

Summer 2022

## **Women in STEM: An Examination of Career Commitment as a Moderator to Organizational Commitment**

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Women in STEM: An Examination of Career Commitment as a Moderator to  
Organizational Commitment

Submitted to Southeastern University

Jannetides College of Business, Communication, and Leadership

In partial fulfillment of the requirements  
for the degree of  
Doctor of Philosophy in Organizational Leadership

Patricia V. Rose

July 22, 2022

Jannetides College of Business, Communication, and Leadership  
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**WOMEN IN STEM: AN EXAMINATION OF CAREER COMMITMENT  
AS A MODERATOR TO ORGANIZATIONAL COMMITMENT**

Has been approved by their committee as satisfactory completion of the dissertation  
requirement for the degree of Doctor of Philosophy

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December 14, 2021

## **Abstract**

Most research on women in STEM in the United States has revolved around retention, barriers, turnover intention, and underrepresentation in businesses, governments, and universities. This quantitative correlational investigated whether career commitment moderated organizational commitment among women working in STEM careers based on independent variables of organizational justice and perceived organizational support. According to the U.S. Census Bureau (2020), in 2019, women made up 34% of the STEM workforce, or 12 million workers, and 52% of the non-STEM workforce, or 62 million workers. In 2006, President George W. Bush released the American Competitiveness Initiative for Science, Technology, Engineering, and Mathematics (STEM) Formal Education (Bush, 2006). In 2016, researchers advocated that STEM jobs in the United States are expected to increase to 1 million positions, 92% of which will require postsecondary education and training (Chen, 2013; Ellis et al., 2016; Olson & Riordan, 2012). The imbalance of women in STEM occupations reflects a lack of workforce diversity, which is valuable to organizations as it enriches innovation and organizational performance by representing differentiated backgrounds and experiences (Diaz-Garcia et al., 2013; Friedman et al., 2016; Herring, 2009; Hoever et al., 2012; Steele & Derven, 2015). Through the use of survey data from a sample of 111 working women in STEM careers in the United States, the hierarchical regression results were significant for two sub dimensions of organizational justice: interpersonal justice was significant ( $\beta = .331, p < .001$ ) and informational justice ( $\beta = .290, p < .05$ ) when career commitment was added as a moderator. Perceived organizational support showed significance representing 57% of organizational commitment ( $R^2 = .567, p < .001$ ). Recommendations for businesses include gathering similar survey data among their STEM professionals to ascertain a more customized approach on relational skillsets among women in STEM. The findings of this study could also be applied to educational institutions seeking to survey and assess their STEM program curriculum and add further research on participants in STEM based on gender and long-term retention in STEM careers.

*Keywords:* Women, STEM, career commitment, organizational commitment, perceived organizational support, organizational justice

## **Dedication**

I dedicate this research to future women leaders in the technical fields of science, technology, engineering, and mathematics careers. I hope to inspire them to make a difference and continue to speak out in their STEM careers.

To my adult daughters, Katie Rose and Jessica Rose, and granddaughter, Charlotte Rose: you kept me going every day in my research and the many research papers. You motivated me to make a difference in research and education in technical fields and increase the number of female leaders, mentors, and C-suite executives in STEM. Be your BEST self and write your own amazing chapters of your life.

To my adult sons, Michael Rose and Jonathan Rose, who are natural born leaders today: it is my hope that you will continue learning about leadership to lead teams with a vision for growth and success. I hope my passion for learning about leadership and women in STEM resonates with you, and that you continue forging your path in leadership careers.

To my husband and best friend of 34 years, Raymond Rose, thank you for always supporting our family and supporting me in my education and reading. Thank you for always being there, supporting my thirst and passion for learning, researching, and being a perpetual student. I couldn't have done this without your being there to support our family. My favorite memory of us is still the day we graduated from college together and crossed the stage together. I love you always.

To my mom, who loves learning about new topics and always wanted to hear what I was studying, researching, and writing about especially during my dissertation. Thanks Mom for listening. A special thanks to all my family and friends who supported me and always wanted to help with participants in my study.

## **Acknowledgments**

My passion for learning about leadership grew over the years. As a leader, I always wanted to learn more on how to be a GREAT LEADER! I heard about a new leadership PhD program at Southeastern University in Lakeland, Florida. Our first day of residency began with a prayer over the students on their doctorate journey in Cohort 2. I knew then that I would grow and learn about leadership through one of our greatest teachers and leaders, Jesus. Several books stayed with me throughout my journey: *To Know as We are Known* by Parker Palmer, which taught me to never settle for the status quo and to take authentic teaching and education as a spiritual journey; *The Adventure Called Life: Discovering your Divine Design* by Kent Ingle, which taught me that each one of us has a divine design and to keep searching for mine; *All That's Good* and *Humble Roots* by Hannah Anderson, which reminded me this is just the beginning of my journey.

Special thanks to the educational and spiritual growth of Southeastern University and Dr. Carter for her inspiration and motivation as a Program Leader to encourage us to think deeply within and give those a voice who do not have one.

Special thanks to Cohort 2 at Southeastern University. We were like a small family who was always there to support and motivate each other when we wanted to quit each course each semester. We are finally here!

Special thanks to my committee chair, Dr. Henson, who always believed in me, pushed me, and cheered for me—sometimes, doing all three simultaneously—when I did not think I could do it or I didn't belong here.

Thank you Dr. Best for the great collaboration on quantitative analysis, correlations, and statistical significance in SPSS. I could talk to you all day about statistics analysis.

Thank you, Dr. Erlacher, for your “eagle eyes” in reading multiple pages of my dissertation many times over to get the best writing from me.

I especially appreciate all the STEM groups on social media, LinkedIn, and Facebook. They supported research efforts by participating in the survey and forwarding them to other women to increase the participant pool of women in STEM careers.

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## **Chapter 1 – Introduction**

Women in the United States represented approximately 50.4% of the workforce in 2017 and earned half of all STEM degrees, but were only employed in 26% of STEM jobs (U.S. Bureau of Labor Statistics, 2018). Women also leave professional STEM careers at a higher rate than their male counterparts (Cech & Blair-Loy, 2019; Corbett & Hill, 2015). For example, high-tech industries report that women leave at 41% compared to men at 17% (Ashcraft et al., 2016). In addition, Hill et al. (2010) discovered that women are half as likely as men to remain in engineering by the time they reach the age of 50 years old. Therefore, by computing these percentages beginning at 26% of women in STEM jobs and women leaving high tech careers at a rate of 41%, and then women leaving their engineering positions before the age of 50 years at a rate of 50%, it is likely that there will be a significant shortfall of women in STEM careers in the future.

In 2006, President George W. Bush released the American Competitiveness Initiative for Science, Technology, Engineering, and Mathematics (STEM) Formal Education (Bush, 2006). In 2016, researchers advocated that STEM jobs are expected to increase from 5.0% to 5.3% of the jobs in the United States, or 1 million jobs, 92% of which will require postsecondary education and training (Chen, 2013; Ellis et al., 2016; Olson & Riordan, 2012). In addition, due to the increased U.S. workforce, the President's Council of Advisors on Science and Technology (PCAST, 2010) report suggested the need for academic institutions in the United States to increase the current supply of STEM graduates by 1 million to meet the demands of the workplace over the next decade (Chen, 2013; Ellis et al., 2016; Olson & Riordan, 2012).

Women leave the educational and professional pipelines at every stage of their lives (Abuwatfa et al., 2021). The percentage of women enrolled in collegiate science and engineering curricula remained at around 18% from 2000 to 2013 (Chau & Quire, 2018; Snyder & Cudney, 2017; U.S. National Science & Technology Council, 2018). Between 2003 and 2009, 48% of bachelor's degree female students left the STEM field before completing a degree or certificate; in addition, 69% of associate degree female students left by the spring of 2009 (Chen,

2013) compared to only 29% of their male peers who left STEM studies (Chen, 2013; Snyder & Cudney, 2017). Half of university graduates are women, but only 36% of female college graduates hold STEM degrees (Gallego et al., 2019). With women only making up only 25% of the STEM workforce in the United States (Noonan, 2017), they also have a higher attrition rate (Chen, 2013; Jensen & Deemer, 2019). The high turnover rate among women in STEM occupations is problematic at the organizational level because it negatively affects businesses losing highly educated and skilled employees, given the recruiting and training efforts required to replace these workers (Lambert, 2003; Ng & Feldman, 2007). By 2019, women accounted for 48% of the total labor force, 27% were in STEM fields, and 5% held CEO positions (Martinez & Christnacht, 2021). More than two thirds of women leave engineering 15 years following the acquisition of their degree, double the rate of men (Frehill et al., 2008). In 2014, the U.S. Bureau of Labor Statistics announced that the number of people employed in STEM careers was expected to increase to more than 9 million between 2012 and 2022 (Herrmann et al., 2016; Snyder & Cudney, 2017). Companies facing the modern competitive business conditions must meet demands for excellence in retaining employees with the best skills, expertise, and experience. A company seeking to maintain its competitive advantage in products and labor markets requires employees who are committed and integrated with the company (Herachwati & Rachma, 2018).

The lack of women in STEM careers is a concern for organizational leaders as the competitiveness of businesses, and the U.S. economy is affected by technological advancements (Cech & Blair-Loy, 2019; Corbett & Hill, 2015; Fayer et al., 2017; U.S. House Education & Workforce Committee, 2013; U.S. National Science & Technology Council, 2018). The U.S. Office of Science and Technology Policy has stated that supporting women pursuing STEM careers is vital because they are an essential part of the United States' strategy "to out-innovate, out-educate, and out-build the rest of the world" (Women in STEM, 2013, p.1). Bidwell (2014) asserted that it takes diversity to solve significant public policy anomalies and fundamental issues. Therefore, the participation of women in STEM and energy fields is essential in advancing knowledge, creating economic growth,

promoting prosperity, and contributing to the well-being of societies (Abuwatfa et al., 2021).

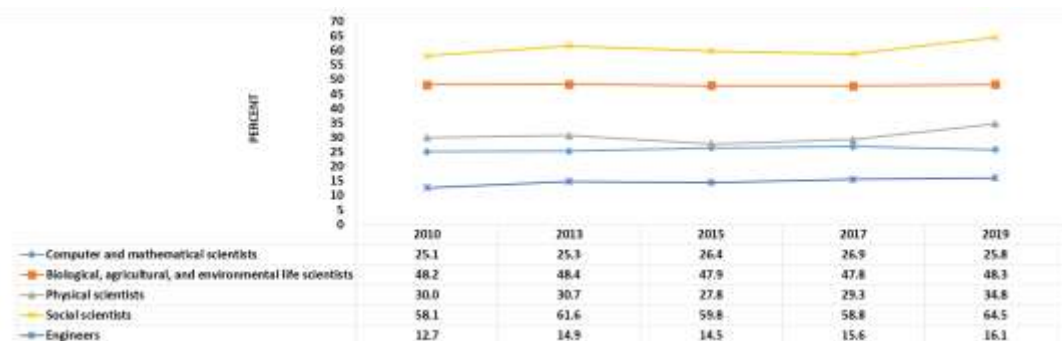
The imbalance of women in STEM occupations reflects a lack of workforce diversity. Diversity in the workforce is valuable to organizations, as it enriches innovation and organizational performance by representing differentiated backgrounds and experiences (Diaz-Garcia et al., 2013; Friedman et al., 2016; Herring, 2009; Hoever et al., 2012; Steele & Derven, 2015). Organizations need to continue to build products and services to meet the interests of market populations that are becoming more diverse and therefore need more internal diversity to serve a broader range of customers (Salomon & Schork, 2003; U.S. National Science & Technology Council, 2018). Continuous innovation is crucial to meet customers' changing demands for products and services (Dobni et al., 2018; Steele & Derven, 2015).

STEM careers are growing faster than any other profession in the United States. STEM opportunities in the United States are expected to grow from 9.7 million to 10.5 million between 2018 and 2028, outdoing overall U.S. job growth (U.S. Bureau of Labor Statistics, 2018). Glass et al. (2013) evidenced that unlike other occupations, 50% of the women working in STEM fields left their careers compared to 20% of women working in non-STEM professions such as law, financial operations, nursing, and management. The future economic demand of the United States will fall short in STEM fields with just the male gender in the workplace (Blackburn & Heppler, 2019); therefore, further researchers should seek to ascertain why women are not entering STEM careers and why women are not staying in STEM fields (Catalyst, 2018). Educators in STEM fields identified three areas of academic burnout among female students: cynicism, emotional exhaustion, and reduced educational efficacy, all leading to increased attrition for STEM students (Jensen & Deemer, 2019). STEM professions are critical to technological advances in military innovations, global business competitiveness, and employment (Bidwell, 2014). Researchers have found that STEM careers will drive the future economy and help the United States remain globally competitive (Herrmann et al., 2016; Snyder & Cudney, 2017).

Appianing (2017) studied women at target universities and the reasons women stay or switch from STEM majors by examining their different reasons. This researcher used theories like perceived value and expectations for success (Eccles, 1983), self-efficacy (Bandura, 1977, 1986), and self-determination (Deci & Ryan, 1985) to guide the study. Abuwatfa et al. (2021) expanded the study of men and women from Middle Eastern, European Union, and the United Kingdom universities on the underrepresentation of women in STEM based on artificial intelligence data. Adams and Morgan (2021) conducted a study in Australia of women in college in computer science (CS) and information technology (IT) fields. This study involved women’s sensibilities in which they believed there was a lack of transparency and information about what was involved in employment in CS or IT (M. Adams & Morgan, 2021). The attraction and retention of women in IT degrees are challenging in many other countries without government decrees for universities (M. Adams & Morgan, 2021). STEM degrees among college graduates with bachelor’s degrees decreased from 45% to 42% from 2007 to 2018 (Olson & Riordan, 2012; Watkins & Mazur, 2013). In 2019, however, there was an increase in overall degrees in the sciences on average of 3.9% and engineers by .5% and a decrease in technology degrees by 1.1% (Figure 1; National Science Foundation, 2021).

**Figure 1**

*Women with a Bachelor’s Degree or Higher in STEM Careers: Selected Years, 2010–2019*



Scholars in other countries have conducted multiple studies on women in STEM careers in terms of their career commitment and organizational



commitment; however, there has been little research in the United States on women in STEM careers based on career commitment and organizational commitment using the independent variables of organizational justice and perceived organizational support. Previous researchers have not yet addressed women in a STEM-related job using organizational justice, perceived organizational support, with career commitment as a moderator to organizational commitment. Furthermore, research on women in STEM-related positions and leadership is available in isolation, and there is a gap for women in leadership in STEM-related careers (Alawi & Al Mubarak, 2019; Cheryan et al., 2011; McCullough, 2019). As women take on leadership roles in STEM, understanding their experiences can help promote other women's ambitions and leadership success (McCullough, 2019).

