything with the baby, and with the pandemic situation, we’re limited.”</p>

Motherhood and the Pandemic

An interesting component to this study is the timeframe in which the recruitment of subjects and interviews took place. Considering that an international pandemic of the COVID-19 virus occurred during the year 2020 and has continued into 2021 so far, specific discussion within the interviews occurred regarding the challenges of balancing the pandemic and motherhood. This was of particular interest to the study, as suggestions and discussions about the pandemic and motherhood relate specifically to COVID-19 in present day. This information may be used to develop new protocols regarding work–life balance, emotional support, and realistic expectations for employers, specifically for employees who are parents. An illustrative quote regarding the pandemic and motherhood is provided in Table 12.

Table 12*Summary of Pandemic and Motherhood Theme*

Theme	Illustrative Quotes
Pandemic and motherhood	“The more we are open and honest about what it looks like to try to balance the two worlds, the more understanding people will become of it. Not that I wished we were in a pandemic, but this environment has made it very clear to people who I don’t think understood what that was like before, when you had children in and out of Zoom meetings that they can’t ignore.”

Birth Control Methods

Another interesting topic of discussion during the interviews was the choice of birth control methods used during the time in which the participants were obtaining their terminal degrees. The methods mentioned were condoms, IUD, NuvaRing, oral contraceptive pills, tubal ligation, and no usage of birth control. IUD ($n = 11$) and oral contraceptive pills ($n = 8$) were the most popular among the participants interviewed. Some participants mentioned the ease of an IUD, as they did not have to remember to take an oral contraceptive pill. This was particularly useful for those participants during residency or other training during which there was not a consistent schedule.

Summary of Research Questions

This study’s three main research questions and findings are as follows:

Question 1: How do women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices?

As indicated by the major themes of this study, overall most women find balancing a career and motherhood challenging. Some participants explained that the

expectations and realities of motherhood did not align in the slightest. Others have acknowledged that their positive, supportive experiences with balancing a career and motherhood, including having a supportive partner, mentor, etc., are exceptions to the rule for most women. Some participants described their reproductive experiences, such as miscarriage, infertility issues, in vitro fertilization (IVF), the death of children, delayed childbearing due to education, and a lack of access to healthcare during various phases of their obtaining of a terminal degree and training. Additionally, the timing of when and how many children to have was a reproductive choice that was based on several factors, such as finances, marital status, career, and training.

Question 2: What consideration do women make regarding their reproductive choices?

This research question aimed to discover what, if any, considerations women make regarding their reproductive choices, such as contraception, the timing of children, when along their educational journey to have children or consider not having children, and support systems in place for having and caring for children, as well as support from a partner. When participants chose to have children varied. Most participants with children indicated that they had their first child after completing their terminal degree or while they were in a post-doctoral fellowship or residency program. A few participants, however, indicated that they had a child before obtaining a terminal degree, with additional participants indicating they had their first child during graduate school. Most participants shared that they chose some sort of method of contraception during graduate school; IUD and oral contraceptive pills were the most popular.

Question 3: What role do sociocultural and socioeconomic determinants, such as marital status and income level, play in their choice of whether or not to become a mother?

This question yielded two of the most-coded themes from the study: marital status and finances. These two themes produced strong opinions on both sides of whether finances or marital status played a role in the consideration of having children and becoming a mother. While some participants indicated that marital status was their top determining factor, others stated that their financial status was the top determining factor, and some delayed childbearing until they or their partners were more financially stable. For many of those, that meant first completing their studies and obtaining a terminal degree and being actively involved in a more stable career as a result of their doctoral training and education. Some participants who have not had children explained that obtaining a terminal degree was a time commitment that occurred at the expense of their personal lives. While marital status is their top reason for not having children at the moment, they said it is challenging to find a partner while obtaining a terminal degree. Others mentioned that because of the current COVID-19 international pandemic, nationwide shutdowns and safety protocols forced a delay in proceeding with plans of marriage, and that some are looking toward the option of conceiving prior to marriage, which they might not have otherwise considered before the pandemic.

Chapter Five: Discussion

Purpose of the Study Overview

The purpose of this qualitative study was to investigate how women with terminal degrees who live in Roanoke, VA, and who are employed at Fralin Biomedical Research Institute at VTC, Radford University Carilion, and Virginia Tech Carilion School of Medicine, describe the influences on their reproductive choices. Findings from this study may be extrapolated to apply to other urban areas with higher concentrations of women with terminal degrees.

Discussion of Results

Overall, the major themes that emerged from the interviews were balancing career and motherhood, effects of a terminal degree on reproductive choices, finances, marital status, challenges and barriers, and suggestions. These findings suggest that there are specific challenges, concerns, and needs for this targeted population of women with terminal degrees. The major themes pulled from discussions within the interviews provide a basis for:

1. Continuing the discussion about the specific needs of this population, including support from the workplace, mentors, partners, and other women;
2. Further exploration of workplace discrimination and how the gender gap can be reduced within the workplace environment;
3. Groundwork for Science, Technology, Engineering and Mathematics (STEM) workplaces to consider developing and adopting proactive policies and measures that will prevent workplace discrimination while actively supporting

women who possess terminal degrees as well as a diverse, equal, and inclusive culture;

4. Understanding and further exploring the effects of dissolution of the traditional family dynamic for some women among this specific targeted population, and providing support and suggestions to move forward with an evolving society;
5. Further understanding the ways in which marital status and finances may affect women's choices whether and when to become a mother.

Theoretical Framework Integration with Study Findings

Each interview question was affiliated with a construct of the theory of reasoned action (Appendix E). Subsequently, the major themes that emerged from the interviews can be associated with various constructs of the theory of reasoned action as well, specifically the constructs of behavioral beliefs, normative and subjective beliefs, motivation to comply, attitude toward the behavior, and behavioral intention.

Behavioral Intention

The intention to become a mother was wrought with complexities, such as marital status, finances, support, and obtaining a terminal degree and training thereafter (all of which emerged as major themes in this study). As indicative of behavioral intention, which is the idea that the stronger the motivational factors are to perform the behavior, the more likely the behavior will occur (LaMorte, 2019), some of the women interviewed reported factors such as marital status, finances, the presence of support, etc., as working in their favor as motivational influences on whether or when to become a mother. The major takeaway from the behavioral intention of the interviewed participants is the

complex actual and perceived sociocultural pressures of balancing a career and motherhood, and when is the most “ideal” time to start childbearing.

Behavioral Beliefs

Most of the themes found were associated with the construct of behavioral beliefs, or the idea that behavioral performance is associated with certain attributes or outcomes (Ajzen, 2019). Overall, most participants with children believed that the act of becoming a mother will produce a given outcome or experience, whether that experience is the fulfillment of becoming a mother, the experience of balancing career and motherhood, or the expectations versus realities of becoming a mother. For example, a participant stated, “...My role as a mother has always been really important to me, and I think that I expected to look back on that as the most important part of how I’ve spent my life.” On the other hand, another participant stated, “I feel really privileged to help with him... at the same time, I don’t enjoy playing kid games and things like that. And so it would drive me insane to be a stay-at-home mom and be around him constantly. I’m definitely a better mother when I’m also working, and so I really enjoy being able to work some days and be home [others].”

Additionally, this construct can be used when examining the behavior of obtaining a terminal degree. Overall, having obtained a terminal degree produced a given outcome or experience of perhaps a higher-paying career and more flexibility within one’s career. For example, a participant reported, “I recognize the incredibly privileged position I’m in. However, I put myself in that position because I knew it was gonna be privileged. Again, that’s why I said I got a terminal degree, so that I could be in that kind of position, because I wasn’t before.”

Normative Beliefs and Subjective Norms

Normative beliefs, or the perceived behavioral expectation of those who are the closest to the participants (i.e., spouses, family members, and friends), as well as subjective norms, or the perception of social pressure whether or not to engage in a specific behavior, were both identified through major themes found in this study (Ajzen, 2019). Some women reported the desire to have children only after they were married or because they had such a supportive partner that wanted to have children, which motivated them to start having children. “I would not have considered having children had I not been married,” confessed a participant. Additionally, it was reported that social influences, such as comparing oneself to others in person or via social media, also affected whether or when participants have become mothers “...Definitely do not need to be influenced by social media and what their friends over yonder are doing with their live and their babies. That’s completely ridiculous and that’s hard. There was a time when I was like looking at baby books, you know, in my later 20s and I’m like ‘oh geez, I’m behind,’” explained another participant. The major themes that emerged associated with normative and subject beliefs include marital status, finances, balancing career and motherhood, work–life balance, support, and effects of a terminal degree on reproductive choices. Furthermore, subjective norms regarding the perceived or actual expectations of women to have children or to obtain a terminal degree emerged through the major themes of challenges and barriers and balancing career and motherhood.

Motivation to Comply

Subsequently, because of normative beliefs and subject norms, the theory of reasoned action construct of motivation to comply emerged from participants reporting

various feelings towards obtaining a terminal degree and motherhood. Some of the choices that participants considered were whether or not to have children until after obtaining a terminal degree or after they felt financially or martially established. Women reported considering the motivation to comply regarding the perceptions of motherhood on one's career and how motherhood may affect career advancement. Furthermore, the construct of motivation to comply was presented with societal or normative beliefs regarding the use of a birth control method to prevent pregnancies. These considerations were represented in the major themes of marital status, finances, the effects of a terminal degree on reproductive choices, and balancing career and motherhood.

Attitude toward the Behavior

The final theory of reasoned action construct represented in the study, attitude toward behavior, is defined as the rate in which the performance of a behavior is considered positively or negatively valued (Ajzen, 2019). The idea of whether becoming a mother or not was valued both positively and negatively throughout the study. The discussions about weighing the outcomes and experiences of becoming a mother were reported through the major themes of balancing career and motherhood, effects of a terminal degree on reproductive choices, challenge and barriers, marital status, finances, and support. The influence or presence of marital status, finances, and support were reported as determinants of what becoming a mother would look like, as well as through discussions about the expectations and realities of motherhood. Relatedly, there was mention of weighing motherhood as a positive or negative valued component of life through analyzing the challenges and barriers associated with motherhood, as well as

how to balance a career and motherhood, and how to maneuver through the related obstacles.