By understanding the levels of career commitment among women who stay in STEM careers, it may be possible for organizations to better attract women from academia and keep and grow them in their STEM careers. Although prior research has shown that feelings of occupational commitment are highly predictive of subsequent occupational decision-making and satisfaction, individuals who express low levels of commitment are less likely to persist (Fouad et al., 2016; Singh et al., 2018).

Organizational politics often exclude women, socially and systematically from powerful and executive-level positions, despite the growing evidence that organizations may reap significant benefits when they empower women politically (Blake et al., 2021). Such contributions may include innovative ideas, visionary and transformational leadership, and empathic concern for others. Based on social role theory, women and men exhibit work behaviors corresponding to societal expectations of socially derived behaviors evolved due to stereotypes of "men's work" as aggressive and competitive (Blake et al., 2021).

Through the present study, the researcher examined whether career commitment as a moderator for organizational commitment explains why women are underrepresented in STEM fields and why they are leaving STEM fields. The remainder of this chapter covers the study's problem statement, purpose and significance, research questions and hypotheses, conceptual framework,

methodology, scope and limitations, and definitions of terms. The theoretical models of motivation and support that underlie much of the discussion around women in STEM do not apply to all racial backgrounds. More research is needed considering how gender and race simultaneously shape STEM engagement and persistence (Riegle-Crumb et al., 2020).

The underrepresentation of women in STEM will continue unless all aspects are explored, including career and organizational commitment. The underrepresentation of women in STEM careers has numerous reasons (AAUW, n.d.), and few scholars have explored organizational commitment from the viewpoint of women in STEM careers in the United States (Martinez & Christnacht, 2021). Researchers need to examine further why women are not committed to their careers in STEM and how it transitions to organizational commitment. The results from this study contribute to understanding the factors behind women's departure from STEM careers. This study focused on the influence of organizational factors such as career commitment, organizational justice, perceived organizational support, and organizational commitment on women's retention in STEM-related careers.

### **Statement of the Problem**

Employment projections have predicted 10.5% growth in STEM careers from 2020 to 2030, while non-STEM careers will increase by 7.5% (U.S. Bureau of Labor Statistics, 2022); however, the lack of women retaining in STEM careers is a concern for organizational leaders and policymakers given the competitiveness of global businesses to meet the workforce needs (Catalyst, 2018; Martinez & Christnacht, 2021). In addition, the United States economy will require a diversified group of talented scientists, technologists, mathematicians, and engineers in order to support advances in technologies (Cech & Blair-Loy, 2019; Corbett & Hill, 2015; Fayer et al., 2017; U.S. House Education & Workforce Committee, 2013; U.S. National Science & Technology Council, 2018).

Buse et al. (2013) used a survey method to verify the retention of women in STEM careers. There is a need to study women in STEM careers in the United States to determine whether there is a significant relationship between career

commitment to organizational commitment using the independent variables of perceived organizational support and organizational justice. The findings of this study may help businesses discover why women stay in STEM careers to meet the growing demands of technology in the United States. Compounding this issue for the United States are the anticipated shortages in skilled STEM labor needed to compete globally (U.S. House Education & Workforce Committee, 2013; U.S. National Science & Technology Council, 2018; West, 2011) and the expected growth in demand of 1.25 million engineers and computer technologists by the year 2025 in the United States (Corbett & Hill, 2015). The following sections discuss the importance of the variables in this study, including organizational commitment, career commitment, organizational justice, and perceived organizational support and how it relates to women in STEM careers.

### ***Organizational Commitment***

Individuals come to organizations with particular needs, desires, and skills and expect to find an environment where they can utilize their abilities and satisfy their basic needs (Farzaneh et al., 2014). Lee et al. (2016) revealed that career-related resources delivered by organizations, such as career development opportunities and perceived career support, enhance work engagement. In contrast, work engagement improves career-related outcomes like career commitment and satisfaction. Researchers have confirmed that career commitment positively affected organizational commitment and accounted for 19% of the variance (Abdullah & Ramay, 2012; Nazish et al., 2013; Odunayo et al., 2014). The correlation coefficient between career commitment and organizational commitment is  $R = 0.44$  and  $p < 0.05$ , showing that the higher the employees' commitment to their career, the higher their commitment to the organization (Odunayo et al., 2014).

### ***Career Commitment as a Moderator***

Commitment can take various forms (Meyer et al., 2004; Morrow, 1983) and directed by different motivations (Cohen, 2003). Further, career commitment mediates the relationship between job involvement and organizational commitment

(Jyoti et al., 2021). This chain of relationships reconfirms the work commitment theory, wherein career commitment acts as the mediator between job involvement and organizational commitment (Cohen, 1999). Jyoti et al. (2021) studied government higher education teachers in India based on person-job fit and organizational commitment. These authors stated that different outcomes, such as job satisfaction, career satisfaction, work ethics, and job performance, can be considered to understand this concept better.

Wallace (2013) studied career commitment associated with social relationships related to well-being in western Canada. This author investigated whether the interaction effects of social relationships are harmful or beneficial in the same domain or different domains (Wallace, 2013). The results suggested that not all support resources or interactive activities are beneficial and may harm employees' well-being and career commitment (Wallace, 2013). The limitations of this study were based on restricted measures of social integration, and the analysis was partial to a single high-status professional occupation (Wallace, 2013) with partial measures of social integration in the community.

Cai et al. (2018) conducted a study in the Chinese healthcare industry on full-time chemists linking career commitment through organizational commitment. Organizational commitment mediated career commitment based on the social exchange theory. Future studies should use more significant variability in the distribution of occupations and employee work status in STEM fields (Cai et al., 2018). Lin and Chen (2004) conducted a study in six hospitals in Taiwan on turnover intentions using career commitment as a moderator. Their research model was directly influenced by organizational commitment and organizational justice (Lin & Chen, 2004). They also proposed further research to test the validity of this model across different occupational fields (Lin & Chen, 2004).

### ***Organizational Justice***

Organizational justice theory reflects a long history as a cognitive process internal to individuals. Working individuals are more likely to engage in work-related behaviors when they perceive they are in an organization operating fairly (Çelik, 2020). Organizational justice is an important concept explaining

employees' perceptions of an organization and their personal performance and impact on organization performance (Abril et al., 2020; Elamin & Alomaim, 2011; Perez et al., 2013). Researchers have demonstrated that employees' impressions of organizational justice affected their performance and outcomes, with more positive images fostering greater trust, organizational commitment, customer satisfaction, and conflict reduction (Gurbuz & Mert, 2009; Perez et al., 2013).

The distributive justice dimension of organizational justice addresses the perception of fair and equitable distribution of resources and outcomes (Cropanzano et al., 2001; Elamin & Alomaim, 2011). Distributive and procedural dimensions of organizational justice are strongly related to supervisors' evaluations and trust relationships in management (Alexander & Ruderman, 1987). In addition, procedural justice has been characterized as giving recipients a voice and respectful treatment (Lind & Tyler, 1988; MacCoun, 2005); it is based on the perception of organizational policies and processes used in decision-making rather than on outcomes (Gurbuz & Mert, 2009). In a study in Pakistan, the researchers interviewed women working in banks, international airlines, and fast food companies to look at ethical behavior as a mediator and how organizational justice is associated with organizational commitment, especially with supervisor support actions (Mushtaq et al., 2020).

### **Perceived Organizational Support**

Perceived organizational support (POS) is an employee's overall perception that the organization values their contributions and cares for their well-being (Eisenberger et al., 1986). Perceived organizational support helps organizations retain employees (Garcia et al., 2021). Various organizational characteristics like fair treatment or job autonomy are positively related to POS, which predicts job satisfaction, job involvement, intention to remain in the organization, and reduced withdrawal behaviors (Rhoades & Eisenberger, 2002). POS is regarded as a central socio-emotional resource (Harris & Kacmar, 2018) that organizations use to instill loyalty and a socio-emotional obligation, which elevates employees' identification and commitment to their organization and makes them want to help the organization achieve its goals (Eisenberger et al., 2001; Rhoades & Eisenberger,

2002). Garcia et al. (2021) conducted a study that showed perceived organizational support helped organizations retain employees in Australia and the Philippines, with late-career employees focusing on perceived organizational support among older workers. In addition, perceived organizational support has been found to influence turnover intention indirectly through the mediation of organizational commitment (Lin & Chen, 2004).

### **Purpose of the Research**

In the current quantitative study, the researcher investigated the depth of career commitment as a moderator to organizational commitment based on perceived organizational support and organizational justice among women in STEM careers. The findings of this research will help corporate leaders better understand recruiting and retaining women in STEM to promote women as leaders in technical careers. Previous scholars have stated that the underrepresentation of women in STEM fields is a “leaky pipeline” issue (Morgan et al., 2013). The leaky pipeline metaphor refers to the continued loss of girls and women from STEM fields at various educational transition points on their way to STEM careers—from elementary through secondary school to college and graduate school (Morgan et al., 2013). It is presumed that women are more likely to “leak out” from the STEM pipeline than their male peers (Ellis et al., 2016), either by choosing other educational options or failing to progress through the stages of the pipeline (Soe & Yakura, 2008). For example, Ellis et al. (2016) reported that women are 1.5 times more likely than men to leave the STEM pipeline (Soe & Yakura, 2008) after taking an introductory calculus course. Therefore, colleges and universities, including 2- and 4-year institutions, need better connections among themselves and other institutions to provide more entry points and pathways to STEM degrees (Olson & Riordan, 2012).

This quantitative study measured the significance between career commitment, organizational commitment, organizational justice, and perceived organizational support among women in STEM careers in the United States. By understanding how career commitment motivates women to stay in STEM careers and what triggers their organizational commitment to leave STEM careers, the

findings of this study will add to the future body of research on women in STEM. The researcher intended to bring awareness to the gap between studying STEM in collegiate studies and the transition in the career workforce. The understanding gained from this study is to expand the knowledge on the retention of women in STEM careers. This knowledge can be used to develop strategies that positively impact retaining skillful women in STEM careers.

Through hierarchical regression analysis, the researcher explored the gaps in career commitment from organizational commitment among women in STEM careers. The survey consisted of four validated survey models. Career commitment was measured using Blau's (1985) survey instrument questions. Organizational commitment was measured using the survey instrument of Mowday et al. (1979). Perceived organizational support was measured by an instrument from Eisenberger et al. (1986). Organizational justice was measured using Greenberg and Colquitt's (2005) survey model on organizational justice. Control and demographic variables were also included for descriptive statistics. The control variables that were measured were time in career, time in the organization, and education (bachelor's degree or lower and master's degree or higher). Other demographic variables included the area of STEM and age.

### **Research Questions and Hypotheses**

The researcher used a hierarchical regression methodology to explore women's career commitment as a moderator to organizational commitment in STEM careers. The business-level question guiding this study was whether and how career commitment impacts organizational commitment and the recruitment and retention of women in STEM careers. In addition, further insight was needed on the impact of organizational justice and perceived organizational support for women in STEM careers. Therefore, this study's high-level research question asked to what extent career commitment predicts organizational commitment after controlling for organizational justice, perceived organizational support, and other demographic variables (see Figure 1).

### ***Research Question 1***

The findings of previous studies have shown that turnover intentions related to career commitment as a moderator are influenced directly by organizational commitment and organizational justice (Lin & Chen, 2004). This informed the development of the first research question: How do perceptions of organizational justice relate to organizational commitment among women in STEM careers?

H<sub>1a</sub> There is a positive relationship between procedural justice to organizational commitment.

H<sub>1b</sub> There is a positive relationship between distributive justice to organizational commitment.

H<sub>1c</sub> There is a positive relationship between interpersonal justice and organizational commitment.

H<sub>1d</sub> There is a positive relationship between informational justice and organizational commitment.

### ***Research Question 2***

Career-related resources delivered by organizations, such as career development opportunities and perceived career support, have been found to enhance work engagement (Lee et al., 2016). The second research question of this study asked: How does perceived organizational support relate to organizational commitment among women in STEM careers?

H<sub>2</sub> There is a positive relationship between perceived organizational support and organizational commitment.

### ***Research Question 3***

Previous researchers have reported that career commitment positively affects organizational commitment (Abdullah & Ramay, 2012; Nazish et al., 2013; Odunayo et al., 2014). Based on this, the third research question of this study was developed: What effect does career commitment as a moderator have on the relationship between organizational justice and organizational commitment among women in STEM?



H<sub>3a</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and procedural justice.

H<sub>3b</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and distributive justice.

H<sub>3c</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and interpersonal justice.

H<sub>3d</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and informational justice.

#### ***Research Question 4***

Career commitment has been linked to organizational commitment, where organizational commitment mediates career commitment based on the social exchange theory (Cai et al., 2018). Future studies on this topic should use more variability in the distribution of occupations and employee work status in STEM fields (Cai et al., 2018). The fourth research question asked: What effect does career commitment as a moderator have on the relationship between perceived organizational support and organizational commitment among women in STEM careers?

H<sub>4</sub> Career commitment has a positive moderating effect on the relationship between perceived organizational support and organizational commitment.

#### **Significance of the Research**

The significance of this research relates to the benefits of retaining women in STEM careers. Keeping women in STEM careers will benefit organizations and businesses as they become globally competitive. Business leaders need a better understanding of career and organizational commitment that can lead to work programs and approaches to keep more women in STEM careers (Corbett & Hill, 2015). There are significant benefits to recruiting and retaining women in STEM careers (Armstrong et al., 2012; Corbett & Hill, 2015), such as the following:

- Mitigating the workforce shortages in STEM that affect global competitiveness;

- Improving gender equality to enhance organizational innovation and performance;
- Lowering costs for organizations related to turnover and replacement; and
- Enhancing training courses for organizations on diversity and inclusion at multiple organizational levels.

Combining organization benefits is critical due to the focus on organizational-level issues to contribute to the existing research on the underrepresentation of women in STEM careers (Armstrong et al., 2012; Corbett & Hill, 2015). Previous research on women in STEM careers have focused on improving the STEM education pipeline, while the current researcher focused more on the decisions and actions of employees after career commencement. This study was designed to extend the existing research by examining the factors influencing the retention of women in STEM careers through a survey of women currently working in STEM careers and their career commitment level. The findings may help employers in selecting and implementing strategies to recruit and retain women in STEM career fields.

Prior studies on women in STEM involved qualitative and quantitative investigations in academia using interviews and surveys involving college students; very few studies centered on women employed in STEM careers (Corbett & Hill, 2015; Fouad et al., 2016). According to researchers, existing studies have employed a historical view of the current female STEM worker shortfall in countries other than the United States (Blickenstaff, 2005; Sax et al., 2015). Further investigation is needed to investigate working women and career commitment in STEM careers in the United States (Corbett & Hill, 2015; Fouad et al., 2016).

In addition, previous studies involving women's retention in STEM careers used publicly available database information instead of a focused survey approach used in this current study. For example, other researchers have studied women's commitment specifically to engineering careers (Buse et al., 2013; Fouad et al., 2016) and information technology (IT) roles (Armstrong et al., 2012, 2018; Major et al., 2013). Previous researchers have called for more focused studies across STEM in general (Corbett & Hill, 2015).