Relationship of the Findings to Prior Research

Overall, the findings from this study align with the current literature associated with the differences between college educated and non-college educated women. However, this study aimed to understand the lived experiences of women specifically with terminal degrees. The relationship of findings to prior research are organized by the major themes found within this study.

Balancing Career and Motherhood

Overall, most mothers found balancing a career and motherhood challenging, and women who plan to become mothers anticipate experiencing the same. As stated by a participant, “The farther I’ve gotten into my career, the less apologetic I have become about taking that time for my family, but I know that early in my career, it was a lot more challenging to say to people, ‘no I can’t be at event X, my kids have this.’” Conversely, another participant said, “I’ve been very fortunate that I work within an institute that supports terminal degrees and helps you achieve those. I’m also fortunate in my current position that I have flexibility so when my children have needs at home I’m able to work around their schedule.” Additionally, another participant explained, “I think of it more as a work–life integration, where there’s times where I’m more focused on my career and work, and there’s times where I’m more focused on life.”

While the overall perception of balancing a career and motherhood aligns with current literature, this study aimed to understand the specific needs of women with terminal degrees. The challenges of balancing a career and motherhood that were

discussed are specific to the target population of women with terminal degrees versus college educated versus non college educated women. There was mention of the expectation of “doing it all”— that is, having a career and also being a mother. The challenges associated with maintaining a career and motherhood specifically as a woman who has obtained a terminal degree were discussed. Some participants feel that there is much expected from women with terminal degrees, and that the “job” of being highly educated is never ending. According to one participant, “I hate the term work–life balance. I think it’s completely ridiculous for people who are at this level of education...Nobody works 40 hours a week when you have a terminal degree. You don’t punch in, punch out.” While some participants said their career took precedence over their children, others expressed an opposite or more balanced view: “It’s okay for your kids to see you working hard because you are doing a service to them. Now, not hard to the point of neglect. That is why I say motherhood comes first,” said another participant. In either scenario, women reported feelings of shame and guilt in prioritizing either motherhood or their careers. According to a participant, “It’s a daily battle I think I play in my head between the two.” Considering that balancing a career and motherhood is so important to this specific group, overall, women with terminal degrees may want to consider ways in which they plan to balance career and motherhood before they have children, and ensure proper support systems to feel better equipped to manage the demands of both.

Effects of a Terminal Degree on Reproductive Choices

As the current literature suggestions, generally college-educated women with more advanced degrees are having children later in life and having fewer children than

other tiers of educated women or non-college educated women (Brand & Davis, 2011; Ganguli et al., 2011; Neels et al., 2017; Reichlin & Augeri, 2015; Taylor et al., 2010; Zang, 2019). Of the participants with children, most women (nine participants) interviewed reported having their first child between the ages of 25–31 years, while the national average of women having their first child from 2011–2015 is age 23 years (Center for Disease Control and Prevention [CDC], 2017).

Some participants reported that because of their education, they feel that it is too late in life for them to begin having children or to have additional children. “I can honestly say I had my children probably later than I would have, had I not stayed and got [sic] my PhD,” said one participant. According to another participant,

I think being in medical school as long as you are, it was...a little bit too much, I thought to have a child during medical school or training, and then...life gets away from you...before you know it, you're in a high-risk group, so it delays everything by a number of years, for sure. Now I'm at the point where I'm not sure if I wanna take that risk.

Another participant expressed similar sentiments:

My DNP didn't impact when I began having children, because that was not something that I was thinking about at that point in time, but it did, I would say, impact having more children...there was the thought of maybe...having another pregnancy, [but] things just got very busy and crazy as I decided to kinda continue with my DNP.

Additionally, many participants delayed childbearing due to their pursuing a terminal degree, and the training that occurs after initial terminal degree education (e.g.,

residency programs, postdoctoral fellowships, etc.). Having the choice to delay childbearing relates to feeling more mature and prepared as a mother, having more control over motherhood, and the unpredictability of parenthood (Shelton & Johnson, 2006). The use of birth control options, such as IUD and oral contraceptive pills (which were the most popular forms of birth control chosen by the interviewed participants), provided these women a method by which to prevent pregnancy during their terminal degree education and subsequent training.

While current literature suggests that the more educated a woman is, the more likely she is to delay childbearing or having less children, some women interviewed stated that obtaining a terminal degree did not affect their reproductive choices, whether because they obtained their terminal degrees after having children or because obtaining their terminal degrees was not an obstacle in regards to the number of children they planned to have. For example, one participant stated: “I really highly value family and I’m relatively conservative...so, I was planning on having several children, really, no matter what.” A conclusion that can be drawn from the participants’ statements is that if a woman had obtained at terminal degree after beginning to have children, these women were less affected by obtaining a terminal degree influencing the timing of their having children, but rather how many children they chose to have after obtaining a terminal degree.

Marital Status

In terms of socioeconomic factors, marital status and finances were very close in regards to how often these major themes were coded. For most, marital status was one of the determining factors when deciding whether or when to become a mother. While

current literature does not present any specific explorations of the relationship between women with terminal degrees, reproductive choices, and marital status, the findings from this study align with the current literature of the choice to delay childbearing because of a socioeconomic factor, such as marital status. As previously mentioned by Petropanagos (2010), there are many reasons why women chose elective egg freezing, which include increased cost of living, not being able to afford to care for a child in the current stage of life, prioritizing obtaining higher education and career advancement, as well as the challenges of finding a long-term partner. Relatedly, women from this study mentioned that while they may not have intentionally delayed childbearing due to obtaining a terminal degree or not finding a suitable partner due to the time commitments of a terminal degree or a career, one participant stated that sometimes "...life gets away from you... before you know it, you're in a high-risk group, so it delays everything by a number of years, for sure." This aligns with current literature that states it may not be an intentional choice to delay childbearing, but that this simply becomes the course of how a woman's life has unfolded (Petropanagos, 2010).

For some women interviewed who were currently married, they stated that if they were not married, they would have not considered having children otherwise, or that they felt like because they had an established marriage, they felt more ready to have children. Some participants who are not married yet, on the other hand, have a different view, stating that regardless of their marital status, they have plans to become a mother, whether their wedding was put on hold due to the COVID-19 pandemic and shutdown, or that marital status is not one of the top considerations for when and if they become a mother. Considering the COVID-19 pandemic, some women are sacrificing the desire to

be married prior to having children, as the shutdown protocols have affected whether or when they could pursue wedding planning. Findings related to COVID-19 and the effects of the pandemic on marital status and motherhood as it relates to reproductive choices of women with terminal degrees has not yet been studied, as this pandemic is relatively new. However, the findings in this study relating to marital status as a consideration to whether or when to have a child aligns with current literature stating socioeconomic factors, such as marital status and income level, affect women's reproductive choices (Reichlin & Augeri, 2015).

Interestingly, an area not explored by current literature regarding women's reproductive choices and obtaining terminal degree is sexual orientation and the way in which this may affect the considerations that are made regarding motherhood. Typically, current literature has focused on or assumes heterosexuality. For example, in regards to what type of birth control was used during graduate school, a participant stated,

This isn't such a straightforward question, because my sexuality has a lot more to do with it than my choice of whether or not to use contraceptives, like, I don't have sex with males, so there is no chance of me becoming pregnant, so I never had to consider that question and [marital status was] probably the number one reason. Yeah, that has greatly impacted my decision [about becoming a mother]. I probably would not, at least for the next 10 years of my life...choose to become a mother, if I didn't have a partner to do that with, especially when considering my career ambitions, life circumstances, and financial situation. There's no way I would even consider becoming a single mother.

Finances

Considering that finances was one of the major themes that emerged from the interviews, most participants reported that finances did affect their choice of whether or when to become a mother. Aligning with current literature that discusses the financial struggles of childcare and maternity leave and the ways in which financially caring for a child affects one's career choice and potential earnings (Bidwell, 2018; Carnevale & Smith, 2014), participants in this study also reported the financial struggles of the salaries associated with residencies and postdoctoral fellowships, as well as the expense of childcare. "...Financially, that was absolutely not gonna be doable, on a resident's salary, you know, because...the resident's salary would barely cover...housing, like full time, five-hour-a-week childcare in New York City," said one participant. Interestingly, in what seemed to be a discussion more specific to women who have obtained terminal degrees, some women also reported the financial challenges of taking the roll of "primary breadwinner" within their household.

Challenges and Barriers

Participants in this study mentioned many and various challenges and barriers, which aligns with current literature. Many participants mentioned struggles similar to those cited in current literature on the "motherhood penalty" and the effects motherhood has on one's career (Gough & Noonan, 2013). Additionally, participants in academic settings mentioned the special considerations and challenges associated with the academic tenure system and balancing motherhood with the demands of academia, which has previously been studied by Kittelstrom (2010).

Relatedly, challenges regarding fertility issues emerged from the interview discussions. While not a major topic of discussion, a few participants indicated their fertility challenges. According to one,

I just figured I had enough time. And so, I knew plenty of people that had children in their early to mid-30s and they were able to have, you know, all the children that they wanted. I knew that some of my friends were already starting to have fertility problems. But naturally, you know, you don't think it's gonna affect you until it happens. And so our mindset was just 'let's get through training'...So that was the reason why we really put off having kids. And now, in hindsight, it's sort of like, 'Gosh, should we have started earlier?' But our journey with IVF [was] a little bit different, because we have a genetic condition in the family...There was a lot of mixed feelings in the beginning of the pregnancy because we knew that the genetic stuff needed to be figured out...We didn't even tell our families...It was pretty awful. We were celebrating the pregnancy, but we were also just like really scared, too.

On another note, a few participants mentioned the increase in fertility treatments and opportunities for women who are wanting to have children at an older age and the importance of discussing reproductive options with an OB-GYN prior to wanting to conceive. "Fertility treatments are like very, very good these days. And so, you know, we have 'til we're 40 until...there's any concern for greater risk to the fetus around development," explained a participant. Another participant added,

I think along the lines of discussing fertility, if there's any family history of any type of genetic disorders or things like that, things that need to kinda be sorted out

before you could get pregnant, like if there is some uncontrolled diabetes or things like that. Like, there are things that they can do to get their bodies as healthy as they can be before they want to get pregnant.