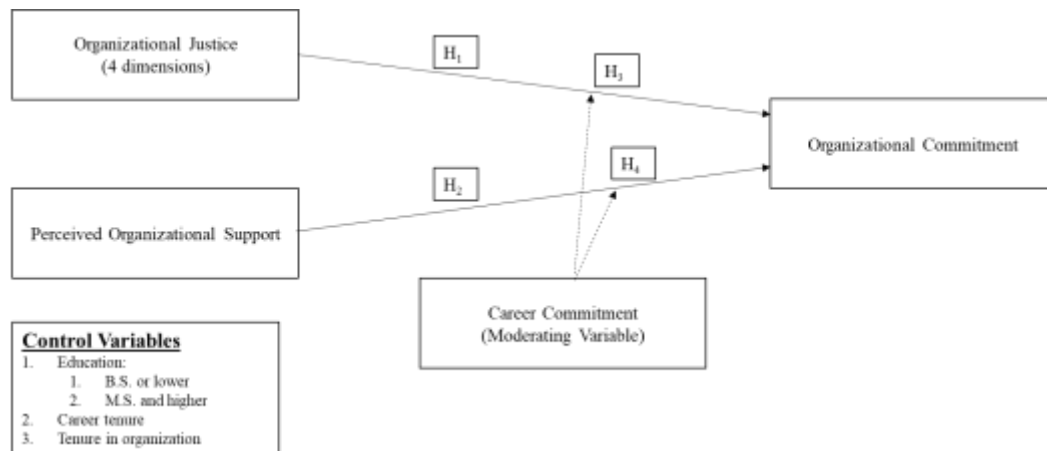
**Conceptual Framework**

A conceptual framework is the theoretical foundation of the problem; it includes study variables, depicts established relationships, and represents predicted relationships among these variables (Creswell, 2015). This study included an examination of career commitment as a moderator variable for the dependent variable of organizational commitment based on the independent variables of perceived organizational support and organizational justice (see Figure 1). The foundation to investigate women’s career decisions for career commitment was Blau’s (1985) model. Blau’s model has a reliability coefficient alpha value from .76 to .88 (Cohen, 1999). In addition, career commitment is positively correlated with perceived performance, life satisfaction, and the personal sacrifices dimension of continuance commitment (Cohen, 1999).

The basis for measuring organizational commitment was the shortened version of the model presented by Mowday et al. (1982). This model has a reliability coefficient alpha value ranging from .74 to .92, in which the retest reliability was found to be .74 (Aryee et al., 1994; Cohen, 1999; Mathieu & Farr, 1991; Vandenberg & Scarpello, 1994; Wayne et al., 1997). In addition, organizational commitment correlated positively with the power and success of an employee’s work unit, perceived opportunity for advancement, income level, and work involvement (Fields, 2013).

**Figure 2**

*Organizational Framework Showing Career Commitment as a Moderating Variable Predicting Organizational Commitment*



Quantitative analysis was conducted to examine the relationships among four areas: organizational support (OS), organizational justices (OJ), perceived organizational support (POS), career commitment (CC), and organizational commitment (OC) among women in STEM careers. The data were analyzed for differences in the variables (i.e., OJ, POS, CC (moderator), to OC). Statistical significance was considered for women working in STEM to determine whether career commitment perceptions and organizational commitment intentions influenced women in STEM careers.

### **Methodology**

The current research methodology included creating an online survey and distributing it to women currently working in STEM careers using nonprobability sampling. This sampling method ensured that the participating individuals were available and possessed the relevant characteristics of the study (Creswell, 2015). The recruiting of individuals involved a mix of convenience sampling of willing and available participants to be studied through professional business connections. This sample provided helpful information for answering questions and hypotheses (Creswell, 2015). The other method of recruiting participants for this research was snowball sampling, in which participants were asked to identify others that would qualify as members of the sample (Creswell, 2015).

The participants included women working in STEM careers in the United States with at least 2 years of career experience. The researcher sent emails with a link to the survey in Qualtrics to professional business contacts and organizations to recruit women working in STEM careers to answer the survey. Some professional organizations of note are Women in Tech Leadership, Women Who Code, AAUW Leadership & Women in STEM, STEM Women, Women in STEM @ FIT, Inspiring Women in STEM, and Women in STEM Thriving. The target population included women working in STEM careers as scientists, technologists, engineers, or mathematicians in the United States.

The online survey was created through Qualtrics and shared via email to the participants and professional organizations linked to the Qualtrics online survey. The survey was distributed to at least 1,000 participants; therefore, the researcher

determined the need for a sample of at least 100 working participants to mitigate the possibility of testing errors and ensure statistical significance (Creswell & Creswell, 2018).

The data were collected through an online survey. In addition to the validity of the instruments used in this survey, additional survey questions were identified for the control variables (see Table 1) to ensure the reliability of the survey data. The collected data were prepared for analysis by assigning numeric scores, assessing the types of scores to use, selecting a statistical program, importing the data into a program, and cleaning up the database for analysis (Creswell, 2015). Upon importing the data, those participants were eliminated if there were errors in the data or missing scores. Only those participants whose data were complete were included in the data analysis (Creswell, 2015). Each question in the survey was required to be answered in order to mitigate the elimination of any participants or data.

The survey questions come from four validated instruments used to measure organizational commitment, career commitment, perceived organizational support, and organizational justice (see Table 1). The complete poll included 47 questions, using 5- and 7-point Likert scales with six to eight inquiries related to demographics and control variables, as seen in Figure 2. The moderating variable was career commitment, which was measured using Blau's (1985) survey with a coefficient alpha range from .76 to .88. Perceived organizational support as an independent variable was measured using the survey of Eisenberger et al. (1986) describing employee perceptions about the organization. The reliability coefficient alpha values of this instrument range from .74 to .95. The independent variable of organization justice was measured using Colquitt's (2001) scale to assess employees' perceptions of fairness. This scale has four dimensions: distributive, procedural, informational, and interpersonal justice. The reliability coefficient alpha values range from .78 to .92 (Colquitt et al., 2001). The dependent variable was organizational commitment to measure attitudinal or affective commitment and correlated positively with power and success of employee's work, perceived opportunity for advancement, work involvement, and employee satisfaction with

work schedule flexibility (Fields, 2013). This study used the shortened version of the 15-item Organizational Commitment Questionnaire (OCQ) by Mowday et al. (1982), which consists of nine items. This instrument has a reliability coefficient alpha value ranging from .74 to .92.

These instruments enabled the researcher to measure and analyze the statistical significance of organizational commitment when career commitment is a moderator. In addition, these instruments resulted in the collection of data for the descriptive analysis and hierarchical regression analysis. The researcher conducted regression analysis to determine the effect of career commitment as a moderator on organizational commitment using independent variables organizational justice and perceived organizational support.

**Table 1**

*The Measures of the Multiple Constructs by Source*

Construct	Measures	Source
Organizational justice (OJ) (IV)	19 items using a 5-point Likert scale Reliability .76 to .93	(Colquitt et al., 2001)
Perceived organizational support (POS) (IV)	17 items using a 7-point Likert scale Reliability .74 to .95	(Eisenberger et al., 1986)
Career commitment (CC) (moderator)	7 items using a 5-point Likert scale Reliability .76 to .88	(Blau, 1985)
Organizational commitment (OC) (DV)	9 items using a 7-point Likert scale Reliability .74 to .92	(Mowday et al., 1982)
Control variables and demographic data	Age Education level Bachelor's degree or lower Master's degree or higher	

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Career tenure

Organization tenure

Area of STEM

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### **Scope and Limitations**

The scope of this research project involved women working in STEM careers in the United States to determine their level of career commitment to organizational commitment. The data collected only captures the perceptions held by women in STEM careers through self-reporting from an online survey. The results of the analysis only reflected one point in time and not career stages over a period of time. Assessing whether the study results correctly represent a broad representation of women in STEM careers in the United States is difficult given the approach of convenience sampling and snowball sampling (Creswell, 2015) by asking women to forward the survey to other participants to provide a different perspective.

The limitations of this research project represent the parameters and assumptions identified in this study. The first assumption in this study was that the statistics collected from surveying women could honestly establish factors that motivate women to persist in STEM careers. Second, the researcher assumed that the survey participants would answer the questions honestly, completely, and in a way that accurately reflected reality. Third, the objective of this research was to collect a broad sample of women across age, tenure in STEM, education level, and the four areas of STEM. Finally, in terms of the study's scope, the present investigation centered only on female participants from professional networks. Male participants were excluded from this study. In addition, while the COVID-19 pandemic may have changed work-related perceptions of many, it was outside this study's scope to explore the impacts of the pandemic on the retention of women in STEM fields.

### **Definition of Terms**

*Career commitment (CC)*: CC is defined as one's attitude towards one's profession or vocation (G. J. Blau, 1985).

*Colquitt Organizational Justice Scale (COJS)*: This is a measurement tool for perceived organizational justice. The COJS has a demonstrated validity as a measurement tool for perceived organizational justice (Elamin & Alomaim, 2011; Enoksen, 2015).

*Distributive justice (DJ)*: DJ is defined as the fairness of outcome distributions and the fairness of the procedures to determine outcome distributions (Colquitt et al., 2001).

*Interpersonal justice (IPJ)*: IPJ is defined as respect and propriety, a component of Colquitt's interactional justice (Greenberg & Colquitt, 2005).

*Informational justice (IFJ)*: IFJ is defined as truthfulness and justification and a component of Colquitt's interactional justice (Greenberg & Colquitt, 2005).

*Organizational commitment (OC)*: OC is defined as one's identification with the organization (Porter & Steers, 1973).

*Organizational justice (OJ)*: OJ is defined into four subcategories of procedural justice, distributive justice, interpersonal justice, and informational justice (Colquitt et al., 2001).

*Perceived organizational support (POS)*: POS describes employees' perceptions about the extent to which an organization is willing to reward more outstanding efforts because the organization values the employee's contribution and cares about their well-being (Fields, 2013).

*Procedural justice (PJ)*: Procedural justice is defined as a distributive relationship in which the perceived fairness of the means or methods are used to determine a given outcome and connected to other numerous organizational outcomes (Lin & Chen, 2004).

*Qualtrics*: Qualtrics is a Web-based research surveying software that facilitates the design, distribution, and analysis of survey data (Barnhoorn et al., 2015).

*STEM fields*: STEM fields include science, technology, engineering, and mathematics as represented in government, academia, and the workplace (Noonan, 2017)



*STEM majors*: The following academic programs are designated STEM majors: aerospace sciences, biology, computer science, information systems, industrial technology, engineering, and mathematics (Seymour & Hewitt, 1997).

### **Summary**

Women are employed in over half of the jobs in the total workforce, but only a quarter of the jobs in STEM fields. The high turnover rate among women in STEM careers is problematic as losing highly educated and skilled employees negatively affect businesses, given the recruiting and training efforts required to replace these workers. The current research was designed to investigate the perceptions of career commitment in women working in STEM careers in the United States. Understanding career commitment as a moderator to organizational commitment has not been studied among women in STEM. The findings of this study may guide organizations in improving career commitment decisions among women in STEM fields and determining the factors influencing women to remain in their STEM careers and advance to leadership positions in STEM. Through these findings, organizational leaders will better understand innovative ways to recruit and retain women in STEM, which supports the benefits of having a diverse and representative workforce in organizations to optimize the economic competitiveness of the United States. The following chapters will go into more detail on the supporting literature, methodology, results of the survey, and conclusion with implications for businesses.

## **Chapter 2 – Literature Review**

Women in the United States represented approximately 50.4% of the workforce in 2017 and earned half of all STEM degrees, but were only employed in 26% of all STEM jobs (U.S. Bureau of Labor Statistics, 2018). Women also leave professional STEM careers at a higher rate than their male counterparts (Cech & Blair-Loy, 2019; Corbett & Hill, 2015). For example, high-tech industries report that women leave at 41% compared to 17% for men who leave high-tech industries (Ashcraft et al., 2016). In addition, Hill et al. (2010) surveyed women and discovered that women are half as likely as men to remain in engineering by the time they reach 50 years old. Therefore, the culmination of these numbers with 26% of women in STEM jobs and women leaving at a rate of 41% in high tech careers, and then women leaving engineering positions before the age of 50 at a rate of 50%, the odds are there will be a significant shortfall of women in STEM careers in the future.

While most studies on women in STEM have focused on other areas like barriers to advancement, gender pay gap, and reasons for turnover (AAUW, n.d.; Abuwatfa et al., 2021; Armstrong et al., 2012; Beede et al., 2011; Bidwell, 2014; Blackburn, 2017; Buzzetto-More et al., 2010; Luthi, 2019; Settles, 2014; Thomas, 2017; Women in STEM, 2013), the current researcher studied women in STEM careers and why they stay based on the relationship between career commitment as a moderator to organizational commitment. The researcher also examined independent variables of organizational justice (perceptions of fairness within the organization) and perceived organizational support (perceptions of whether one is valued and cared for in the organization) based on organizational commitment (willingness to stay with their current organizations). The findings enhance the understanding of how career commitment impacts women's commitment to the organization. Finally, this research considered whether a commitment to a career in STEM makes it more likely for women to stay committed to their organization or vice-versa.

The purpose of this literature review is to provide support for the analysis of career commitment (Blau, 1985) as a moderator to organizational commitment

(Mowday et al., 1979) among women in STEM careers. The independent variables used in this analysis were organizational justice, including the four dimensions of distributive, procedural, interpersonal, and informational justice (Greenberg & Colquitt, 2005). The second independent variable in this research was perceived organizational support (Eisenberger et al., 1986).

### **Women in STEM**

Although women in the United States held over 51% of management and professional jobs in recent years, women are still less likely than men to occupy top leadership positions (U.S. Bureau of Labor Statistics, 2018). Further research needs to be conducted on other external factors like job quality, labor empowerment, climate, interpersonal mistreatment, multiple role management, work-family balance, mentorship, and legislative changes (Flores et al., 2021) on women in STEM fields in the United States.

Flores et al. (2021) studied external organizational factors over individual factors as a critical role in shaping women's work experiences. This study involved the women's labor force in the United States and their participation in five essential research areas on external factors that enhanced the understanding of women's work experiences. These external factors included job quality and labor empowerment, workplace climate, interpersonal and relational factors, multiple role management, and mentorship (Flores et al., 2021). While most of the research on women and careers is from theoretical advancements, additional research is needed using models allowing for the analysis of individual and structural factors in studies to understand how person-level variables are related to work and non-work outcomes in multiple organizational environments (Flores et al., 2021).

Ostroff et al. (2013) posited that research on women and their work environment has evolved over 50 years. A significant issue that can hinder or facilitate women's positive experiences at work is the psychological climate or individuals' perceptions of the work environment (Ostroff et al., 2013). The psychological climate can be subjective and based on an individual-level construct that includes perceptions of the organization's practices, policies, and rewards

(Ostroff et al., 2013). These perceptions related to women in the work environment have not been thoroughly examined in the United States.

Kossek and Lee (2021) reviewed 71 work-family and career issues over the last 50 years in careers studies of vocational psychology lenses, work-family studies from industrial-organizational psychology, organizational behavior research, and dual-real focused research from other disciplines. Vocational psychology was studied as a career lens that helped quantify individual differences within their proper environment (Fouad et al., 2016, p. 184). Kossek and Lee (2021) conducted a second study from a 2019 workshop held at Purdue University sponsored by the U.S. National Science Foundation for gender and work-life inclusion for faculty staff. Their study centered on the career issues facing women faculty and scientists in business schools and professional contexts where women are under-represented (Kossek & Lee, 2021). When the COVID-19 pandemic hit, work-life tensions related to gender equality were accentuated as women defaulted to parenting, schooling supervision, and other domestic roles when remote work skyrocketed (Kossek & Lee, 2021). Beyond the pandemic lies the question of how leaders of organizations prepare to advance women's career equality (Kossek & Lee, 2021).

### **Organizational Justice**

Organizational justice is one of the factors in the quality of interaction between the worker and the organization and is known as a cognitive process internal to the individual (Balven et al., 2018; Çelik, 2020; Ceylan & Sulu, 2011). Organizational justice is defined as “the rules and social norms governing how outcomes like rewards and punishments should be distributed and the procedures used for making distribution decisions, and how people are treated interpersonally” (Folger & Cropanzano, 1998, p. 13). Organizational justice is an essential measure of perceived fairness and equality in how well an organization embraces diversity and inclusion (Fujimoto & Hartel, 2017; Kalinoski et al., 2013). Perception of justice is defined as the fairness of the exchanges in the organization, either economic or social, involving individual relationships with superiors, subordinates, colleagues, and the organization as a social system (Zribi & Souai, 2013).

Organizational justice not only includes employees' perceptions of fairness regarding procedures applied during working hours, wage distribution, promotion, and communication within the organization but also explains the ties of employees with their management, their colleagues, and their organization (Yazıcıoğlu & Topaloğlu, 2009). Justice is also related to a wide range of human behaviors in the corporate setting (Hartman et al., 1999), as well as other outcomes such as job satisfaction and work motivation (Cropanzano et al., 2001; Fernandes & Awamleh, 2006; Moorman, 1991; Suliman, 2007) turnover intention (Colquitt et al., 2001) work performance (Fernandes & Awamleh, 2006; Suliman, 2007), and work commitment (Folger & Konovsky, 1989; Moorman, 1991).

Colquitt et al. (2001) conducted earlier research about justice in which they were primarily concerned with different types of justice from the viewpoints of fairness of outcomes, policies, and procedures, and showing dignity and respect in interpersonal relationships. Justice research has primarily focused on the organization and supervisors as justice sources (Colquitt et al., 2013; Rupp et al., 2014). Organizational justice formulates from distributive justice, interactional justice, and procedural justice. Distributive justice (Adams, 1965) is the basis of employees' assessment of supervisors on their perception that organizational outcomes like salary and promotion decisions are distributed equally through the organization (Çelik, 2020). Interpersonal justice concerns how employees feel they are treated with respect and courtesy by supervisors (Bies & Moag, 1986; Greenberg, 1993; Moorman, 1991). The third component is procedural justice which defines how employees perceive their supervisors as fair and more likely to identify with their organization, comply with procedures, and hold more favorable attitudes toward the community (Leventhal, 1980; Nix & Wolfe, 2016).

In addition to organizational justice research about perceptions of fair treatment in the workplace (Harris et al., 2020), honest perceptions are positively associated with organizational citizenship behaviors dimensions and negatively related to indicators of withdrawal such as absenteeism and turnover intention (Cohen-Charash & Spector, 2001; Colquitt et al., 2001). Voluntary turnover or withdrawal behaviors can be costly to organizations and can negatively impact an

organization's reputation, client relationships, and employee relationships (Koys, 2001; J. Wallace & Gaylor, 2012). From a management and human resource perspective, employee turnover also leads to increased costs associated with the hiring and training new employees (Koys, 2001).

Organizational justice is also strongly related to supervisors' evaluations and trust relationships in management (ÇeliK, 2020). While organizational theory is related to organizational justice as a cognitive process internal to working individuals and are more likely to engage in work-related behaviors when they perceive that they are in an organization operating fairly (ÇeliK, 2020; Greenberg, 1990). Most recent research around organizational justice and women in STEM has occurred in other countries in different occupational areas like administrative, higher education, or hospital workers. ÇeliK (2020) conducted a study distributing 397 surveys to a university's administrative staff in Turkey, which measured the effect of organizational justice and organizational commitment on employee performance and measured the extent of employee performance increase in commitment to the company. The results of the study were based on the impact of two independent variables, commitment, and justice, on job performance, showing that organizational commitment increases under fair working conditions, which affects employees' job performance directly and indirectly. In addition, organizations demonstrated high inclusion rates when there are high levels of perceived organizational justice, feelings of equity, and perceptions of fairness in the workplace (Dahanayake et al., 2018; Lazauskaitė-Zabielskė, 2017; Moss-Racusin et al., 2018; Roczniowska et al., 2018; Saifi & Shahzad, 2017). Most studies on organizational justice and the internal cognitive process of working individuals have been conducted in other countries outside the United States. This research is needed in the United States to determine a correlation between women in STEM and the internal cognitive processes of working individuals in the United States.

Organizational justice has been studied with job insecurity from the theoretical framework of social exchange theory proposed by Blau (1964). In-role job performance refers to completing tasks and responsibilities that are formal

requirements of employees' jobs (Williams & Anderson, 1991). Extra-role behaviors are discretionary organizational citizenship behaviors (OCB) often not formally recognized by the organization's reward system; however, they contribute to an organization's good functioning and effectiveness while maintaining a favorable social and psychological climate (Podsakoff et al., 2009).

Sora et al. (2021) proposed a mediation model to explain the relationship between psychological contract and social exchange theory with a mediating role of organizational justice regarding the contract type. Data were collected through a survey of 1435 employees in 138 organizations in Spain and Austria in four markets: education, retail, construction, and health. The results showed that job insecurity was indirectly related to organizational citizenship behaviors (OCB) and self-rated performance through organizational justice-distributive, procedural, and interactional. The findings of this study contributed to the relationship between job insecurity and performance by underlying terms according to the type of contract (Sora et al., 2021). The relationship between job insecurity and job performance is in the role and extra-role job performance based on the type of contract. The research on job insecurity considers multiple operationalization of job performance, including in- and extra-role performance. Future research should consider the type of contract supporting job insecurity-job performance links based on intervening factors. Future research could also explore additional factors that interfere with the relationship between job insecurity and job performance (Sora et al., 2021). More research is needed to examine the construct of job insecurity with job performance under a broader range of employment relations (Sora et al., 2021).

Abril et al. (2020) tested the organizational justice scale using two correlational studies. The first study used 115 technical staff employees of a Portuguese organization, and a second test with 59 Portuguese teachers, tested the scale's discriminant validity through comparison with other measures like organizational identification, work motivation, job satisfaction, and job fit. Organizational justice was a concept reflected in this study explaining employees' perceptions of an organization and their impact on its performance (Elamin & Alomaim, 2011; Perez et al., 2013). Study 1 showed a positive correlation between

organizational justice in distributive justice and corporate identification (Tavares et al., 2007), emphasizing the importance of fairness for organizational identification. In addition, Study 1 also reflected a positive correlation between organizational justice and work motivation, confirming the importance of managerial justice perceptions for employees' underlying work motivation (Oren et al., 2013). Study 2 showed a positive correlation between organizational justice and job satisfaction, and persons with higher perceptions of their ability-job fit benefit more from the organization than those with lower ability-job fit (Abdel-Halim, 1981; Moorman, 1991). Conversely, a job that persons perceive to fit their skills well may perceive their relationship with the organization as more fair, adding to the study of the relationship between employee and organization (Abril et al., 2020). The findings of this study supports the organization's influence on how employees see themselves and others in studying employees' behavior toward an organization and work performance (Abril et al., 2020).

Elamin and Alomaim (2011) examined the influence of organizational justice perceptions on job satisfaction and self-perceived performance on 793 Saudi and foreign workers in multiple organizations. Their results showed that perceptions of organizational justice influenced job satisfaction for Saudi employees and foreign workers. For the Saudi employees, however, the justice dimensions did not establish a relationship with self-perceived performance; contrary to the foreign workers, all the justice dimensions significantly influenced self-perceived performance. Distributive justice was the best predictor of self-perceived performance for foreign workers, while procedural justice showed a negative effect (Elamin & Alomaim, 2011). This research further showed that honesty, courtesy, timely feedback, respect for rights, and the chance to express viewpoints are critical components for securing a satisfied workforce in Saudi Arabia. All three justice dimensions were influenced by self-perceived performance for foreign workers' groups with a significant negative influence on procedural justice. This study was limited in scope based on the concentrated impact of organizational justice on only job satisfaction and self-perceived performance. Another limitation was the common variance problem since data for independent



and dependent variables were collected simultaneously using the same questionnaire (Elamin & Alomaim, 2011).

Sarrafoğlu and Günsay (2020) researched the effects of organizational justice and silence on job satisfaction and employees' intention to leave their jobs (Sarrafoğlu & Günsay, 2020). The survey contained 363 respondents working in public and private sectors of Turkey. The results showed significant relationships between distributive, procedural, and interpersonal sub dimensions of organizational justice and job satisfaction and intention to leave (Sarrafoğlu & Günsay, 2020). There was a positive effect of organizational justice perception on job satisfaction (Sarrafoğlu & Günsay, 2020). Summing up the importance of providing employees with an environment where they feel more accessible and have a voice on the decision results has impacts, for example, increasing job satisfaction, decreasing their intention to leave, reducing costs, and saving time in organizations (Sarrafoğlu & Günsay, 2020).

Wei et al. (2020) studied psychological empowerment and organizational justice in Chinese employees related to their voice behavior and how organizational justice moderates the effect of psychological charge on voice behavior. Participants were 236 Chinese small- and medium-sized enterprises who completed a survey to measure psychological empowerment, organizational justice, and voice behavior. Chinese employees will choose aggressive voices only when they perceive the procedural context is unfair. When they cannot find a clear benefit for themselves, they will not deal with the situation using an aggressive voice, even if they strongly perceive psychological empowerment (Lind et al., 1997). The hypothesis was that Chinese employees would choose a considerate voice when they perceived lower procedural fairness, as they need social exchange (Yang et al., 2019). Participants were selected from five small- and medium-sized enterprises in Dongguan and Huizhou, in the south of China, across various industries: textiles, manufacturing, service, and computer manufacture. Three hundred sixty-three valid forms were used in the results. Employees can use physical empowerment effectively to obtain additional resources: Competent employees will use aggressive voices in a workplace with low informational justice. In this study, informational justice

significantly was found to moderate the relationship between psychological empowerment and assertive voice. Although Chinese employees are usually dynamic and self-directed, the results showed that aggressive voice was a prominent tool for competent Chinese employees. This is consistent with the findings of Tangirala and Ramanujam (2008), who found that employees were incredibly motivated to use voice to change an unfavorable status in a harmful environment. The findings also showed that organizational justice moderated the relationship between Chinese employees' psychological empowerment and voice behavior (Wei et al., 2020). Psychological empowerment motivates employees to engage in voice behavior even in unfavorable conditions. When Chinese employees consider a job valuable and fitting their work requirements and personal beliefs, they will strengthen their voice behavior. Lu et al. (2019) explained that voice behavior could balance and expand personal resources in the Chinese context. Future researchers should include participants from a broader background of contexts and cultures (Wei et al., 2020).

Research regarding women in STEM, organizational justice, and turnover intention has been chiefly analyzed outside the United States. Vaamonde et al. (2018) identified turnover intentions (TI) among Argentine employees to strengthen and retain valued employees for organizations by looking at mechanisms of turnover intention. The study used an integrative serial multiple mediation model that examined mediation in burnout and job satisfaction between organizational justice and turnover intention. Their study sampled 408 multi-occupational Argentine employees with a mean age of 29.4 and tenure of 4.7 years. The results showed that structural equation modeling revealed that perceptions of distributive, procedural, and interpersonal justice indirectly affect turnover intention through burnout (Vaamonde et al., 2018). Job satisfaction and perceptions of informational justice positively affect TI through job satisfaction. Distributive procedural and interpersonal justice perceptions relate to lower levels of burnout and promote greater job satisfaction, and reduce TI. Informational justice perceptions are positively related to job satisfaction, decreasing employees' turnover intention. The turnover intention had negative consequences for

individuals and organizations, including absenteeism, frustration, low motivation, and reduced work performance (D. Flint et al., 2013; Han et al., 2015). From an individual level, turnover affects workers' commitment identification and social integration levels. At the organizational level, turnover of qualified employees leads to poor performance and high costs of recruitment, selection, and training of new staff (Chang et al., 2013).

Researchers have consistently studied organizational justice through university students. Caleo (2016) examined gender roles leading to biased reactions to men's and women's work behaviors. The results of four experimental studies demonstrated that men and women receive differential performance evaluation ratings and reward recommendations when they violate specific organizational justice rules that coincide with the content of gender stereotypes (Caleo, 2016). The sample population was 129 undergraduate students enrolled in psychology courses at one southeastern university. The findings suggested that reactions to injustice can be influenced by how men and women should behave. The research findings implied that gender norms could potentially damage and limit women in the work environment (Caleo, 2016). The research aimed at the importance of organizational justice, a multidimensional construct that captures employee perceptions of fairness in the workplace. Researchers have consistently demonstrated a link between fairness perceptions and work-related outcomes (Cohen-Charash & Spector, 2001; Colquitt et al., 2013; Whitman et al., 2012). Additional research suggests that specific organizational justice rules are gendered (Caleo, 2016). Although the findings support the idea that justice is generally expected in the workplace, they also indicate that women pay a higher cost than men for breaching organizational justice (Caleo, 2016).

Hashmi and Waqar (2018) investigated the relationship between organizational justice and workplace reactivity in telecommunication employees among gender. The sample consisted of 187 employees—123 men and 64 women—in the telecommunications industry from Pakistan's private and semi-government companies. The organizational justice and workplace reactivity scales were used to measure the variables. The results showed that organizational justice

correlates negatively with workplace reactivity and its components in all three subscales, i.e., when the score of organizational justice perception increases, the score on workplace reactivity decreases (Hashmi & Waqar, 2018). Men showed a higher level of workplace reactivity than women and had a better perception of interactional justice. Gender had a significant moderating effect in predicting workplace reactivity from perceived organizational justice. It varied with changing levels of perceived organizational justice for men, but for women, workplace reactivity remained constant based on organizational justice as high, medium, or low (Hashmi & Waqar, 2018). For women, interactional justice perception is common, leading to dissatisfaction; however, it can be controlled by knowing the female's general tendency to perceive interactions as unfair and by looking at the workplace scenarios more objectively (Hashmi & Waqar, 2018). Future scholars should conduct studies to extend the need to assess the possible reasons and effects of the relationship between organizational justice and other workplace behaviors (Hashmi & Waqar, 2018). This study also suggested more research is needed to examine the relationship between organizational justice, organizational citizenship behavior, and organizational commitment (Hashmi & Waqar, 2018).