While findings from this study align with current literature, challenges and barriers associated specifically with women obtaining terminal degrees emerged from this study's results. Two key examples of these challenges and barriers are finding a good partner and having support, as one participant said:

I think medical school makes dating hard as well, so you might be delaying when you're actually finding a supportive partner, and that is, I think, critical, insofar as some people can clearly raise their children being single, but when you're as busy as you are in medicine, I think it's difficult to then have to be a single mother.

Suggestions

Considering some of the novel research findings from this study, many suggestions that were mentioned were specific to women who have obtained terminal degrees and motherhood. Some of these findings, however, may be extrapolated and applied to other educational attainment groups, and women overall. The three main suggestions from participants were making the decision of whether and when to become a mother unyoked from one's career or education goals, outsourcing everyday chores and errands, and prioritizing what is important to each individual. Regarding timing as a personal choice, one participant said,

I think timing is your decision and it should have absolutely nothing to do with your career and terminal degree. That is your decision. That is your family's

decision, and there's nobody that belongs in that decision except for you and your partner.

Another participant said, "[For] women in particular, but also guys who are thinking about starting families, there's never a perfect time, it's whatever's right for your family and for yourself."

As for hiring help, another participant said,

Outsource as much as possible, get help, like even housekeeping if you can afford it...the groceries. Get some time also for your couple, get some time for you, get a babysitter, even if it's twice a week, once a week to be able to breathe...that will help keep some sanity to be able to go on.

As for setting personal priorities, a participant said,

I think that if somebody wants to be a mother, go for it. I think that's probably the most important thing to a lot of people and I think prioritizing that and prioritizing your child over work is a totally appropriate thing and needs to be normalized.

Limitations

There were limitations to this study. The survey instrument was not validated or tested. The electronic survey was distributed only to the three organizations previously mentioned. The email list for Fralin Biomedical Research Institute did not account for female employees who are currently pursuing a terminal degree. However, the email lists for Radford University Carilion and Virginia Tech Carilion School of Medicine were sent to all female-identifying employees regardless of educational attainment.

The email distribution for Virginia Tech Carilion School of Medicine was sent on behalf of the researcher and was at the discretion of the primary contact at VTCSOM to

be sent in a timely manner to the appropriate audience. This limitation did not exist with the email distribution for Fralin Biomedical Research Institute at VTC and Radford University Carilion, as the researcher obtained approval from a primary contact employee from both organizations to send the email out directly, thus not requiring outside assistance. Additionally, the sampling method may have been considered a limitation or considered to have low credibility. However, the three organizations in Roanoke, VA, were chosen because of the saturation of female employees with terminal degrees who are employed there and because they are in a logical and accessible location for the researcher.

Another possible limitation was conducting the interviews via Zoom audio calls. Considering this method, the researcher was not able to observe the participant's body language. The researcher was, however, able to understand the tone, inflection, and emotion of the participants' interview answers through the recording of the interview.

Delimitations

The targeted population, inclusion criteria, demographic location, three employer organizations chosen, and timeframe required of survey completion may have accounted for a smaller sample size of audio-recorded interviews. Data reached saturation for this study at 20 interviews, however, and therefore the researcher did not need additional interested participants to schedule interviews.

Areas for Future Research

The findings from this study provide several opportunities for further research to better meet the needs of women's journeys through motherhood and obtaining an education.

Expanding Sample Size and Targeted Population

Considering the 20-participant sample size and that most women surveyed and interviewed identified as White/Caucasian in this study, additional results could result if the sample size and targeted population was expanded to different educational and healthcare institutions, an additional demographic location beyond Roanoke, VA, and removed the 24–44-years-old inclusion criteria. The age bracket of 45 years and older had the greatest number of responses to the initial recruitment survey; by interviewing this age group specifically, and considering the time period in which some may have received their terminal degree, perhaps findings would vary based on sociocultural constraints or the differences in expectations and traditional family roles of women 45 years and older versus those age groups interviewed in this study. Additionally, by interviewing women in the 45 years and older population, there is an opportunity for participants to reflect on their now-grown children, what they may have done differently when raising their children, and exploring how women who are 45 years and older might reflect on their personal experience of not having children.

On a related note, another interesting group of women leaders for future studies is the C-suite, or highest-ranking senior executives within an organization (Cassidy, 2018), at Carilion Clinic in Roanoke, VA. Findings from a study interviewing the C-suite may possibly lead to workplace protocol and human resource changes, and further understand the needs of this special population of educated women leaders. Furthermore, findings from studying C-suite women leaders may result in the realization that women face similar pressures regardless of whether a terminal degree has been obtained, but perhaps the caliber of workplace leadership and responsibility is a unifying factor.

Workplace Discrimination

Although the topic of workplace discrimination was not an original part of the overall goal of this study, it was mentioned in many interviews as a way to better understand the pressures associated with mothers in the workplace and the gender inequality—whether perceived or actual—that currently exist within society. The findings regarding workplace discrimination and gender inequality can be used to instill more sufficient workplace strategies and expand human resources support. Furthermore, it is important to consider better implementation of workplace policies regarding graduate student healthcare coverage, maternity and paternity leave accessibility, better accommodation for breastfeeding mothers, possibilities of graduate student stipend increases, and strategies to combat gender inequality and lessening the gender gap, as well as the challenges associated with a patriarchal workplace environment and any inappropriate behavior, harassment, conversations, or other workplace inappropriateness that may arise in some workplace situations.

Further Identifying Differences among Terminal Degree Types

Pressures associated with individual terminal degrees were presented in this study's findings. Additional research further identifying the differences among terminal degree types would be beneficial to better understand the needs of this particular population of women. For example, some participants mentioned the specific stressors associated with working in science-related fields, locations, or laboratories, and the daily challenges and battles they face in order to preserve their careers, such as mentor support (or lack thereof), or challenges with working in a laboratory that utilizes toxic chemicals that make being pregnant and continuing science-related experiments impossible.

Relatedly, some of the women interviewed who possess MDs stated challenges and battles specifically related to the obtaining of a Doctor of Medicine, such as residency (e.g., pay, time commitment, effects of timing of children, etc.) and concern over how motherhood may impact their career and promotional opportunities. As established in this study's results, there were differences as well as similarities associated with the different types of terminal degrees explored. It may be beneficial to specifically target certain types of terminal degrees to understand the challenges of each associated with balancing career and motherhood, as well as explore which degrees may be considered the "best" and "worst" for balancing education, career, and becoming a mother.

Balancing Career and Motherhood

As this was the most-coded theme that emerged from the study's results, this leaves room for further research regarding the better understanding of the needs of women who are balancing careers and motherhood, including childcare, support from other women in the workplace, mentors, and personal relationships. It is important to understand the specific pressures that women with terminal degrees face to be "all things to all people" and how to better support one another in regards to the demands of balancing career and motherhood.

Shifts in Traditional Family Roles

As mentioned in both the current literature and this study's findings, with more women obtaining higher education comes a shift in the traditional family dynamic. There was discussion in the interviews about shifting gender roles, and some women reported being the "breadwinner" of the household and the challenges associated with that role. With societal expectations and family dynamic shifts, as well as more women obtaining

terminal degrees and advancing their careers, there is likely to be an increase in added pressure as more women become the primary breadwinner of their household in order to provide for their families and also have a partner who primarily takes care of the children. As presented in this study's findings, one participant said,

Choice of a partner is so important to how it works... Women with terminal degrees are also marrying men with similar professions and terminal degrees... If they have a career that's quite demanding, it's hard to negotiate that. Without a significant financial investment in nannies, you can't both continue to go at full speed. Most women with terminal degrees are marrying professional men, you know, [and] that can be harder to negotiate between the couple.

On a related note, as current literature and findings from this study demonstrate, generally the more educated a woman is, the more likely she is to delay childbearing and have fewer children (Brand & Davis, 2011; Ganguli et al., 2011; Neels et al., 2017; Reichlin & Augeri, 2015; Taylor et al., 2010; Zang, 2019). The time commitments of obtaining a terminal degree affect many facets of women's lives, including finding a suitable partner. This can affect the timing of children and whether or when to have children, if marital status is of importance to the woman prior to becoming a mother; for most participants involved in this study, it was.

Exploration of Sexual and Gender Minorities' Experiences with Motherhood

According to the Society for Women's Health Research (2016), "sexual minorities face discrimination and social stigma on a higher basis than other subpopulations." As such, there is a need to further explore the lived experiences of sexual and gender minorities (SGM). SGM are "a group whose sexual identity,

orientation, or practices differ from the majority of the population” and is usually comprised of lesbian, gay, bisexual, and transgender individuals” (Society for Women’s Health Research, 2016). This study’s results discuss sexual orientation and the ways in which this may or may not affect women’s reproductive choices, but there is a need to further explore the ways in which sexual orientation and gender identity affects reproductive choices, especially among women with terminal degrees.

Overall Support for Women

As indicative in this study’s findings, the need for all-around support is vital to the success of women balancing careers and motherhood. It is important that additional research is conducted to investigate better strategies for women to feel “heard” and supported throughout the journey of motherhood and their careers. Relatedly, considering this study was conducted during the COVID-19 international pandemic, women indicated the need for support now more than ever. Additional research on how our society as a whole can move forward with supporting one another through virtual collaboration and encouragement is important, as some women interviewed indicated a feeling of isolation or the absence of resources, especially during the quarantine and lockdowns associated with COVID-19, which for many, results in schooling at home, working remotely, and distance from friends and family.

Birth Control Methods

A final suggestion for further research is to explore the need to develop different birth control options for women who are obtaining or who have obtained a terminal degree and are employed in a demanding workplace environment. As this study’s results show, IUD and oral contraceptive pills were the most popular birth control options, with

IUD being the most popular, especially for those women with an MD. “It has to be a guarantee, and your schedule is so hectic, I just can’t imagine remembering to take a pill all the time,” said a participant. According to another participant, “the IUD is a lifesaver...If you’re in the operating room for, like, 12 hours, you can’t step out to change your pad.” Additionally, based on some interview discussions, it is important to understand and acknowledge topics relating to fertility issues and the options available to women who are going through fertility challenges.

Conclusion

While obtaining a terminal degree affected most participants’ reproductive choices, specifically when to become a mother and how many children to have, obtaining a terminal degree was not the only determining factor. Other considerations regarding reproductive choices included marital status; finances; and support from family, from friends, from mentors, and in the workplace; fertility issues; the perception of one’s identity as a mother; the potential strain motherhood may have on career advancement; and the challenges of balancing a career and motherhood. The findings from this study may be useful for women who are both currently obtaining, have obtained, or are thinking of obtaining a terminal degree and are mothers or wanting to become a mother.