Kobayashi and Kondo (2019) conducted a study in Japan where the investigators examined professionals and managers and their interactional justice with other employees. The sample represented 2,216 female and 7,557 male employees aged 18 to 69 from the Japanese Study of Health, Occupation, and Psychosocial Factors Related Equity. The study examined the associations between perceived organizational justice and psychological distress and stress-related behaviors. The results of this study were that (a) the frequency of psychological distress was higher among working women and men with low perceived levels of organizational justice, regardless of their occupational positions; and (b) among women, low levels of perceived interactional justice were associated with twice the frequency of smoking, compared with high levels of perceived interactional justice, among managers and professionals, while this association was weaker among other workers (Kobayashi & Kondo, 2019). These authors concluded that low

organizational justice leads to a higher risk of poor health in women than in other workers.

Women's predominance of psychological distress reported lower perceived organizational justice levels, which were significantly higher among managers and professionals (Kobayashi & Kondo, 2019). Low perceived procedural and interactional justice levels were associated with a high prevalence of psychological distress for women and men, regardless of occupational status (Kobayashi & Kondo, 2019). Female managers and professionals with unsupportive supervisors may be more likely to manage their stress through unhealthy coping behaviors. Creating supportive workplaces may be beneficial in increasing workers' health, especially for female managers and professionals (Kobayashi & Kondo, 2019). Organizational justice is essential in expanding opportunities for women and benefiting all employees' health (Kobayashi & Kondo, 2019).

Mathisen et al. (2013) studied how female directors of corporate boards of directors (BoD) experience boardroom dynamics. This study represented an initial research trend that moves from an independent focus on financial outcomes of female representation in BoDs to more substantial attention on the social dynamics in the boardroom (Mathisen et al., 2013). The researchers proposed that female directors often established an out-group within the BoD, preventing them from experiencing positive boardroom dynamics, and sought to explore how female directors experience less justice, lower cohesion, and higher conflicts within the BoD than their male counterparts (Mathisen et al., 2013). The sample population consisted of 491 directors from 149 board of directors in Norway based on a written survey of Europe's largest companies, the European Professional Women's Network, in 2007. The findings revealed few differences in how female and male directors experienced boardroom dynamics, and female chairpersons of BoDs did not perceive the dynamics differently from other female directors. The conclusions of this study reflected that female directors are welcomed into boardrooms and not perceived as out-groups. In addition, BoDs benefit from the female director's experience and skills (Mathisen et al., 2013). The results suggested that there are few differences in how female and male directors experience boardroom dynamics

and that the gender composition of BoDs may be less critical than proposed by researchers (Mathisen et al., 2013). A more practical argument for having more women on BoDs is that the number of potential recruits will increase when both women and men are considered (Pfeffer & Salancik, 1978). Furthermore, Fondas and Sasselos (2000) argued when the pool of recruits is expanded, there is the potential for greater diversity that often brings new ideas, different voices, and alternative perspectives.

A female director may feel more strongly about her educational background, professional experience, or industry association than her gender. Another finding in this study is that boardroom dynamics were related to the board of directors' perceived level of conflict. Female directors who experienced low levels of justice and cohesion perceived higher levels of competition in the boardroom (Mathisen et al., 2013). Another development in this area of research could be investigating female characteristics that directors identify most strongly with, including educational or professional background, relevant experience, or gender, and whether different types of social identification influence their perception of the boardroom dynamics (Mathisen et al., 2013).

### ***Distributive Justice***

The distributive justice dimension of organizational justice addresses the perception of fair and equitable distribution of resources and outcomes (Cropanzano et al., 2001; Elamin & Alomaim, 2011). Distributive justice has the most important relationship to measuring justice outcomes, significantly predicting decision satisfaction, leader-evaluation, and legal compliance (Tyler & Blader, 2003). Distributive justice entails fairness in allocating organizational resources, including salaries, benefits, bonuses, and promotions (Hashmi & Waqar, 2018). Distributive justice refers to “the perceived fairness of the allocation of resources by the organization” (Blakely et al., 2005, p. 261). Distributive justice shares values such as services, roles, duties, goods, wages, opportunities, rewards, and promotions distributed within the organization among existing individuals (Özmen et al., 2007). The forms of distributive justice include (a) equality, distributing the same opportunities and rewards to all employees; (b) need, conducting the

distribution according to individual needs; and (c) equity, a distribution based on the comparison that employees make between themselves and other employees in terms of input to outcome proportionality (Cropanzano et al., 2007; Perez et al., 2013).

Few studies are prevalent to women in STEM careers related to distributive justice. Most research on distributive justice occurred outside the United States among private businesses. Mushtaq et al. (2020) tested 400 employees in Pakistan working in banks, international airlines, and fast food companies showing ethical behavior as a mediator for organizational justice. The results of this study showed a significant association with organizational commitment related to supervisor support, actions, justice, and harmony among employees' positive relations in honesty, fairness, equality, and dignity. These positive relations showed an increase in employee level of attachment in organizations and reduced stress levels in work environments (Mushtaq et al., 2020).

Nazir et al. (2019) analyzed the relationships between organizational justice, innovative organization culture, perceived organizational support (POS), affective commitment, and innovative behavior (IB). Sample data included 367 managerial and executive employees in Pakistan's manufacturing and IT firms (Nazir et al., 2019). The results indicated that organizational justice (distributive, procedural, and interactional justice), innovative organization culture, and perceived organizational support are significantly related to affective commitment and employees' innovative behavior (Nazir et al., 2019). The findings also disclosed that organizational justice stimulates employees' affective commitment and innovative behavior by mediating POS openly (Nazir et al., 2019).

Percunda et al. (2020) observed the connection between organizational justice with performance appraisal satisfaction. Through a study in a suburban hospital in Indonesia, these researchers targeted performance evaluations to increase the efficiency of workers by keeping the relationship between organizational justice and performance appraisal satisfaction. The sample data contained 223 participants completing the survey, with 80% of the females less than 30 years old to measure organizational justice and performance appraisal

satisfaction (Percunda et al., 2020). Data analysis was conducted using hierarchical regression for the correlation coefficient. The results showed a correlation between organizational justice and performance appraisal satisfaction contributing to the performance appraisal system in the organization's fairness (Percunda et al., 2020). The performance appraisal aims to develop or motivate people, and the employee will be satisfied if it is perceived to be fair in terms of organizational justice (Crossman & Cook, 2004). One issue around the performance appraisal was the effectiveness of the operational assessment process of employee work performance (Percunda et al., 2020). The significance of the performance appraisal system depends on employee perception of fairness (Warokka et al., 2012). The fairness of the appraisal outcomes refers to the distributive justice. Fairness is also described as a fair procedure known as procedural justice (Moorman, 1991). Retaining qualified employees are essential in today's business world, like in hospitals, as they have a higher level of job knowledge in health service; therefore, employee performance could impact the service quality (Birecikli et al., 2016). Other studies have explored the relationship between organizational justice and other factors such as job satisfaction and work performance. In addition, leader-focused justice dimensions are related to employees' organizational outcomes and complaints (Herr et al., 2018).

There is a close connection between individual performance and company performance; if employee work performance is good, company performance will also be good (Sinabariba et al., 2018). An employee believes that a fair procedure guarantees more beneficial outcomes (Cropanzano et al., 2001). Additional research indicated that organizational justice could be related to financial and nonfinancial rewards, such as payment and incentives, opportunities for promotion, and performance appraisal procedures (Percunda et al., 2020). Organizational justice is essential in economic considerations such as fair compensation, social respect for creating trust among employees, and ethical care, including organizational unethical and inappropriate actions (Percunda et al., 2020). Some impacts of organizational justice have been recorded, such as trust-building, employee organizational citizenship behavior, and performance improvement



(Cropanzano et al., 2001). Organizational justice dimensions serve as moderators of the relationship between the need for independence and turnover intention (Birecikli et al., 2016). In comparison, distributive and procedural dimensions of organizational justice are strongly related to supervisors' evaluations and trust relationships in management (Alexander & Ruderman, 1987). Moreover, distributive justice generally shows an organization with higher sensitivity toward injustice (Brockner & Wiesenfeld, 1996; Kickul et al., 2002).

### ***Procedural Justice***

The procedural component of justice refers to the perceived quality of the decision-making process, fairness, objectivity, or impartiality in making decisions (Kaur & Carreras, 2021; Moon & Kamdar, 2008; Thibaut & Walker, 1975). To profit from the diverse knowledge and experience that female directors represent, women need to perceive that they can voice their views and arguments and influence decisions made in the board room (Mathisen et al., 2013). Fair decision-making is enhanced when participants experience control over the procedures that determine the outcome (Kaur & Carreras, 2021). Procedures are the official rules of how things are done and decisions are made (Kaur & Carreras, 2021) and represent the traditional view of a more inclusive understanding of combining processes and interactions in organizations (Tyler & Blader, 2003). Colquitt et al. (2001) described six bases for fair procedures:

1. Applied consistently across people and time
2. Free from bias from a third party with no vested interest
3. Ensure accurate information is collected and used in decision making
4. A mechanism to correct flawed or incorrect decisions
5. Conform to prevailing standards of ethics or morality
6. Opinions of various groups affected by a decision are taken into account

Employees' perceptions come from making decisions following fair guidelines (Elamin & Alomaim, 2011). An essential element of this is the perception that members of the organization have of the processes, not necessarily the actual process value (Heidari et al., 2012). At a psychological level, people

behave according to their perception of the organizational reality—not necessarily the truth itself (Amirkhani & Pourezzat, 2009; Heidari et al., 2012).

Procedural justice is also how the distribution of rewards is generated as objective or subjective and whether they are consistent, accurate, and unbiased (Hashmi & Waqar, 2018; Thibaut & Walker, 1975). Perceptions of an outcome depend on procedural and interactional justice in which procedural justice contributes to distributive justice (Niehoff & Moorman, 1993). Procedural justice has been characterized as giving recipients a voice and respectful treatment (Lind & Tyler, 1988; MacCoun, 2005), as well as the recognition of the role that procedural justice might play in the successful implementation of decisions within the group decision-making community (Druckman & Wagner, 2017; Eden & Ackermann, 2014).

Nazir et al. (2019) researched procedural justice related to an employee's perception of organizational procedures and policies and an employee's perceived organizational support (POS). Procedural justice showed that when an organization supports its workers, enhancing employees' relationship with the organization, perceived organizational support enhances their commitment to organizational policies, procedures, and goals (Nazir et al., 2019).

Harris et al. (2020) studied healthcare workers' workgroup on procedural justice by defining how workgroup members use fair procedures to make decisions. In this study, the multifocal perspective of justice suggested that employees differentiate between parties that may treat them fairly or unfairly during the workday Rupp and Cropanzano (2002), along with the social exchange-based, targeted similarity approach suggesting employees will direct their attitudes and behaviors towards the source of (in) justice (Lavelle et al., 2007). In addition, organizations that control for organization-focused and supervisor-focused justice demonstrated that client-focused fairness perceptions uniquely predict supervisor ratings of employees' organizational citizenship behavior toward clients and that perceptions of workgroup-focused justice uniquely predict organizational citizenship behavior toward workgroups (Harris et al., 2020).

Procedural justice is substantial, as it indicates to employees that they are valued members of the organization and work group (Posthuma et al., 2007). When employees experience high levels of procedural justice, they are more likely to develop positive emotions and have higher intentions to stay with an organization (Posthuma et al., 2007). Conversely, if employees experience procedural injustice, they are more likely to develop negative emotions and have higher turnover intentions (Cropanzano et al., 2001).

In 2008, research was conducted in a large metropolitan city in the southwestern United States with employees and supervisors at two skilled nursing senior care facilities owned by the same organization (Harris et al., 2020). Surveys were distributed to 152 employees and their direct supervisors at the facilities. The employees and supervisors worked in nursing, rehabilitation, housekeeping, dietary, and administrative areas (Harris et al., 2020). The sample population included 104 participants (68%) and the study found that external clients' justice was a unique predictor of employee organizational citizenship behavior (OCB) toward clients (Harris et al., 2020). Human resource practices and policies can be developed to help guide the behavior of supervisors and coworkers towards employees; however, these same human resource practices cannot be developed to control clients' behavior towards employees (Harris et al., 2020). Organizations seek to minimize voluntary employee turnover partly because it leads to increased hiring and training costs and the loss of tribal knowledge that occurs when employees exit the organization (Harris et al., 2020).

Hausknecht et al. (2009) found perceptions of justice to be a more significant predictor of turnover intentions for high-performing employees than for low-performing employees. This author, however, only examined the hypotheses in a single organization using employees and supervisors in the healthcare industry (Harris et al., 2020). The study also controlled job satisfaction in the analyses since data on job satisfaction was unavailable. Future research should maintain job satisfaction to account for any effect of job satisfaction on the relationships between justice and OCB and turnover intentions (Harris et al., 2020). Justice and turnover intentions are essential from a human capital theory perspective because it

indicates that when high performers feel mistreated, they are more likely to leave the organization. If high performers leave the organization, they take their human capital with them, which may negatively affect organizational performance since human capital is the source of competitive advantage (Wright et al., 1994).

***Interactional (Sub dimensions: Interpersonal and Informational)***

The third dimension of organizational justice is interactional justice, referring to employees' treatment based on managers' decisions. Interactional justice comprises two sub dimensions: *interpersonal*, referring to how much employees are treated at the interpersonal level by superiors transmits respect/respectfulness, and *informational fairness*, referring to truthfulness/trustworthiness of information given to employees when implementing new processes (Cropanzano et al., 2007; Gurbuz & Mert, 2009; Perez et al., 2013; Rodell et al., 2017). Because women are expected to act interpersonally sensitively (Eagly & Karau, 2002), interactional justice violations they enact will be seen as a breach of justice rules and a departure from prescriptive gender stereotypes. Consequently, women who exhibit interactional injustice will be penalized for violating organizational justice rules and failing to engage in stereotypical female behaviors (Caleo, 2016).

Interactive justice is based on communication between employees and managers (i.e., resource distributors), behaviors and attitudes that employees are exposed to, and respect, courtesy, and honesty during organizational practices (Greenberg, 1990). Interactional justice captures the perception of the righteousness between employee and organization regarding the communication and execution of procedures (Greenberg, 1990; Gurbuz & Mert, 2009). It centers on the perceptions workers have of how they are treated at the interpersonal level by the organization during the implementation of policies and procedures (Gurbuz & Mert, 2009). One crucial aspect of how workers are treated at interpersonal levels only shows up with their employees' personal needs (Niehoff & Moorman, 1993). The components of interactional justice are truthfulness/trustworthiness and respect/respectfulness.