A major takeaway from this study is the need for women to feel supported, whether by mentors, colleagues, partners, friends, or family. The support to obtain a terminal degree or become a mother was very important in the success of the women interviewed. According to one participant, “I could see this research would fuel more qualitative research that then helps better destigmatize all the things that work against us in society.” Women wear many hats and have many responsibilities and expectations

ingrained in all the roles of their lives. Having a supportive group of women who motivate, inspire, and help one another through challenging chapters in life, such as balancing a career and motherhood, make the world of difference to the prosperity and fulfillment of other women. Another participant explained it this way: “In order to increase participation not only in getting terminal degrees, but in faculty and administrative positions, one of the things that needs to probably continue to adapt is how we set up the pipeline for women.”

Summary

The purpose of this qualitative study was to investigate how women with terminal degrees in Roanoke, VA, describe what influences their reproductive choices through semi-structured interview questions conducted via Zoom audio call. By using the theory of reasoned action, a theoretical foundation was developed to explore how perceived societal norms, subjective beliefs, and personal values and priorities influenced women's decisions about reproductive choices. The central research question for this study was: How do women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices? Research sub-questions included: What considerations did women make regarding their reproductive choices? What perceived or actual sociocultural constraints and pressures did they face? What role did socioeconomic determinants, such as marital status and income level, play in their choice whether or not to become a mother?

The study participants were recruited by working in collaboration with Virginia Tech and Radford University. To obtain a pool of interview subjects, a novel electronic survey instrument was created using Qualtrics software and distributed via email to invite female employees from Radford University Carilion, Fralin Biomedical Research Institute at Virginia Tech Carilion (VTC), and Virginia Tech Carilion School of Medicine who met the inclusion criteria. The survey link included primary demographic questions, such as gender, race, and income level. The survey link also invited qualified participants to indicate their interest in scheduling an interview.

The researcher interviewed 20 participants. Of the 20 participants, the majority were between the ages of 32–38 years (13), identified as White/Caucasian (16), were

married (15), with a household income over \$95,000 and over (16), and held PhDs (nine) and MDs (six). Additionally, the majority of participants had children (14), gave birth to their first child between the ages of 25–31 years (nine) and either the participants did not have children (six) or had two children (six). Most of the participants did not want any more children (13), but if they did want additional children, they wanted two more children (six).

Overall, the major themes that emerged from the interviews were balancing a career and motherhood, effects of a terminal degree on reproductive choices, finances, marital status, challenges and barriers, and suggestions. Additional topics of discussion included support, use of birth control, workplace discrimination, and balancing the COVID-19 pandemic and motherhood. The goal of the interviews was to understand the lived experiences of women with terminal degrees and what informed their decision about whether or when to have children. The interview questions were designed to provide an opportunity for participants to describe and elaborate on the important and meaningful influences of reproductive choices they have made through their lives and careers. These findings suggest that there are specific challenges, concerns, and needs for this targeted population of women with terminal degrees.

The major themes found in this study align with the construct of behavioral intention, subjective and normative beliefs, attitude toward the behavior, motivation to comply, and overall behavioral beliefs. The behavior choice of whether and when to have children was associated with a number of normative and subjective beliefs, attitudes toward the choice of childbearing, the motivation to comply with societal expectations or

personal expectations, and the overall behavioral beliefs regarding both the benefits and challenges of motherhood and having obtained a terminal degree.

While previous research shows associations between certain socioeconomic determinants and reproductive choices, there were no existing qualitative studies that explore how women with terminal degrees described what influenced their reproductive choices. The researcher found no published research that explored the complex relationship between obtaining a terminal degree and the reproductive choices regarding motherhood by the female employees from the three organizations mentioned previously. Findings from this study provide areas for future research. Expanding sample size and targeted population, identifying differences among terminal degree types, suggesting better ways to balance a career and motherhood, and understanding better ways to provide support are some examples of areas for further exploration. Additionally, further discussion on workplace discrimination, shifting traditional family roles, and popular birth control methods are also areas of further research.

While much of this study's findings aligned with current literature, this study provided novel insights into the lived experiences of women at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion, specifically, who have obtained a terminal degree and also chose to discuss their perceptions of and viewpoints on motherhood. Findings from this study may be extrapolated to apply to other urban areas with higher concentrations of women with terminal degrees.

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Appendix A: Invitation to Survey Email

Email Subject: Interview Invitation: The Experience of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study

Dear (Respondent),

My name is Alexandria Pilot, and I'm a doctoral student at Radford University Carilion and an employee at Fralin Biomedical Research Institute at VTC. I'm conducting research for my capstone project, "*The Experience of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study*".

I would like to invite you to participate in a short survey after which you may have the opportunity to indicate interest in scheduling a one-on-one 30- to 45-minute Zoom audio interview with me to discuss your lived experiences of obtaining a terminal degree and making reproductive choices, including the factors related to motherhood. If requested, a hard copy of the interview questions can be provided prior to the interview for preparation purposes.

This is a voluntary survey and interview. The purpose of the survey is to ask a few questions to determine if you meet the qualifications and inclusion criteria of the interview. The survey will take approximately 5 minutes to complete. The survey will remain open for two weeks beginning on _____ (the date in which I send the email). All of your responses will be anonymized by the survey software prior to being analyzed. You may complete the survey even if you are not interested in scheduling a one-on-one interview. There are no perceived risks beyond everyday life to participating in the survey and interview. There is no compensation for participating in the survey and interview.

Please visit: *Link to Survey (created in Qualtrics)*

Please let me know if you have any questions or if I can provide additional information.

Thank you,

Alexandria Pilot, MPA
Program & Administrative Coordinator,
Center for Neurobiology Research
Fralin Biomedical Research Institute at VTC
DHSc Candidate, Radford University Carilion
pjpilot@radford.edu

Appendix B: Electronic Survey Instrument (Created in Qualtrics)**Insert Radford University Cover Letter for Internet Research****Gender:**

Q1. What is your gender?

- Male
- Female
- Other

Forced Logic: If the participant answers male, the survey will end with an automatic response of: “For the purpose of this study, participants must identify as female. Thank you for your time.”

Education

Q2. Have you obtained a terminal degree? A terminal degree is the highest level of education in a field of study.

- Yes
- No

Forced Logic: If the participant answers no, the survey will end with an automatic response of: “For the purpose of this study, participants must possess a terminal degree. Thank you for your time”.

Q3. What type of terminal degree do you possess?

- Doctor of Philosophy (PhD)
- Doctor of Medicine (MD)
- Doctor of Nursing Practice (DNP)
- Doctor of Health Sciences (DHSc)
- Doctor of Education (EdD)
- Doctor of Veterinary Medicine (DVM)
- Other: _____

Reproductive Choices

Q4. Do you have biological children?

- Yes
- No
- No, but I have adopted or foster children.
- Prefer not to answer

Forced Logic: If the participant answers yes, prefers not to answer,, or no, but I have adopted or foster children, survey continues to question 5. If the participant answers no, survey continues to question 7.

Q5. At what age did you have or adopt your first child?

- Younger than 18 years old
- Ages 18-24 years old
- Ages 25-31 years old
- Ages 32-38 years old
- Ages 39-44 years old
- 45 years old or older
- Prefer not to answer

Q6. How many children do you have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer

Q7. Do you want children/more children?

- Yes
- No
- Prefer not to answer

Forced Logic: If the participant answers yes or prefers not to answer, survey continues to question 8. If the participant answers no, survey continues to question 9.

Q8. If yes, how many children/more children would you like to have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer
- I do not want children or more children.

Demographic Information

Q9. What is your age?

- 18-24 years old
- 25-31 years old
- 32-38 years old
- 39-44 years old
- 45 years old or older
- Prefer not to answer

Q10. What is your race? Please select all that apply.

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other _____
- Prefer not to answer

Q11. What is your household income?

- \$0-\$34,999
- \$35,000-\$54,999
- \$55,000-\$74,999
- \$75,000-\$94,999
- \$95,000 and above
- Prefer not to answer

Interview

Q12. Are you interested in scheduling a 30-45 minute one-on-one phone interview to discuss the influences of a terminal degree on your reproductive choices?

- Yes
- No

Forced Logic: If participant answers yes, survey continues to question 13. If the participant answers no, the survey ends with “end of survey” acknowledgement.

Q13. If you are interested in scheduling an interview, please provide your first name and email address.

- First Name: _____
- Email Address: _____

End of Survey acknowledgement.

Appendix C: Radford University Cover Letter for Internet Research



Radford University Cover Letter for Internet Research

You are invited to participate in a research survey and interview, entitled "*The Experiences of Reproductive choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study.*" The study is conducted by Alexandria Pilot, student researcher at Radford University Carilion (pjpilot@radford.edu), and Jeannine Everhart, Ph.D., Principal Investigator and Program Director and Assistant Professor in the Department of Public Health and Healthcare Leadership at Radford University Carilion (jeverhart1@radford.edu; (540) 985-4046).

The purpose of this study is to investigate how women with terminal degrees in Roanoke, Virginia, describe the influences on their reproductive choices. Your participation in the survey and interview will contribute to a better understanding of how women with terminal degrees describe what factors influence their reproductive choices. We estimate that it will take about 5 minutes of your time to complete the survey and about 30-45 minutes to complete the interview. You are free to contact the investigator at the above address and phone number to discuss the survey or interview.

This study has no more risk than you may find in daily life. We anticipate that your participation in this survey and interview present no greater risks than everyday use of the Internet.

The research team will work to protect your data to the extent permitted by technology. It is possible, although unlikely, that an unauthorized individual could gain access to your responses because you are responding online. This risk is similar to your everyday use of the internet.

Identification numbers associated with email addresses (if you decide to participate in an interview) will be kept during the data collection phase for tracking purposes only. IP addresses will not be collected or recorded. A limited number of research team members will have access to the data during data collection. Identifying information will be stripped from the final dataset.

Your participation in this survey and interview is voluntary. You may decline to answer any question in the survey and interview and you have the right to withdraw from participation at any time without penalty from completing the survey or interview. If you wish to withdraw from the study or have any questions, contact the investigator listed above. If you choose not to participate or decide to withdraw, there will be no impact on any current or future relationship with Radford University Carilion.