Interactional justice also relates to employees' quality of interpersonal treatment during decision-making (Bies, 2015; Bies & Moag, 1986). This element

of organizational justice requires that decision-makers behave politely, use respectful communication, and consider subordinates' views and needs (Bies & Moag, 1986). Bies and Moag (1986) suggested interactional justice is the quality of the communication process as organizational policies are carried out due to its focus on managerial procedures.

Kaur and Carreras (2021) studied procedural justice and interactional justice, enhancing the effectiveness of causal mapping workshops using Group Explorer software combined with the Decision Explorer tool. Their model showed how participants' voice in group workshops using causal mapping is strengthened with an authentic outcome representing participants' thinking (Kaur & Carreras, 2021). The sample contained 62 responses from seven workshops of multiple sizes between five and 10 participants (Kaur & Carreras, 2021). The workshops were a mix of private organization workshops and student feedback workshops. The study used qualitative and quantitative analysis, with the qualitative analysis using the causal maps created with relevant concepts and statements highlighted to illustrate the authentic voice. The authors analyzed responses to a post-workshop questionnaire using scale reduction techniques and significant relationships between participants' voices and procedural justice, interactional justice, and causal mapping approach (Kaur & Carreras, 2021). This study applied a different lens and made it explicit that procedural and interaction justice impact participants' fairness perceptions in group workshops that support causal mapping (Kaur & Carreras, 2021). Their results showed a strong correlation between procedural justice, interactional justice, and voice effect (Kaur & Carreras, 2021). The support of fairness is important to stakeholders and a fundamental aspect of procedural justice (Kaur & Carreras, 2021). Future scholars should employ a comparative analysis approach and examine the outputs from group workshops that do not use causal mapping with group decision software. The limitation of this study is the reporting of the actual interventions that occurred where the data was gathered without a "control group" comparator (Kaur & Carreras, 2021).

Interpersonal justice has been the most studied form of justice in client justice research since it is the most relevant form of justice when examining the

employee–client relationship (Rupp & Spencer, 2006; Shao & Skarlicki, 2014; Skarlicki et al., 2008, 2016; Spencer & Rupp, 2009). Customers' interpersonal justice comes when “an employee is treated with dignity and respect, and personal attacks are refrained from” (Rupp & Spencer, 2006, p. 971).

Informational justice refers to “the fairness in the communication process of company procedures” (Blakely et al., 2005, p. 262). Perceptions of informational justice show positive associations with job satisfaction, which reduces turnover intention (TI). This finding shows that providing adequate, timely, and convenient explanations of the decision-making process motivates employees (Colquitt et al., 2013; Silva & Caetano, 2016), reinforcing job satisfaction and strengthening intentions to stay in the organization. The structural equation is the relationship between organizational justice and turnover intention (Vaamonde et al., 2018). Scholarly findings have shown that burnout and job satisfaction mediate organizational justice and TI in an interconnected chain (Vaamonde et al., 2018). Higher perceptions of distributive, procedural, and interpersonal justice are linked to lower levels of burnout, resulting in greater job satisfaction and fewer TI among employees (Vaamonde et al., 2018).

### **Perceived Organizational Support**

Organizations are essential sources of socio-emotional interaction, respect, and care for employees. When an employee’s socio-emotional needs, the value of contributions, and care for their well-being are being fulfilled, this is known as perceived organizational support (POS) (Eisenberger et al., 1986). POS is a factor that affects employees’ motives and behaviors and affects employee psychological commitment, attitude, intention, and behavior (Daan Van & Ed, 2006). Perceived organizational support is the exchange between an employee and their overall organization and explains the development of an employee’s commitment to the organization. It is the perceived extent of the organization’s concern about the value of the employees’ contribution and care for their well-being (Eisenberger et al., 2014). Perceived organizational support helps organizations retain employees, recognizing once an organization fails to invest in its employees, employee engagement decreases relatively (Eder & Eisenberger, 2008; Garcia et al., 2021).

This study measured perceived organizational support using a six-item scale developed by Eisenberger et al. (1997). Some organizational characteristics, like fair treatment or job autonomy, are positively related to POS, predicting job satisfaction, job involvement, intention to remain in the organization, and reduced withdrawal behaviors (Rhoades & Eisenberger, 2002). Perceived organizational support is regarded as a central socio-emotional resource (Harris & Kacmar, 2018) that organizations use to instill loyalty and a socio-emotional obligation, which elevates employees' identification and commitment to their organization and makes them want to help the organization achieve its goals (Eisenberger et al., 2001; Rhoades & Eisenberger, 2002).

Researchers have studied perceived organizational support in detail within other industries like hospitality and airlines. More research is needed to determine parallels within the United States on women in technical fields to determine the relationship between perceived organizational support, turnover intentions, and job characteristics among women in the United States in technical careers. Jolly et al. (2021) studied a national sample of employees in the hospitality industry with managers to understand whether enriching job characteristics such as job variety may diminish the relationship between pay and benefits satisfaction. The results found that low pay and benefits related to job variety reduced employee turnover by improving employee-organization relationships and developing perceived organizational support (Jolly et al., 2021). There is a need to identify nonmonetary factors that may help lessen the negative pay-turnover relationship among hospitality employees; this identity will advance the understanding of the complex factors leading to employee turnover and provide evidence-based solutions to practitioners faced with high levels of employee attrition (Jolly et al., 2021). The sample population was 258 workers nationwide in the hotel industry with an average tenure of seven years (Jolly et al., 2021). Perceived organizational support was measured using the short 8-item scale of Eisenberger et al. (1986) and as a mediator in the relationship between pay and benefits satisfaction and turnover intention (TI), which provided insight into the psychological processes that may underlie the relationship in hospitality employees (Jolly et al., 2021). Job variety

(JV) offers organizations solutions to potential staffing shortages and scheduling challenges while at the same time increasing perceived organizational support. Future researchers should replicate these findings using multi-source, multi-wave data in other industries (Jolly et al., 2021).

Huang et al. (2021) reported on a study that examined the influence of leader-member exchange (LMX) on employees' turnover intention and presentism with the mediating role of perceived organizational support in the semiconductor industry. The sample contained 124 department managers and 241 team members in five high-tech companies in Taiwan (Huang et al., 2021). The results revealed that perceived organizational support significantly related to employees' turnover intention and mediated the relationship between LMX and turnover intention (Huang et al., 2021). The results are significant for high-tech companies, which continuously strive for innovation, efficiency, and sustainability (Huang et al., 2021). Managers and practitioners could better understand the importance of perceived organizational support and LMX in employee behaviors and company performance (Huang et al., 2021). Perceived organizational support affects employees who work for specific teams, divisions, departments, and organizations due to psychological state and turnover intention (Huang et al., 2021). Perceived organizational support directly impacts the willingness of employees to remain on the job. It dramatically reduces the desire of employees to leave when motivated by a perception that employees are receiving direct organizational support (Huang et al., 2021). This finding explains that POS significantly affects employees' willingness to go or stay in the competitive high-tech industry. Additional research is needed to test whether the exact relationship is found in other sectors and cultural contexts (Huang et al., 2021).

Garcia et al. (2021) conducted a study about retaining employees with late-careers focusing on perceived organizational support among older workers in Australia and the Philippines. Older workers' contributions benefit organizations even past the threshold of retirement, yet little is known about what motivates older workers to pursue bridge employment in their current organizations (Garcia et al., 2021). Perceived organizational support typically helps organizations retain



employees, yet POS may ironically repel some older workers to the extent that it imposes an undesirable, excessive obligation (Garcia et al., 2021). The successful social exchange also depends on employees' perceptions of whether the organization values their contributions and cares for their well-being (Aselage & Eisenberger, 2003), also known as POS. The "best practice" prescription commonly given to employers is fostering POS, which is widely believed to improve the quality of employment relationships by deepening the socio-emotional exchange with employees (Eisenberger et al., 2001).

Perceived organizational support is positively related to organizational characteristics such as fair treatment and job autonomy, as a predictor of job satisfaction, job involvement, intention to remain in the organization, and reduced withdrawal behaviors (Rhoades & Eisenberger, 2002). In addition, organizations use socio-emotional means (Harris & Kacmar, 2018) to instill loyalty and a socio-emotional obligation, which raises employees' identification and commitment to their organization and makes them want to help the organization achieve its objectives (Eisenberger et al., 2001; Rhoades & Eisenberger, 2002).

Lee and Peccei (2007) found that POS led to more significant affective commitment through socio-emotional mechanisms. Two studies were conducted; in the first, data were collected from 320 late-career employees enrolled in a part-time Masters in Business/MBA program at a large university in the Philippines (Lee & Peccei, 2007). In the second, 400 survey questionnaires were distributed to late-career employees of a large Christian community organization in the Philippines (Garcia et al., 2021). The findings' summary remained open because the researchers only examined the interactive effects of psychological contracts and POS among older workers. Future work should discuss these effects in predicting outcomes more relevant to these units (Garcia et al., 2021).

Côté et al. (2021) evaluated the mediating effect of work engagement in the relationship between presentism and job satisfaction. Building on previous work, this study proposed considering perceived organizational support (POS) as a moderator of the relationship between work engagement and job satisfaction. At a low level of work engagement, feeling the organization's support makes a

difference in job satisfaction (Côté et al., 2021). The present study considered POS an essential organizational resource that could help workers facing ill work situations, which could impede their satisfaction with their work (Côté et al., 2021). Perceived organizational support refers to the individuals' perception of how the organization values their contributions and cares about their well-being (Côté et al., 2021). Many scholars have recognized the beneficial effects of POS on employees' subjective well-being and job attitudes and behaviors (Eisenberger & Stinglhamber, 2011). For example, the social exchange theory (Blau, 1964) posits that employees who felt supported by their organization would repay their debt and reciprocate their care to the organization (Côté et al., 2021). As a result, supported employees feel grateful to help their organization reach its goals and contribute to the development and general efficiency of the organization by demonstrating positive attitudes and behaviors.

On the other hand, the organizational support theory suggests that self-enhancement processes are also at stake to ensure that POS helps fulfill employees' socio-emotional needs for esteem and affiliation (Eisenberger et al., 1986). When POS meets employees' fundamental human needs in the workplace, those who feel supported by their organization will show better indicators in other areas like well-being (Eisenberger & Stinglhamber, 2011). Material and emotional resources help employees do their jobs more effectively (Eisenberger & Stinglhamber, 2011). In a work environment characterized by increasing demands and pressures, feeling supported by one's organization can become a significant organizational resource that helps the employee to cope with their job and maintain positive attitudes (Côté et al., 2021). An online survey was administered to Belgian medical clinic employees through convenience sampling (Côté et al., 2021). The sample population included 289 employees providing clinical care or holding administrative positions at a single Belgian hospital (Côté et al., 2021). Perceived organizational support was significant; however, the results were limited to one Belgian organization in this study. Replicating this study is recommended with more extensive and diverse samples (Côté et al., 2021). The results suggested that a high level of engagement helps individuals maintain a positive emotional and

motivational presence at work, even when employees go to work when they are (Côté et al., 2021). The findings also showed that individuals who perceive support from their organization tend to maintain a more positive emotional and cognitive assessment of their work environment, work engagement, and job satisfaction (Côté et al., 2021). More specifically, when studied in interaction, POS seemed to be a significant factor to consider when employees experienced a low level of work engagement due to their presentism (Côté et al., 2021). In addition, the results showed that high POS reduced the negative influence of low work engagement on job satisfaction (Côté et al., 2021). When employees perceive a high level of organizational support, they feel supported and understood and therefore believe that their manager or work environment can be more understanding and mobilized in case of perceived difficulties (Côté et al., 2021). Therefore investing in approaches that generate positive perceived organizational support, such as immediate supervisor support and colleague support, could contribute to maintaining employees' job attitudes, even when low presentism behaviors are reported (Krishnan & Mary, 2012; Rhoades & Eisenberger, 2002).

Nazir et al. (2019) analyzed the relationships between organizational justice, innovative organization culture, perceived organizational support (POS), affective commitment, and innovative behavior (IB). Data were collected from 367 managerial and executive employees working in manufacturing and IT sector firms in Pakistan (Nazir et al., 2019). The results of their analysis indicated that organizational justice, including distributive, procedural, and interactional justice, innovative organization culture, and POS are significantly related to affective commitment and employees' IB (Nazir et al., 2019). Their findings also showed that organizational justice directly stimulates employees' affective commitment and IB through mediating POS (Nazir et al., 2019). This study's limitations were based on specific Pakistan's manufacturing and technology sectors (Nazir et al., 2019). This research expands the organizational justice dimensions, organizational culture, and POS as antecedents of affective commitment and IB (Nazir et al., 2019). In addition, this study investigated justice, organization culture, POS, loyalty, and IB in the Pakistan cultural context (Nazir et al., 2019). Research into POS has

suggested that high levels of POS lead to employees' higher involvement in voluntary behaviors, which are more valuable to the organization (Eisenberger et al., 1990; Settoon et al., 1996; Wayne et al., 1997).

Researchers have argued that if employees' POS levels are high, they feel obligated to return the favor to the organization by performing beyond their job description (Eisenberger et al., 2001; Rhoades et al., 2001). Employees with a high level of POS may ignore an injustice since they might feel that the organization will provide them with their due rewards in the future (Shore & Shore, 1995). Conversely, employees with a low level of POS might react more harshly to the same injustice, as they will consider it a continuation of the organization's inability to treat them equally (Nazir et al., 2019). These researchers aimed to analyze how judgments about organizational justice prompt IB and employees' affective commitment in Pakistan within its cultural context and examined how organizational justice transmits its effects on IB and affective organizational commitment (Nazir et al., 2019).

Singh et al. (2018) investigated the factors that trigger the relationship between work-family conflict (WFC) and women engineers' intention to leave their careers. They examined how perceptions of organizational support changed the relationship between commitment to the occupation and intention to leave the profession and how the conflict between work and family was related to that choice (Singh et al., 2018). They also tested predictions using time-lagged data from a sample of 245 women engineers (Singh et al., 2018). The findings of their study indicated that future research needs to explore whether these practices and policies have the same beneficial effect in promoting occupational attachment and reducing occupational turnover cognitions and what may alter these relationships (Singh et al., 2018). Further research also needs to be done to examine the role of supportive organizational practices and uncover how and why these may be practical tools in promoting attachment and retention in the technical professions (Singh et al., 2018).

Harris (2018) studied positive associations of POS with desirable workplace outcomes like high performance and high commitment. This study involved

individuals of organizations who form “global beliefs” concerning the extent to which the organization values their contributions and cares about their well-being (Rhoades & Eisenberger, 2002). The author investigated the relationships between POS and four individual outcomes rated by the supervisor (Harris, 2018).