If you choose to participate in an interview, you will be provided a Zoom phone number link, in which you will call and answer questions regarding reproductive choices and

Radford University
Research Compliance Office

Radford University IRB
Approval Date: 10/27/2020



obtaining a terminal degree. You will also be asked for your permission to participate and consent for the interview to be audio-recorded. The audio-recording of the interview will then be transcribed using a professional transcription service, and then promptly destroyed thereafter. The transcription will not include your name or any other identifying information.

If you have any questions or wish to update your email address, please contact Jeannine Everhart, Ph.D. at (540) 985-4046 or send an email to jeverhart1@radford.edu. You may also request a hard copy of the survey and/or interview guide from the contact information above.

This study was approved by the Radford University Committee for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Ben Caldwell, Institutional Official and Dean of the College of Graduate Studies and Research, bcaldwell13@radford.edu, (540) 831-5724.

If you agree to participate, please **press the arrow button at the bottom right of the screen**. Otherwise use the X at the upper right corner to close this window and disconnect.

Thank you,

Jeannine Everhart, Ph.D, Principal Investigator

Alexandria Pilot, MPA, Student Researcher

Appendix D: Interview Guide

Name: _____

Email address: _____

Date of interview: _____

Time of interview: _____

(For researcher internal documentation only)

Instructions to be read to the participant:

Good morning/afternoon (name of participant). Thank you for taking the time to interview with me today. My name is Alexandria Pilot and I am a doctoral student at Radford University Carilion. I am conducting interviews with women who work at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion, who have obtained a terminal degree to discuss lived experiences of reproductive choices and motherhood. The purpose and central focus of the interview is to see how women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices. I will be asking you a series of questions in order to guide the interview; however, please feel free to share and discuss any other additional thoughts, feelings, or experiences that you wish. Our phone call interview today will be recorded and later transcribed by a professional transcription service. The transcription; however, will not be published. First, let's discuss a few important components.

To qualify for this interview, you must identify as a woman, possess a terminal degree, be employed at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, or Radford University Carilion, and must be within the ages of 24-44. Do you feel that you qualify for the interview? (Yes/No) If yes, great, we will proceed. If no, thank you for your time; unfortunately, we will be unable to proceed with the interview.

For internal record keeping purposes only, I will notate your name; however, this information will not be published. I will de-identify and code your responses to the interview by assigning your interview a number. I also plan to use quotes from this interview for the purpose of my research and will identify those quotes by using the assigned coded number. Do I have your consent to use quotes from this interview? Additionally, I would like to record our interview. Your responses to the questions will be professionally transcribed so that I can accurately summarize, review, and account for your thoughts and experiences. Do I have your consent to record the interview? (YES/No) If yes, great, let's begin. If no, thank you for your time; unfortunately, will be unable to proceed with the interview.

[Begin recording]

Survey Follow Up/Motherhood Background

I'd like to start off the first question by reviewing the questions you answered in my online survey about reproductive experiences. This section of the survey included questions about whether you have children, at what age you had or adopted your first child, how many children you have, whether you want children or any more children, and how many additional children you would like to have.

1. Please tell me more details about your current motherhood status and number of children.

Probe: Number of biological, adopted, or step-children?

2. When along your educational journey did you have children or consider not having children?

Probe: Before, during or after obtaining a terminal degree?

Reproductive Choices

3. How did obtaining a terminal degree affect your reproductive choices?

Probe: Such as the number of children you have, age at first child, contraception choices, etc.

4. What challenges or barriers do you feel women with terminal degrees have in making their reproductive choices?

Probe: What perceived sociocultural constraints? What pressures faced?

My next question is related to your perceptions of contraception and preventing unwanted pregnancy.

5. What, if any, contraception did you use/choose to use during your years of obtaining a terminal degree?

Marital Status/Finances

6. How did your relationship or marital status impact your choice whether or not to become a mother?

7. What role did finances or your financial situation play in regards to your choice whether or not to become a mother?

Career and Motherhood

Now, please tell me more about your attitudes and choices regarding balancing career and motherhood.

8. What are your beliefs regarding balancing career and motherhood?
Probe: What do you prioritize or personally value?
9. What are your experiences with balancing career and motherhood?
10. How did your expectations about balancing career and motherhood align with your realities?

Suggestions

11. What suggestions do you have for women regarding motherhood and obtaining a terminal degree?
Probe: Timing? Decision-making? Overcoming challenges and barriers?

We have reached the end of the interview. Thank you for answering the interview questions. Your insight, thoughts, and feelings are extremely valuable for my capstone research on the experiences of reproductive choices by women with terminal degrees. I appreciate your willingness to participate.

12. Do you have any additional comments or questions that you would like to add to the recording or anything else that you want to share related to this topic?

Additional comments and notes:

Thank you so much for your time! Have a wonderful day/afternoon! I will stop the recording.

[Stop recording]

Appendix E: Constructs of Theory of Reasoned Action

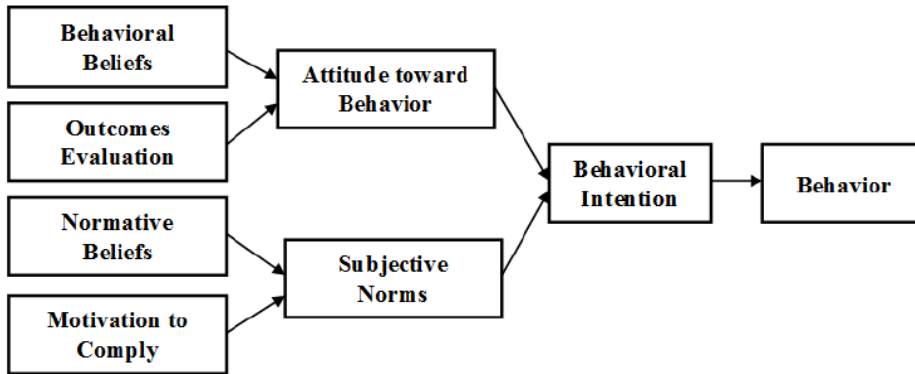


Figure 2: Theory of Reasoned Action (Fishbein & Ajzen, 1975)

Interview Question	Construct of Theory of Reasoned Action
How did obtaining a terminal degree affect your reproductive choices? Probe: Such as the number of children you have, age at first child, contraception choices, etc.	Behavioral intention Attitude toward behavior and belief Behavioral beliefs Subjective norms
What challenges or barriers do you feel women with terminal degrees have in making their reproductive choices? Probe: What perceived sociocultural constraints? Pressures faced?	Behavioral intention Attitude toward behavior and belief Behavioral beliefs Subjective norms Normative beliefs
What if any contraception did you use/choose to use during your years of obtaining a terminal degree?	Behavioral intention Attitude toward behavior and belief Behavioral beliefs Normative beliefs Subjective norms Motivation to comply
How did your relationship or marital status impact your choice whether or not to become a mom?	Behavioral intention Attitude toward behavior and belief Behavioral beliefs Subjective norms Normative beliefs Motivation to comply
What role did finances or your financial situation play in regards to your choice whether or not to become a mother?	Behavioral intention Attitude toward behavior and belief Behavioral beliefs Subjective norms Normative beliefs Motivation to comply

<p>What are your beliefs regarding balancing career and motherhood? Probe: What do you prioritize or personally value?</p>	<p>Behavioral intention Attitude toward behavior and belief Subjective norms Normative beliefs Motivation to comply</p>
<p>What are your experiences with balancing career and motherhood?</p>	<p>Behavioral intention Attitude toward behavior and belief Behavioral beliefs Subjective norms Normative beliefs</p>
<p>How did your expectations about balancing career and motherhood align with your realities?</p>	<p>Behavioral intention Attitude toward behavior and belief Subjective norms Normative beliefs Motivation to comply</p>
<p>What suggestions do you have for women regarding motherhood and obtaining a terminal degree? Probe: Timing? Decision-making? Overcoming challenges and barriers?</p>	<p>Behavioral intention Attitude toward behavior and belief Subjective norms Normative beliefs Motivation to comply</p>

Appendix F: Institutional Review Board

Institutional Animal Care and Use Committee / Institutional Review Board

10/27/2020

TO: Frances Everhart
RE: Exemption Determination
STUDY TITLE: The Experiences of Reproductive Choices by Women with Terminal Degrees in Roanoke, VA: A Qualitative Study
IRB REFERENCE #: 2020-278 / FY20-146
SUBMISSION TYPE: Initial Submission
ACTION: Determination of Exempt IRB Review
DECISION DATE: 10/27/2020

The above-referenced study has been determined by Radford University's Institutional Review Board (IRB) to be exempt from review. A copy of your IRB protocol is available for your records in IRBManager under your dashboard of active protocols.

Your study has been determined to be exempt under Exempt Category 2: Educational tests, surveys, interviews, or observation of public behavior with limited IRB review. Detailed explanations of the exempt review categories are available on the Research Compliance Office webpage.

Should you need to make changes in your protocol, you must submit a request for amendment for review to determine if the application still remains in an Exempt review category before implementing the changes. Amendments must be submitted via the IRBManager system. Please contact our office for assistance, if needed.

As the principal investigator for this project, you are ultimately responsible for ensuring that your study is conducted in an ethical manner. You are also responsible for filing all reports related to this project.

If you have any questions, please contact the Research Compliance Office at 540.831.5290 or irb-iacuc@radford.edu. Please include your study title and reference number in all correspondence with this office.

Good luck with this project!

Anna Marie Lee

Radford University Institutional Review Board (IRB)
Research Compliance Office
540.831.5290

[Irb-iacuc@radford.edu](mailto:irb-iacuc@radford.edu)

<https://www.radford.edu/content/research-compliance/home.html>

Radford University IRB Approval Date: 10/27/2020



Radford University Cover Letter for Internet Research

You are invited to participate in a research survey and interview, entitled "*The Experiences of Reproductive choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study.*" The study is conducted by Alexandria Pilot, student researcher at Radford University Carilion (ppilot@radford.edu), and Jeannine Everhart, Ph.D., Principal Investigator and Program Director and Assistant Professor in the Department of Public Health and Healthcare Leadership at Radford University Carilion (jeverhart1@radford.edu; (540) 985-4046).

The purpose of this study is to investigate how women with terminal degrees in Roanoke, Virginia, describe the influences on their reproductive choices. Your participation in the survey and interview will contribute to a better understanding of how women with terminal degrees describe what factors influence their reproductive choices. We estimate that it will take about 5 minutes of your time to complete the survey and about 30-45 minutes to complete the interview. You are free to contact the investigator at the above address and phone number to discuss the survey or interview.

This study has no more risk than you may find in daily life. We anticipate that your participation in this survey and interview present no greater risks than everyday use of the Internet.

The research team will work to protect your data to the extent permitted by technology. It is possible, although unlikely, that an unauthorized individual could gain access to your responses because you are responding online. This risk is similar to your everyday use of the internet.

Identification numbers associated with email addresses (if you decide to participate in an interview) will be kept during the data collection phase for tracking purposes only. IP addresses will not be collected or recorded. A limited number of research team members will have access to the data during data collection. Identifying information will be stripped from the final dataset.

Your participation in this survey and interview is voluntary. You may decline to answer any question in the survey and interview and you have the right to withdraw from participation at any time without penalty from completing the survey or interview. If you wish to withdraw from the study or have any questions, contact the investigator listed above. If you choose not to participate or decide to withdraw, there will be no impact on any current or future relationship with Radford University Carilion.

If you choose to participate in an interview, you will be provided a Zoom phone number link, in which you will call and answer questions regarding reproductive choices and

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obtaining a terminal degree. You will also be asked for your permission to participate and consent for the interview to be audio-recorded. The audio-recording of the interview will then be transcribed using a professional transcription service, and then promptly destroyed thereafter. The transcription will not include your name or any other identifying information.

If you have any questions or wish to update your email address, please contact Jeannine Everhart, Ph.D. at (540) 985-4046 or send an email to jeverhart1@radford.edu. You may also request a hard copy of the survey and/or interview guide from the contact information above.

This study was approved by the Radford University Committee for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Ben Caldwell, Institutional Official and Dean of the College of Graduate Studies and Research, bcaldwell13@radford.edu, (540) 831-5724.

If you agree to participate, please **press the arrow button at the bottom right of the screen**. Otherwise use the X at the upper right corner to close this window and disconnect.

Thank you,

Jeannine Everhart, Ph.D, Principal Investigator

Alexandria Pilot, MPA, Student Researcher

Appendix A**Invitation to Survey Email**

Email Subject: Interview Invitation: The Experience of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study

Dear (Respondent),

My name is Alexandria Pilot, and I'm a doctoral student at Radford University Carilion and an employee at Fralin Biomedical Research Institute at VTC. I'm conducting research for my capstone project, "*The Experience of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study*".

I would like to invite you to participate in a short survey after which you may have the opportunity to indicate interest in scheduling a one-on-one 30- to 45-minute Zoom audio interview with me to discuss your lived experiences of obtaining a terminal degree and making reproductive choices, including the factors related to motherhood. If requested, a hard copy of the interview questions can be provided prior to the interview for preparation purposes.

This is a voluntary survey and interview. The purpose of the survey is to ask a few questions to determine if you meet the qualifications and inclusion criteria of the interview. The survey will take approximately 5 minutes to complete. The survey will remain open for two weeks beginning on ____ (the date in which I send the email). All of your responses will be anonymized by the survey software prior to being analyzed. You may complete the survey even if you are not interested in scheduling a one-on-one interview. There are no perceived risks beyond everyday life to participating in the survey and interview. There is no compensation for participating in the survey and interview.

Please visit: *Link to Survey (created in Qualtrics)*

Please let me know if you have any questions or if I can provide additional information.

Thank you,

Alexandria Pilot, MPA
Program & Administrative Coordinator, Center for Neurobiology Research
Fralin Biomedical Research Institute at VTC
Doctor of Health Sciences Student, Radford University Carilion
pjpilot@radford.edu

Radford University IRB Approval Date: 10/27/2020

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Please visit: *Link to Survey (created in Qualtrics)*

Please let me know if you have any questions or if I can provide additional information.

Thank you,

Alexandria Pilot, MPA
Program & Administrative Coordinator, Center for Neurobiology Research
Fralin Biomedical Research Institute at VTC
Doctor of Health Sciences Student, Radford University Carilion
pjpilot@radford.edu

Radford University IRB Approval Date: 10/27/2020

Alexandria Pilot

From: Whitney Slightham
Sent: Thursday, October 8, 2020 4:57 PM
To: Alexandria Pilot
Subject: Research Study Participant Recruitment

Good afternoon, Ms. Pilot,

Considering that this specific research project conducted for your doctoral program is not affiliated with or administered through the Fralin Biomedical Research Institute at VTC or Virginia Tech, it'd be most appropriate for you to contact potential study participants directly via email or phone (their contact info is listed on our website), versus using one of the institute's central communication channel, such as an email to faculty from our Communications Office.

Please let me know if you have any questions!
Whitney

Whitney Slightham
Assistant Director of Communications
[Fralin Biomedical Research Institute at VTC](#)
2 Riverside Circle, Roanoke, VA 24016
O - 540-526-2002 | C - 540-892-1548
[Facebook](#) | [Twitter](#) | [Instagram](#) | [LinkedIn](#)

Have a story idea? Submit a [Communications Project Request!](#)

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Research Compliance
Office
Institutional Review Board

Investigator Agreement

Part 1 – This portion must be completed & submitted for the PI and EACH External researcher:

Title of Study: *The Experiences of Reproductive Choices by Women with Terminal Degrees in Roanoke, VA: A Qualitative Study*

BY SUBMITTING THIS DOCUMENT, THE INVESTIGATOR AGREES:

1. No participants will be recruited or entered under the above protocol number until the Principal Investigator receives written notification of IRB protocol approval.
2. Any modifications of the protocol or consent form must be approved by the IRB Chair or the IRB Chair's designee.
3. All protocol continuation requests will be completed and submitted no later than thirty (30) days **before** the expiration of the protocol.
4. All participants will be recruited and consented as stated in the IRB protocol. If written consent is required, all participants must sign a copy of the consent form that has an unexpired IRB approval stamp.
5. The IRB office will be notified within thirty (30) days of the closure of a study
6. The IRB office will be notified within thirty (30) days of a change in Principal Investigator or change in Principal Investigator affiliation with Radford University.
7. All individuals associated with this research will complete, or have completed, the IRB Human Subjects Training before the start of any research.

Date: 9/13/20

Name of Investigator: Leanna Blevins

X I certify that the information entered above is correct. I understand that submission of false or incorrect data can result in suspension of my research at Radford University. Final submission of this form into the InfoEd Global online system within my account constitutes my signature for this form.

Initials of Investigator: LB

Radford University ID#: _____

Part 2 – PI (cannot be a Student Researcher) must co-sign each form for all external researchers:

By submitting this document, the faculty advisor/ department chair agrees:

1. To assume overall responsibility for the conduct of this investigator
2. To work with the investigator and the IRB, as needed, to maintain compliance with this agreement.
3. That the Principal Investigator is qualified for this study.

Date: 9/18/2020

Name of Primary Investigator: F. Jeannine Everhart

I certify that the information entered above is correct. I understand that submission of false or incorrect data can result in suspension of my research at Radford University. Final submission of this form into the InfoEd Global online system within my account constitutes my signature for this form.

Initials of Primary Investigator: FJE

The RU IRB reserves the right to terminate this study at any time if the above agreement is breached.

Research Compliance Office / Institutional Review Board (IRB)
137 Whitt Hall | Box 7015 | Radford, VA 24147
Tel: 540.831.5290 | irb-iacuc@radford.edu

Radford University IRB
Approval Date: 10/27/2020



Research Compliance
Office

Institutional Review Board

Radford University ID#: 900940358

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Research Compliance Office / Institutional Review Board (IRB)
137 Whitt Hall | Box 7015 | Radford, VA 24142
Tel: 540.831.5290 | irb-iacuc@radford.edu

Radford University IRB
Approval Date: 10/27/2020

Appendix C

Interview Guide

Name: _____

Email address: _____

Date of interview: _____

Time of interview: _____

(For researcher internal documentation only)

Instructions to be read to the participant: Good morning/afternoon (name of participant). Thank you for taking the time to interview with me today. My name is Alexandria Pilot. I am a doctoral student at Radford University Carilion. I am conducting interviews with women who work at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion, who have obtained a terminal degree to discuss lived experiences of reproductive choices and motherhood. The purpose and central focus of the interview is to see how women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices. I will be asking you a series of questions in order to guide the interview; however, please feel free to share and discuss any other additional thoughts, feelings, or experiences that you wish. Our phone call interview today will be audio-recorded and later transcribed by a professional transcription service. The transcription; however, will not be published. First, let's discuss a few important components.

To qualify for this interview, you must identify as a woman, possess a terminal degree, be employed at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, or Radford University Carilion, and must be within the ages of 24-44. Do you feel that you qualify for the interview? (Yes/No) If yes, great, we will proceed. If no, thank you for your time; unfortunately, we will be unable to proceed with the interview.

For internal record keeping purposes only, I will notate your name; however, this information will not be published. I will de-identify and code your responses to the interview by assigning your interview a number. I also plan to use quotes from this interview for the purpose of my research and will identify those quotes by using the assigned coded number. Do I have your consent to use quotes from this interview? Additionally, I would like to audio-record our interview. Your responses to the questions will be professionally transcribed so that I can accurately summarize, review, and account for your thoughts and experiences. Do I have your consent to record the interview?

[Begin recording]

<p>Radford University IRB Approval Date: 10/27/2020</p>

THE EXPERIENCES OF REPRODUCTIVE CHOICES BY WOMEN

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1. Describe your reproductive experiences with having obtained a terminal degree.
Probe: What were some of the challenges and barriers? Do you have children? Did you have children before you pursued a terminal degree, during, or after?
2. How did obtaining a terminal degree affect your reproductive choices?
Probe: (i.e. number of children, age at first child, contraception choice)
3. What considerations do you feel women make regarding their reproductive choices?
Probe: What perceived sociocultural constraints and pressures do we face?
4. What role do socioeconomic determinants, such as marital status and income level, play in regards to your choice whether or not to become a mother?
5. What is your attitude and belief towards balancing the expectations of career and motherhood?
Probe: What are your priorities and personal values regarding your work and motherhood?
6. Describe your perceptions of control over your reproductive choices?
Probe: Did you choose contraception during your years of obtaining a terminal degree?
7. What suggestions do you have for women who want to do both: become a mother and obtain a terminal degree?