Employees form perceptions about how loyal their employers are by rewards received, how much their company cares about them, and how they are willing to reciprocate through perceptions of organizational support by increasing work effort, commitment, positive attitudes, and behaviors (Harris, 2018). Harris administered a survey to 211 respondents and matched their supervisors' performance ratings. The linear relationships increased POS and improved positive outcomes; however, the results support that the relationships between POS and essential individual products rated by the supervisor may be nonlinear (Harris, 2018). The global beliefs represent an employee's POS (Harris, 2018).

Perceived organizational support has been linked to many positive outcomes, with higher levels of POS associated with desired results (Harris, 2018). Perceived organizational support is positively related to organizational commitment, job-related effect, and multiple aspects of job performance; conversely, POS is negatively associated with job strains and withdrawal behaviors (Rhoades & Eisenberger, 2002). Perceived organizational support is positively related to positive individual outcomes and negatively associated with personal adverse effects (Rhoades & Eisenberger, 2002).

The positive associations expected between POS and the desired individual results of job satisfaction, mood, commitment, and performance, and lower levels of turnover intentions and withdrawal behaviors have been reported in recent meta-analyses (Rhoades & Eisenberger, 2002; Riggle et al., 2009). Harris (2018) concluded the need for further investigation of the relationships in organizations using other mediators while looking at different POS outcomes like job satisfaction, job burnout, or withdrawal behaviors to determine the linearity or nonlinearity as the best representation of these associations (Harris, 2018). Perceived organizational support is an organization-employee exchange variable

that has received extensive research attention and associated with several favorable outcomes (Harris, 2018).

### **Organizational Commitment**

Commitment is one of several energizing forces for motivated behavior and binds an individual to a course of action relevant to a specific target (Locke, 1997; Meyer & Herscovitch, 2001). There are benefits to having a motivated and committed workforce (Locke & Latham, 1990; Meyer & Allen, 1997; Pinder, 1984). By combining commitment and motivation, commitment can be understood as a component of motivation (Meyer et al., 2004). Commitment involves a psychological attachment as an independent part of motivation, allowing an enhanced understanding of behaviors with varied social implications (Meyer et al., 2004).

Organizational commitment (OC) is a physical link between an employee's attitude toward their organization and a psychological level that categorizes employee relationships with their organization, which results in the decision to continue in the organization (Herachwati & Rachma, 2018). Employees will show high loyalty if they firmly commit to the organization (Herachwati & Rachma, 2018). OC contains two primary dimensions: attitudinal and calculative (Delobbe & Vandenberghe, 2000; Mathieu & Zajac, 1990). The connection between the individual and the organization stems from moral or economic considerations (Delobbe & Vandenberghe, 2000). It also supports the distinction between the motivation to produce and the motivation to participate, which results in value attachment and instrumental commitment to the organization (Mayer & Schoorman, 1992, 1998). OC also involves three main characteristics: a strong belief in and acceptance of organizations' goals and values, willingness to make an effort on behalf of the organization, and a strong desire to maintain membership (Chordiya et al., 2017, pp. 3–4).

Mowday et al. (1982) defined commitment as the strength of an individual's identification with involvement in a particular organization which contains a strong belief in and acceptance of the organization's goals and values; a willingness to exert extra effort on behalf of the organization and a strong desire to maintain

membership in the organization (Allen & Meyer, 1990). In addition, Mowday et al. (1982) studied organizational commitment about a person's level of loyalty and contribution to the organization.

Organizational commitment studies contend that when commitment binds an individual to an organization, it can reduce the likelihood of turnover (Meyer et al., 2004). Landry and Vandenberghe (2009) proposed that organizational commitment is the psychological state that characterizes the relationship between employees and employers. In addition, scholars have suggested that when an organization treats its employees fairly and is perceived to be fair by the employees, the employees are more likely to be engaged in productive behavior, benefiting their organization (Greenberg & Colquitt, 2013). Organizational commitment identifies many benefits in organizations:

1. Contributing to the improvement and positive change of the organizational environment
2. Including employees in management and increasing team spirit
3. Enhancing coordination within the organization
4. Encouraging trust, cooperation, and solidarity among employees
5. Increasing the performance of employees and the organization as a whole
6. Providing flexibility to the organization to adapt to changes occurring outside the institution
7. Increasing employees' confidence in the organization, managers, and colleagues
8. Helping employees contribute to more consensus in business conditions
9. Increasing job satisfaction (ÇeliK, 2020).

These organizational benefits correlate to a positive organizational commitment and potentially positive revenue and growth for companies. Employees work in organizations with specific needs, desires, and skills where they expect to find an environment where they can utilize their abilities and satisfy their basic needs (Farzaneh et al., 2014). Lee et al. (2016) revealed that some career-related resources delivered by organizations, such as career development and perceived career support, enhanced work engagement. Consequently, work

engagement improved career-related outcomes like career commitment and career satisfaction. The findings of several studies have revealed that career commitment positively affected organizational commitment (Abdullah & Ramay, 2012; Nazish et al., 2013; Odunayo et al., 2014).

The study of organizational commitment has numerous quantitative studies on women; however, most of these studies occurred outside the United States in industries like healthcare, financial and public sectors. Shabir and Gani (2020) conducted a quantitative study on the significance of work-life balance and organizational commitment among women in healthcare. The study looked at 580 women healthcare employees in India. Their results showed a positive relationship between work-life balance and organizational commitment (Shabir & Gani, 2020). The sample came from northern India, so it needs exhaustive exploration if the study can be replicated in other geographical areas for further verification (Shabir & Gani, 2020). Future examples could be considered across different sectors to conclude the relationship between employees' satisfaction levels with organizations and their commitment to their organizations (Shabir & Gani, 2020). In addition, future researchers should study the difference on generational gap and its impact on work-life balance and related factors to increase the number of variables (Shabir & Gani, 2020).

Ramos et al. (2021) administered a scale referred to as TOP WOMAN to 1,300 participants in the financial sector in Spain. The TOP WOMAN scale is a practical tool for human resource managers to analyze gender discrimination and implement best practices in their organization. The scale consisted of 33 items with seven dimensions related to gender discrimination and the barriers contributing to the differences between men and women entering management positions. For example, women are more committed to caring for their families, which is also one of the top barriers to admission to top management positions (Catalyst, 2002; Howe-Walsh & Turnbull, 2016; Miller Burke & Attridge, 2011). Ramos et al. (2021) identified further research was needed to test motivational and organizational culture barriers in other organizations; furthermore, they concluded that workers who perceived barriers to advancement would have less job



satisfaction and organizational commitment. In addition, the researchers suggested that perceived organizational justice reflects a negative from gender inequality, not only for women but for all persons (Ramos et al., 2021).

Liou and Nyhan (1994) examined public employee commitment using an organizational commitment measurement scale. Employee commitment is recognized as one of the major determinants of organizational effectiveness (Steers, 1975). Higher levels of organizational commitment are linked to higher job performance and lower turnover (Porter et al., 1974). In the public sector, organizational commitment is a key to increasing public service motivation. Additional empirical studies of employee commitment are needed to understand its motivational base in public organizations (Liou & Nyhan, 1994).

Al Momani (2017) studied working women at King Abdullah University Hospital to look at the mediating effect of organizational commitment on the relationship between work-life balance and intention to leave. The participants were 800 working women in the healthcare industry. Their results showed that adopting work-life balance programs in Jordanian hospitals would improve the commitment of working women, enhance employee participation in decision-making, and improve organizational commitment (Al Momani, 2017). In addition, managers should give special attention to organizational commitment since it significantly affects the intention to leave (Al Momani, 2017).

Holmgren et al. (2013) analyzed if organizational climate and work commitment predict a return to work after sickness absence in occupational health in men and women. These investigators examined 2,285 participants from Sweden with the largest variance in the men's return to work. An engaging work environment or commitment to work positively influences occupational health for the individual and the organization (Holmgren et al., 2013). Work commitment is based on the workers' experience of energy level and the workers' involvement at work (Holmgren et al., 2013). Limitations of the study pertained to organizational commitment contained multiple dimensions that reflected the employees' views on their work environment (Holmgren et al., 2013).

Delobbe and Vandenberghe (2000) studied organizational commitment among Belgian employees, examining the reliability and validity of four dimensions of organizational commitment, internalization, compliance, affective and continuance commitment. The study was conducted in Belgium among multiple organizations with varying degrees of tenure, education, and length of employment contract among the participants (Delobbe & Vandenberghe, 2000). Future research needs to examine causal relationships among commitment constructs using a longitudinal design (Steyer et al., 1992). In addition, future studies on the interaction among commitment dimensions in predicting significant organizational outcomes can provide additional insights into OC development over time (Delobbe & Vandenberghe, 2000). Organizational commitment has become more important in industrial and organizational psychology (Delobbe & Vandenberghe, 2000).

Park and Jung (2015) examined how future time perspective is related to the career-related variables of occupational self-efficacy, career commitment, and organizational commitment, as well as how it indirectly influences turnover intention. The 500 participants were full-time employees from multiple industries. Occupational self-efficacy indirectly influenced turnover intention through career and organizational commitment (Park & Jung, 2015). Their results showed that future time perspective directly affected career commitment and indirectly affected turnover intention through occupational self-efficacy and career commitment (Park & Jung, 2015). In addition, occupational self-efficacy indirectly influenced turnover intention through career and organizational commitment (Park & Jung, 2015). Job satisfaction and organizational commitment are strong predictors of turnover intention (Ramoo et al., 2013). Park and Jung (2015) concluded that future researchers should focus on additional career-related variables impacting turnover intention.

Malone and Issa (2013) studied job satisfaction, work-life balance, and organizational commitment in women employed in the U.S. construction industry. The participants of their study were National Association of Women in Construction (NAWIC) members using an internet-based organizational climate

survey developed by a private U.S. consulting firm (Malone & Issa, 2013). The study identified variables that affect women's satisfaction with their job and employer and overall intent to remain with their employer (Malone & Issa, 2013). The results showed differences in the participants' commitment over different time intervals and their satisfaction with employer benefits based on whether or not they had children under 21 years old living at home (Malone & Issa, 2013). Factors that led to the most job satisfaction were good working relationships with coworkers and peers, respect and fair treatment from supervisors, challenges on the job, feelings of accomplishment, and feeling valued as an employee (Malone & Issa, 2013). Factors ranked the highest in organizational commitment were job-fit to individual skills, flexibility, a balance between work and personal time, feeling valued as an asset to their employer, and availability of opportunities for advancement (Malone & Issa, 2013). The limitation of the study centralized around the results being exclusively from one organization, NAWIC; therefore, future scholars could refine these questions and compare members of the trade and professional organizations in other industries (Malone & Issa, 2013). Further exploratory studies in these areas of personal job value are warranted to examine the perception of fair and equitable treatment of all employees and communication and respect between management and staff (Malone & Issa, 2013). As more industry-specific research is conducted and findings are used to help companies and consulting firms improve work-life integration, the more companies will understand what leads to job satisfaction of different employee populations and the desire to stay with that company (Malone & Issa, 2013).

Koslowsky et al. (2012) examined how the relationships between career commitment, organizational commitment, and intentions to leave were moderated by the ease of movement and sector affiliation. These authors aimed to understand the differences between career and organizational commitment and how employers in the high-tech sector should advance employees' organizational commitment (Koslowsky et al., 2012). The participants were 340 knowledge workers from high-tech firms in the center of Israel (Koslowsky et al., 2012). The 340 workers completed a questionnaire with questions on organizational commitment, career

commitment, perceived ease of movement, sector affiliation, and intention to leave (Koslowsky et al., 2012). The results showed that organizational commitment is related to choosing to go regardless of other personal or structural considerations (Koslowsky et al., 2012). Organizational commitment was used as an antecedent variable and appeared in many turnover intention models, causing less frequent investigations of career commitment as an antecedent (Koslowsky et al., 2012).

In contrast, ease of movement and sector affiliation moderated the relationship between career commitment and leaving intentions (Koslowsky et al., 2012). Some limitations of this study were that anonymity was protected by masking the data, preventing from running any organization variance, or job position variance between organizations and occupations between organizations were not directly matched to the results (Koslowsky et al., 2012). Nevertheless, the results further showed the importance of investigating organizations' relationships under different economic circumstances during periods of growth (Koslowsky et al., 2012).

Aggarwal et al. (2018) tested the mediation role of women's psychological empowerment on the relationship between structural empowerment and employee's affective commitment in Indian nursing. Using a random sampling technique, data were collected from 389 women nurses working in public and private hospitals in Punjab (Aggarwal et al., 2018). Their results showed that psychological empowerment mediates all the proposed relationships between different dimensions of structural charge and affective commitment (Aggarwal et al., 2018). Indian nurses experienced a high level of structural empowerment, leading to increased loyalty (Aggarwal et al., 2018). Psychological empowerment has many attitudinal and behavioral consequences. Future research initiatives should include other factors affecting the affective commitment and perceptions of nurses' psychological empowerment (Aggarwal et al., 2018). In addition, structural empowerment emerged as an essential antecedent of employees' commitment to an organization which ultimately leads to the extra-role behavior by the employees within and outside the organization (Aggarwal et al., 2018). There was also a strong linkage between empowering work environment and professional nursing

practice features, leading to turnover intention and job satisfaction (Aggarwal et al., 2018). The investigators also explored the relationship between workplace empowerment and the professional nurse practice environment and how they affect their physical and mental health in this study (Aggarwal et al., 2018).

Mushtaq et al. (2020) conducted a study assessing the role of justice, supervisor support, and group cohesiveness indirectly affecting organizational commitment through ethical behavior. Data were collected based on a survey of 220 participants, most of which were aged 25 to 35 years old and employed in mid-level positions working in 12 companies in three different sectors, including Pakistan Airlines, banks, and fast food services (Mushtaq et al., 2020). Their results supported the role of ethical behavior as a mediator, organizational justice, and group cohesiveness significantly associated with organizational commitment (Mushtaq et al., 2020). The results showed that supervisor support, justice in the organization, and harmony in employees' tasks positively relate to employees' behavior like honesty, fairness, equality, and dignity, which enhances employee attachment level, and employees' stress level was reduced in encouraging work environments (Mushtaq et al., 2020). Employees' perception of the organization's supportive and fair policies leads to organizational commitment (D. H. Flint & Haley, 2013). Employees' loyalty to the organization encourages them to be committed to the organization (Haider et al., 2014). Distributive and procedural justice are the main predictors of an employee's positive attitude and strongly correlate with organizational commitment (Mushtaq et al., 2020). The study's recommendations for future investigations were to gather quality data from multiple sectors where data collection is higher, and the larger sample size will offer more meaningful results (Mushtaq et al., 2020). All measures were self-reported, leading to common method bias with standard variables; future research should be based on peer or supervisory reported responses for more dynamic results (Mushtaq et al., 2020).

Zhou et al. (2014) studied nurses' job burnout to test the mediator role of organizational commitment. Their sample included 445 nurses from four large hospitals in Beijing, China aged 20 to 41 years (Zhou et al., 2014). The results

revealed significant relationships between core self-evaluations and dimensions of job burnout and organizational commitment (Zhou et al., 2014).