Additional comments and notes:

We have reached the end of the interview. Thank you for answering the interview questions. Your insight, thoughts, and feelings are extremely valuable for my capstone research on the experiences of reproductive choices by women with terminal degrees. I appreciate your willingness to participate. Do you have any additional comments or questions that you would like to add to the recording?

Thank you so much for your time! Have a wonderful day/afternoon!

[Stop recording]

Radford University IRB Approval Date: 10/27/2020



Radford University Cover Letter for Internet Research

You are invited to participate in a research survey and interview, entitled “*The Experiences of Reproductive choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study.*” The study is conducted by Alexandria Pilot, student researcher at Radford University Carilion (ppilot@radford.edu), and Jeannine Everhart, Ph.D., Principal Investigator and Program Director and Assistant Professor in the Department of Public Health and Healthcare Leadership at Radford University Carilion (jeverhart1@radford.edu; (540) 985-4046).

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If you choose to participate in an interview, you will be provided a Zoom phone number link, in which you will call and answer questions regarding reproductive choices and

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Radford University IRB
Version February 2020
Approval Date: 10/27/2020



obtaining a terminal degree. You will also be asked for your permission to participate and consent for the interview to be recorded. The recording of the interview will then be transcribed using a professional transcription service, and then promptly destroyed thereafter. The transcription will not include your name or any other identifying information.

If you have any questions or wish to update your email address, please contact Jeannine Everhart, Ph.D. at (540) 985-4046 or send an email to jeverhart1@radford.edu. You may also request a hard copy of the survey and/or interview [guide](#) from the [contact information](#) above.

This study was approved by the Radford University Committee for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Ben Caldwell, Institutional Official and Dean of the College of Graduate Studies and Research, bcaldwell13@radford.edu, (540) 831-5724.

If you agree to participate, please **press the arrow button at the bottom right of the screen**. Otherwise use the X at the upper right corner to close this window and disconnect.

Thank you,

Jeannine Everhart, Ph.D, Principal Investigator

Alexandria Pilot, MPA, Student Researcher

Appendix A**Invitation to Survey Email**

Email Subject: Interview Invitation: The Experience of Reproductive Choices by Women with Terminal Degrees in Roanoke, Virginia: A Qualitative Study

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I would like to invite you to participate in a short survey after which you may have the opportunity to indicate interest in scheduling a one-on-one 30- to 45-minute Zoom audio interview with me to discuss your lived experiences of obtaining a terminal degree and making reproductive choices, including the factors related to motherhood. If requested, a hard copy of the interview questions can be provided prior to the interview for preparation purposes.

This is a voluntary survey and interview. The purpose of the survey is to ask a few questions to determine if you meet the qualifications and inclusion criteria of the interview. The survey will take approximately 5 minutes to complete. The survey will remain open for two weeks beginning on ____ (the date in which I send the email). All of your responses will be anonymized by the survey software prior to being analyzed. You may complete the survey even if you are not interested in scheduling a one-on-one interview. There are no perceived risks beyond everyday life to participating in the survey and interview. There is no compensation for participating in the survey and interview.

Please visit: *Link to Survey (created in Qualtrics)*

Please let me know if you have any questions or if I can provide additional information.

Thank you,

Alexandria Pilot, MPA
Program & Administrative Coordinator, Center for Neurobiology Research
Fralin Biomedical Research Institute at VTC
Doctor of Health Sciences Student, Radford University Carilion
pjpilot@radford.edu

Radford University IRB Approval Date: 10/27/2020
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Appendix B**Electronic Survey Instrument (Created in Qualtrics)****Insert Radford University Cover Letter for Internet Research****Gender:**

Q1. What is your gender?

- Male
- Female
- Other

Forced Logic: If the participant answers male, the survey will end with an automatic response of: "For the purpose of this study, participants must identify as female. Thank you for your time."

Education

Q2. Have you obtained a terminal degree? A terminal degree is the highest level of education in a field of study.

- Yes
- No

Forced Logic: If the participant answers no, the survey will end with an automatic response of: "For the purpose of this study, participants must possess a terminal degree. Thank you for your time".

Q3. What type of terminal degree do you possess?

- Doctor of Philosophy (PhD)
- Doctor of Medicine (MD)
- Doctor of Nursing Practice (DNP)
- Doctor of Health Sciences (DHSc)
- Doctor of Education (EdD)
- Doctor of Veterinary Medicine (DVM)
- Other: _____

Reproductive Choices

Q4. Do you have biological children?

- Yes
- No
- No, but I have adopted or foster children.
- Prefer not to answer

THE EXPERIENCES OF REPRODUCTIVE CHOICES BY WOMEN

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Forced Logic: If the participant answers yes, prefers not to answer,, or no, but I have adopted or foster children, survey continues to question 5. If the participant answers no, survey continues to question 7.

Q5. At what age did you have or adopt your first child?

- Younger than 18 years old
- Ages 18-24 years old
- Ages 25-31 years old
- Ages 32-38 years old
- Ages 39-45 years old
- Ages 45+
- Prefer not to answer

Q6. How many children do you have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer

Q7. Do you want children/more children?

- Yes
- No
- Prefer not to answer

Forced Logic: If the participant answers yes or prefers not to answer, survey continues to question 8. If the participant answers no, survey continues to question 9.

Q8. How many children/more children would you like to have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer

Demographic Information

Q9. What is your age?

- 18-24 years old
- 25-31 years old
- 32-38 years old
- 39-45 years old
- 45+ years old

THE EXPERIENCES OF REPRODUCTIVE CHOICES BY WOMEN

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- Prefer not to answer

Q10. What is your race? Please select all that apply.

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian/Other Pacific Islander
- White
- Prefer not to answer

Q11. What is your marital status?

- Married
- Widowed
- Separated
- Divorced
- In a domestic partnership or civil union
- Single, but cohabitating with a significant other or in a committed relationship
- Single, never married
- Prefer not to answer

Q12. What is your household income?

- \$0-\$34,999
- \$35,000-\$54,999
- \$55,000-\$74,999
- \$75,000-\$94,999
- \$95,000 and above
- Prefer not to answer

Interview

Q13. Are you interested in scheduling a 30-45 minute one-on-one phone interview to discuss the influences of a terminal degree on your reproductive choices?

- Yes
- No

Forced Logic: If participant answers yes, survey continues to question 14. If the participant answers no, the survey ends with “end of survey” acknowledgement.

Q14. If you are interested in scheduling an interview, please provide your first name and email address. Please provide your first name and email address to schedule an interview.

- First Name: _____
- Email Address: _____

End of Survey acknowledgement.

Radford University IRB
Approval Date: 10/27/2020

10/18/2020

Mail - Pilot, Parisia - Outlook

Letter of Cooperation for Alexandria Pilot, MPA, DHS candidate, RUC

Lambert, Mark <mlambert11@radford.edu>

Thu 10/8/2020 3:39 PM

To: Pilot, Parisia <pjpilot@RADFORD.EDU>

Good afternoon, Alexandria.

You have approval to send an email to the female faculty employees at RUC inviting them to complete a survey and indicate interest in scheduling an interview to complete your capstone work.

Mark A. Lambert

Director of University Relations—Roanoke-Based

101 Elm Avenue | Roanoke, VA 24013

Radford University Carilion, Room 312

Phone: 540-985-9031 | Cell: 540-400-3100

mlambert11@radford.edu

RADFORD UNIVERSITY

Advancement and University Relations

<https://outlook.office.com/mail/deeplink?version=20201005002.11&popoutv2=1>

Radford University IRB Approval Date: 10/27/2020

1/1



Radford University Cover Letter for Internet Research

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The research team will work to protect your data to the extent permitted by technology. It is possible, although unlikely, that an unauthorized individual could gain access to your responses because you are responding online. This risk is similar to your everyday use of the internet.

Identification numbers associated with email addresses (if you decide to participate in an interview) will be kept during the data collection phase for tracking purposes only. IP addresses will not be collected or recorded. A limited number of research team members will have access to the data during data collection. Identifying information will be stripped from the final dataset.

Your participation in this survey and interview is voluntary. You may decline to answer any question in the survey and interview and you have the right to withdraw from participation at any time without penalty from completing the survey or interview. If you wish to withdraw from the study or have any questions, contact the investigator listed above. If you choose not to participate or decide to withdraw, there will be no impact on any current or future relationship with Radford University Carilion.

If you choose to participate in an interview, you will be provided a Zoom phone number link, in which you will call and answer questions regarding reproductive choices and

Radford University
Research Compliance Office

Radford University IRB
Version February 2020
Approval Date: 10/27/2020



obtaining a terminal degree. You will also be asked for your permission to participate and consent for the interview to be audio-recorded. The audio-recording of the interview will then be transcribed using a professional transcription service, and then promptly destroyed thereafter. The transcription will not include your name or any other identifying information.

If you have any questions or wish to update your email address, please contact Jeannine Everhart, Ph.D. at (540) 985-4046 or send an email to jeverhart1@radford.edu. You may also request a hard copy of the survey and/or interview guide from the contact information above.

This study was approved by the Radford University Committee for the Review of Human Subjects Research. If you have questions or concerns about your rights as a research subject or have complaints about this study, you should contact Ben Caldwell, Institutional Official and Dean of the College of Graduate Studies and Research, bcaldwell13@radford.edu, (540) 831-5724.

If you agree to participate, please **press the arrow button at the bottom right of the screen**. Otherwise use the X at the upper right corner to close this window and disconnect.

Thank you,

Jeannine Everhart, Ph.D, Principal Investigator

Alexandria Pilot, MPA, Student Researcher

Appendix B**Electronic Survey Instrument (Created in Qualtrics)**

IRB Approved Acknowledgement of Consent Introduction

Gender:

Q1. What is your gender?

- Male
- Female
- Other

Forced Logic: If the participant answers male, the survey will end with an automatic response of: "For the purpose of this study, participants must identify as female. Thank you for your time."

Education

Q2. Have you obtained a terminal degree? A terminal degree is the highest level of education in a field of study.

- Yes
- No

Forced Logic: If the participant answers no, the survey will end with an automatic response of: "For the purpose of this study, participants must possess a terminal degree. Thank you for your time".

Q3. What type of terminal degree do you possess?

- Doctor of Philosophy (PhD)
- Doctor of Medicine (MD)
- Doctor of Nursing Practice (DNP)
- Doctor of Health Sciences (DHSc)
- Doctor of Education (EdD)
- Doctor of Veterinary Medicine (DVM)
- Other: _____

Reproductive Choices

Q4. Do you have biological children?

- Yes
- No
- No, but I have adopted or foster children.
- Prefer not to answer

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Forced Logic: If the participant answers yes, prefers not to answer,, or no, but I have adopted or foster children, survey continues to question 5. If the participant answers no, survey continues to question 7.

Q5. At what age did you have or adopt your first child?

- Younger than 18 years old
- Ages 18-24 years old
- Ages 25-31 years old
- Ages 32-38 years old
- Ages 39-45 years old
- Ages 45+
- Prefer not to answer

Q6. How many children do you have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer

Q7. Do you want children/more children?

- Yes
- No
- Prefer not to answer

Forced Logic: If the participant answers yes or prefers not to answer, survey continues to question 8. If the participant answers no, survey continues to question 9.

Q8. How many children/more children would you like to have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer

Demographic Information

Q9. What is your age?

- 18-24 years old
- 25-31 years old
- 32-38 years old
- 39-45 years old
- 45+ years old

THE EXPERIENCES OF REPRODUCTIVE CHOICES BY WOMEN

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- Prefer not to answer

Q10. What is your race? Please select all that apply.

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian/Other Pacific Islander
- White
- Prefer not to answer

Q11. What is your marital status?

- Married
- Widowed
- Separated
- Divorced
- In a domestic partnership or civil union
- Single, but cohabitating with a significant other or in a committed relationship
- Single, never married
- Prefer not to answer

Q12. What is your household income?

- \$0-\$34,999
- \$35,000-\$54,999
- \$55,000-\$74,999
- \$75,000-\$94,999
- \$95,000 and above
- Prefer not to answer

Interview

Q13. Are you interested in scheduling a 30-45 minute one-on-one phone interview to discuss the influences of a terminal degree on your reproductive choices?

- Yes
- No

Forced Logic: If participant answers yes, survey continues to question 14. If the participant answers no, the survey ends with “end of survey” acknowledgement.

Q14. If interested in scheduling an interview, please provide your first name and email address.

- First Name: _____
- Email Address: _____

End of Survey acknowledgement.

Radford University IRB
Approval Date: 10/27/2020

Alexandria Pilot

From: Musick, David <dwmusick@vt.edu>
Sent: Saturday, October 10, 2020 10:42 AM
To: Alexandria Pilot
Subject: Research Letter of Cooperation

Hello Alexandria,

Please consider this email my letter of cooperation regarding your capstone project, part of your current degree program at Radford University Carilion. It is my understanding that your study population must be women who are currently employed at Carilion Clinic, RUC, FBRI and/or VTCSOM; who have terminal degrees (MD, DNP, DVM, DHSc, Ph.D., etc.); and who are of child-bearing age 18-44. I also understand that your study pertains to the influence of marital status, income level, and educational attainment on their reproductive choices.

I am happy to send out your survey link to our approximately 800 faculty members, so that they can then self-select to participate further in your protocol. You may forward this message to your contact at the appropriate IRB, thus assuring them of our agreement to cooperate with your research. Please let me know if you have any questions or require further information.

Sincerely,

David W. Musick, PhD
Senior Dean, Faculty Affairs
Virginia Tech Carilion School of Medicine
Roanoke, VA.
(540) 526-2566

Appendix C: Interview Guide

Name: _____
 Email address: _____
 Date of interview: _____
 Time of interview: _____
 (For researcher internal documentation only)

Instructions to be read to the participant:

Good morning/afternoon (name of participant). Thank you for taking the time to interview with me today. My name is Alexandria Pilot and I am a doctoral student at Radford University Carilion. I am conducting interviews with women who work at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, and Radford University Carilion, who have obtained a terminal degree to discuss lived experiences of reproductive choices and motherhood. The purpose and central focus of the interview is to see how women with terminal degrees describe their beliefs, experiences, and choices regarding reproductive choices. I will be asking you a series of questions in order to guide the interview; however, please feel free to share and discuss any other additional thoughts, feelings, or experiences that you wish. Our phone call interview today will be recorded and later transcribed by a professional transcription service. The transcription; however, will not be published. First, let's discuss a few important components.

To qualify for this interview, you must identify as a woman, possess a terminal degree, be employed at Fralin Biomedical Research Institute at VTC, Virginia Tech Carilion School of Medicine, or Radford University Carilion, and must be within the ages of 24-44. Do you feel that you qualify for the interview? (Yes/No) If yes, great, we will proceed. If no, thank you for your time; unfortunately, we will be unable to proceed with the interview.

For internal record keeping purposes only, I will notate your name; however, this information will not be published. I will de-identify and code your responses to the interview by assigning your interview a number. I also plan to use quotes from this interview for the purpose of my research and will identify those quotes by using the assigned coded number. Do I have your consent to use quotes from this interview? Additionally, I would like to record our interview. Your responses to the questions will be professionally transcribed so that I can accurately summarize, review, and account for your thoughts and experiences. Do I have your consent to record the interview? (YES/No) If yes, great, let's begin. If no, thank you for your time; unfortunately, will be unable to proceed with the interview.

[Begin recording]

Survey Follow Up/Motherhood Background

APPROVED

By Radford University Institutional Review Board at 12:12 pm, Nov 13, 2020

I'd like to start off the first question by reviewing the questions you answered in my online survey about reproductive experiences. This section of the survey included questions about whether you have children, at what age you had or adopted your first child, how many children you have, whether you want children or any more children, and how many additional children you would like to have.

1. Please tell me more details about your current motherhood status and number of children.
Probe: Number of biological, adopted, or step-children?
2. When along your educational journey did you have children or consider not having children?
Probe: Before, during or after obtaining a terminal degree?

Reproductive Choices

3. How did obtaining a terminal degree affect your reproductive choices?
Probe: Such as the number of children you have, age at first child, contraception choices, etc.
4. What challenges or barriers do you feel women with terminal degrees have in making their reproductive choices?
Probe: What perceived sociocultural constraints? What pressures faced?

My next question is related to your perceptions of contraception and preventing unwanted pregnancy.

5. What, if any, contraception did you use choose to use during your years of obtaining a terminal degree?

Marital Status/Finances

6. How did your relationship or marital status impact your choice whether or not to become a mother?
7. What role did finances or your financial situation play in regards to your choice whether or not to become a mother?

Career and Motherhood

Now, please tell me more about your attitudes and choices regarding balancing career and motherhood.

8. What are your beliefs regarding balancing career and motherhood?

THE EXPERIENCES OF REPRODUCTIVE CHOICES BY WOMEN

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Probe: What do you prioritize or personally value?

9. What are your experiences with balancing career and motherhood?
10. How did your expectations about balancing career and motherhood align with your realities?

Suggestions

11. What suggestions do you have for women regarding motherhood and obtaining a terminal degree?

Probe: Timing? Decision-making? Overcoming challenges and barriers?

We have reached the end of the interview. Thank you for answering the interview questions. Your insight, thoughts, and feelings are extremely valuable for my capstone research on the experiences of reproductive choices by women with terminal degrees. I appreciate your willingness to participate.

12. Do you have any additional comments or questions that you would like to add to the recording or anything else that you want to share related to this topic?

Additional comments and notes:

Thank you so much for your time! Have a wonderful day/afternoon! I will stop the recording.

[Stop recording]

APPROVED

By Radford University Institutional Review Board at 12:13pm, Nov 18, 2020

11/4/2020

Qualtrics Survey Software

Consent

Please read the attached Radford University Cover Letter for Internet Research Consent Form. If you agree to participate, please chose "Yes, I consent" and press the arrow at the bottom right of the screen to continue with the survey. Otherwise, if you do not wish to consent, please chose "No, I do not consent" and use the X at the upper right corner to close the window and disconnect from the survey.

Thank you.

[RUC Consent Form](#)

- Yes, I consent.
 No, I do not consent.

Gender

What is your gender?

- Male
 Female
 Other

Education

Have you obtained a terminal degree? A terminal degree is the highest level of education in a field of study.

- Yes
 No

What type of terminal degree do you possess? (please select all that apply)

- Doctor of Philosophy (PhD)
 Doctor of Medicine (MD)
 Doctor of Nursing Practice (DNP)
 Doctor of Health Sciences (DHSc)

APPROVEDBy Radford University Institutional Review Board at 12:11 pm, Nov 18, 2020

11/4/2020

Qualtrics Survey Software

- Doctor of Education (EdD)
 Doctor of Veterinary Medicine (DVM)
 Other:

Reproductive Choices

Do you have biological children?

- Yes
 No
 No, but I have adopted or foster children
 Prefer not to answer

At what age did you have or adopt your first child?

- Younger than 18 years old
 Ages 18-24 years old
 Ages 25-31 years old
 Ages 32-38 years old
 Ages 39-44 years old
 45 years old or older
 Prefer not to answer

How many children do you have?

- 1
 2
 3
 More than 3
 Prefer not to answer

Do you want children/more children?

- Yes
 No
 Prefer not to answer

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11/4/2020

Qualtrics Survey Software

If yes, how many children/more children would you like to have?

- 1
- 2
- 3
- More than 3
- Prefer not to answer
- I do not want children or more children.

Demographic Information

What is your age?

- 18 - 24 years old
- 25 - 31 years old
- 32-38 years old
- 39-44 years old
- 45 years old or older
- Prefer not to answer

What is your race/ethnicity? (Please select all that apply)

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other
- Prefer not to answer

What is your household income?

- \$0-\$34,999
- \$35,000-\$54,999
- \$55,000-\$74,999
- \$75,000-\$94,999
- \$95,000 and above

APPROVEDBy Radford University Institutional Review Board at 12:11 pm, Nov 10, 2020

11/4/2020

Qualtrics Survey Software

Prefer not to answer

Interview

Are you interested in scheduling a 30-45 minute one-on-one phone interview to discuss the influences of a terminal degree on your reproductive choices?

Yes

No

If you are interested in scheduling an interview, please provide your first name and email address.

First name:

Email address:

Powered by Qualtrics