Herachwati and Rachma (2018) researched the effect of career satisfaction on organizational commitment and career commitment as a variable that mediates the relationship between career satisfaction and career commitment. These authors also examined career satisfaction's role in increasing organizational and overall career commitment (Herachwati & Rachma, 2018). The participants in this study were 166 permanent employees with a minimum of two years' experience in manufacturing and service companies between 21 and 30 years old and an undergraduate degree (Herachwati & Rachma, 2018). They found that age affects career satisfaction and is influenced by the age-related structure of respondents between the ages of 26 and 30 (Herachwati & Rachma, 2018). In the early stages of one's career, there are many hopes and ideals, so employees feel less satisfied with the achievements of a job even when they are happy in their careers (Herachwati & Rachma, 2018). This does not guarantee, however, that the employee is committed to the organization (Herachwati & Rachma, 2018). Employees will not hesitate to leave the organization where they are currently working and move on to another organization in the same field (Herachwati & Rachma, 2018). The results showed a positive relationship between organizational commitment and career commitment. Employees with high organizational commitment are motivated to excel on a career path in the organization. Therefore, organizations must continue looking for other factors besides career satisfaction to foster commitment (Herachwati & Rachma, 2018).

Blair-Loy and Cech (2017) studied how cultural meanings influence peoples' experiences of work-life demands. This study centered on employees' cultural beliefs about the importance of work in their lives using survey data to investigate the effects of employees embracing elements of creation (Blair-Loy & Cech, 2017). The participants were women researchers and professionals in science and technology who embraced work devotion (Blair-Loy & Cech, 2017). This cultural model looks at career commitment and organizational dedication in feeling exhausted and overloaded by someone's role, actual hours worked, and family

responsibilities (Blair-Loy & Cech, 2017). The study involved mixed methods using survey data and a case study of women from IRIS, a nonprofit organization. The participants included 305 senior women researchers and professional service providers in the science and technology industries, members of IRIS, corporate firms, government agencies, universities, and service firms serving science and technology organizations in California (Blair-Loy & Cech, 2017). The focus of this study was the cultural beliefs about work influence and how people interpret work and family demands based on the professional experience of women who feel overworked and continue their career dedication for fear of penalties in employment (Blair-Loy & Cech, 2017). Unfortunately, few scholars have focused on high-status women researchers and professional service providers in nonacademic science and technology industries (Blair-Loy & Cech, 2017).

### **Career Commitment as a Moderator**

Career commitment began from research conducted by Blau (1985) on professionalism. Blau categorized six professional characteristics of career commitment: expertise, autonomy, commitment to work and profession, profession identification, ethics, and collegial maintenance of standards. One aspect, commitment to work, refers to a person's dedication to work and aspirations to a career (Blau, 1985). Career commitment is the attitude of an individual working towards a lifelong pursuit of building a meaningful career (Carswell & Allen, 2000). Career commitment includes how work activity is reflected in a person's life plan and a person's desire to keep working in his chosen career (Carswell & Allen, 2000). Commitment is vital to organizations because employers seek individuals who will help an organization succeed through their professional development efforts and dedication (Carswell & Allen, 2000). Career commitment is further defined as the power level of one's motivation to keep working on the career role that has been chosen and is being undertaken at the moment (Carswell & Allen, 2000). Blau's (1985) survey is used as a measurement of career commitment variables reflecting indicators such as employee consideration for switching profession based on salary received, employee's desire to have a career for themselves in the current job, the level of motivational strength of employees to

continue in their profession, and the views of employees on how excellent the work is currently.

Career commitment as a moderator to organizational commitment has been researched in numerous studies outside of the United States concerning women's turnover and career satisfaction within industries like manufacturing, hospitals, schools, and law firms. Herachwati and Rachma (2018) studied career satisfaction on organizational commitment and career commitment. Their results determined organizational commitment's effect as a variable mediating the relationship between career satisfaction and career commitment (Herachwati & Rachma, 2018). The 166 participants in this study were from manufacturing and a service company with at least 2 years of experience (Herachwati & Rachma, 2018). The results showed four impacts: the influence of career satisfaction on career commitment, the power of career satisfaction on organizational commitment, the effect of organizational commitment on career commitment, and the influence of career satisfaction on career commitment (Herachwati & Rachma, 2018). The findings of this study may help organizations in career development planning, personal career development growth, and awareness of their role in the organization (Herachwati & Rachma, 2018).

Various research studies involved career commitment as a moderator with perceived organizational support using participants outside of the United States in hospitals and academic organizations. Lin and Chen (2004) studied career commitment as a moderator in a study about turnover intentions. This study was conducted in six hospitals in Taipei, Taiwan, with 298 hospital staff (Lin & Chen, 2004). Employees with high perceived organizational support showed enhanced organizational commitment with career commitment as a moderator (Lin & Chen, 2004). The model was directly influenced by organizational commitment and justice (Lin & Chen, 2004).

Furthermore, the results showed that perceived organizational support and organizational justice influences on organizational commitment are comparable for high and low career commitment groups (Lin & Chen, 2004). The study involved contrasting high and low career commitment groups using the moderating effects of



career commitment on each relationship. Lin and Chen specified that a limitation of the study was showing career commitment as a significant moderator in this study, and additional research needs to be tested for validity across different industry fields besides hospitals (Lin & Chen, 2004).

Jyoti et al. (2021) studied organizational commitment and person-job fit in government higher education in India based on teachers. The study aimed to explore the impact of person-job fit on organizational commitment through career commitment and job involvement in finding the best employees to generate higher commitment and job involvement (Jyoti et al., 2021). Jyoti et al. (2021) recommended that the same relationships between job involvement and career commitment should be studied in other industrial sectors and concluded that different outcomes such as job satisfaction, career satisfaction, work ethics, and job performance should be considered to understand these concepts.

Wallace (2013) studied career commitment associated with social relationships related to well-being in western Canada. This author investigated whether the interaction effects of social relationships are harmful or beneficial in the same domain or different domains (Wallace, 2013). The participants were 1,436 lawyers. The results showed that domain specificity is not a key to documenting interaction effects and suggested that not all support resources or interactive activities are beneficial and may harm employees' well-being and career commitment (Wallace, 2013). The limitations of this study were based on restricted measures of social integration, and the analysis was partial to a single high-status professional occupation (Wallace, 2013) with partial measures of social integration in the community. Some of the findings of this particular occupation might be considered part of the work-related variables critical to lawyers' well-being and career commitment (Wallace, 2013).

Ahmed (2019) analyzed the relationship between self-efficacy, career satisfaction, organizational commitment, and career commitment. The 133 participants represented an engineering department in a manufacturing company in Saudi Arabia (Ahmed, 2019). The results showed that self-efficacy and organizational commitment positively correlated with career commitment within a

manufacturing company (Ahmed, 2019). Employees with the highest organizational commitment were committed to their careers and remained in the organization (Ahmed, 2019). The organization's goals and values inspire employees to achieve their profession, while self-efficacy influences their career commitment (Ahmed, 2019).

Nesje (2017) conducted a study investigating professional commitment as a moderator between job demands and emotional exhaustion in Norwegian nurses. The participants were 388 Norwegian nurses with a minimum of 3 years of experience (Nesje, 2017). The results showed that individuals with a higher degree of professional commitment had a weaker association between job demands and emotional exhaustion than nurses with a lower degree of responsibility (Nesje, 2017). The relationship between job demands and emotional exhaustion is theoretically founded and empirically supported (Nesje, 2017). The moderator effect of commitment was also theoretically researched through the buffering stress-intensifying mechanisms (Nesje, 2017). Further research on this topic needs to be conducted on nurses with more tenure (Nesje, 2017). In addition, more research is required to support explicit interventions that would enhance the commitment of individuals and conduct longitudinal studies to determine whether recruiting students who identify with the values and goals of their profession are better at handling job demands (Nesje, 2017).

Seierstad and Kirton (2015) researched work-life balance in women in high commitment careers like politicians and nonexecutive directors in Norway. This study investigated gender equality in the Norwegian labor market by exploring women's lived work-life balance experiences (Seierstad & Kirton, 2015). This study conducted 25 interviews with politicians and 21 interviews with nonexecutive directors with the respondents all white women, married with children (Seierstad & Kirton, 2015). Consequently, the findings stemmed around individual flexibility in the nonexecutives corporate board of directors and the politicians due to the demand on some weekends traveling to other locations (Seierstad & Kirton, 2015). The results highlighted the competing and contradictory policy practices at different levels around work-life balance and

social expectations in Norway (Seierstad & Kirton, 2015). The social democratic approach aims to achieve gender equality by strengthening the ties of men to the family and women's connections to working careers (Brandth & Kvande, 2002). These authors identified the need for a cultural shift at the workplace level and more focus on the role of men in the household within the Norwegian gender equality for overcoming challenges identified by women in high-commitment careers; however, there is still a concern for Norwegian working women, just like women in other countries (Haas & Rostgaard, 2011).

Odunayo et al. (2014) conducted a study to analyze career commitment's influence on bankers' organizational commitment in Lagos, Nigeria. The participants were 275 bankers from Unity Bank (Odunayo et al., 2014). The data were collected using organizational commitment scale and career commitment scale (Odunayo et al., 2014). The results revealed that career commitment influences organizational commitment meaning the higher the employees' commitment to their career, the higher their commitment to the organization (Odunayo et al., 2014). Based on these results, the researchers recommended that management improve employees' commitment to their jobs to boost their commitment to their organization to increase productivity and organizational effectiveness (Odunayo et al., 2014). Highly career-committed employees are more motivated to contribute and stay committed to organizations that support their career satisfaction (Odunayo et al., 2014). Therefore, organizations should create policies and practices that support career progression, promotion, internal training, and job security to develop a strong connection in their place of work and career (Odunayo et al., 2014). Odunayo et al. concluded that having a committed workforce is a competitive advantage in the banking sector and globally, with future research focusing on the influence of job characteristics like variety, identity, significance, autonomy, and feedback (Odunayo et al., 2014).

Cai et al. (2018) conducted a study in China in the healthcare industry on full-time chemists linking career commitment through organizational commitment. Data were collected from 396 full-time chemists and laboratory specialists in a health care organization in China (Cai et al., 2018). Their results indicated that

organizational commitment mediated the relationships between employee-organization framework and career commitment (Cai et al., 2018). The researchers revealed that the employee perspective was the most appropriate source of measurement to quantify perceived career commitment and organizational commitment since these are all subjective perceptions; however, future research should consider collecting data from multiple sources to quantify further the findings (Podsakoff et al., 2003). A limitation of this study involved the participants as full-time chemists and lab specialists from a single private organization. Future studies should expand the STEM workforce to use more significant variability in the distribution of occupations and employee work status in STEM fields (Cai et al., 2018).

Finklea and Osborn (2019) studied college students' experience and anxiety about choosing a primary or career path. The investigators of this study analyzed commitment anxiety through cognitive information processing theory and career tension (Finklea & Osborn, 2019). The participants included 101 undergraduate college students enrolled in an elective career planning course from a single public university in the southeastern United States (Finklea & Osborn, 2019). Their results showed a positive relationship between a student's commitment anxiety and career tension levels, suggesting that commitment anxiety and career tension are distinct but related concepts (Finklea & Osborn, 2019). As a result, career counselors can aid clients in reducing and managing emotional concerns that accompany career concerns (Finklea & Osborn, 2019).

Furthermore, cognitive information processing theory supports that commitment anxiety and career tension can perpetuate a student's career problem-solving process more complex (Finklea & Osborn, 2019). Therefore, future researchers should study client populations and samples in other geographic regions. In addition, future researchers should explore interventions related to commitment anxiety and career tension and determine which interventions would minimize both concepts and the types of interventions targeted to address these concepts' unique characteristics (Finklea & Osborn, 2019). In addition, studies

should examine how commitment anxiety and career tension interventions affect career decision-making outcomes (Finklea & Osborn, 2019).

Kim et al. (2016) researched the perception of a linkage between organizational ethical behavior and career success using career commitment and motivation to participate in training and turnover. Data were collected from 389 employees in Korea, with results displaying that career commitment mediated the relationship between ethical behaviors and career success (Kim et al., 2016). The relationship between perception of organizational politics and turnover intentions was partially mediated by career commitment (Kim et al., 2016). Employees' career commitment is compatible with organizational commitment, which shares a balance (Baugh & Roberts, 1994). The limitations of this study included that data were from a single source, and future researchers should further validate results by using additional staggered data collection methods (Kim et al., 2016). Another limitation is future research should replicate and extend to other populations (Kim et al., 2016). Future scholars can investigate the effects of potential mediators or moderators and other variables which could influence the relationship between organizational behaviors or the perception of organizational politics and career commitment (Kim et al., 2016).

Ahmed's (2019) research showed that self-efficacy and organizational commitment have a positive relationship among participants in a manufacturing company where self-efficacy influences career commitment. Research on career commitment as a moderator has been conducted in other countries like Norwegian in the nursing fields (Nesje, 2017). Seierstad and Kirton (2015) studied women in high-commitment careers through a qualitative study investigating the levels of work-life balance and practices within companies.

Cai et al. (2018) conducted a study on Chinese chemists in the healthcare industry, revealing that the most appropriate source of measurement to quantify perceived career commitment is shown in the employee perspective. Future research needs to be considered in collecting data from multiple sources. Finklea and Osborn's (2019) study involved college students at a single university in the southeastern United States in analyzing the results between students' commitment

anxiety and career tension levels. Future research would benefit from other client populations and samples from different geographic regions (Finklea & Osborn, 2019). Researchers in employee commitment and motivation have not done enough to combine their research (Meyer et al., 2004). Various studies have proven the benefits of having a motivated and committed workforce in organizations (Cohen, 2003; Meyer et al., 2004; Morrow, 1983).

Multiple scholars have used career commitment as a moderator and mediator from organizational commitment to job satisfaction to motivation. Most of these studies were conducted outside of the United States and in other industries like healthcare and education. Some of these studies involved only women in analyzing career commitment as a moderator in the relationship of commitment. More research needs to be replicated on women in STEM careers in the United States.

### **Summary of Literature Review**

The summation of this literature review provides research support for the analysis of organizational justice and perceived organizational support when career commitment (Blau, 1985) is the moderator of organizational commitment (Mowday et al., 1979) among women in STEM careers in the United States. The independent variables of organizational justice (OJ) include four dimensions known as distributive, procedural, interpersonal, and informational (Greenberg & Colquitt, 2005). The second independent variable in this research is perceived organizational support (POS) (Eisenberger et al., 1986).

Organizational justice is one of the factors in the quality of interaction between the worker and the organization and is known as a cognitive process internal to the individual (Balven et al., 2018; Çelik, 2020; Ceylan & Sulu, 2011). A cognitive function is internal to the individual, the rules and social norms governing how outcomes, rewards, and punishments should be distributed, the procedures for making distribution decisions, and how people are treated interpersonally.

Interpersonal justice concerns how employees feel they are treated with respect and courtesy by supervisors (Bies & Moag, 1986; Greenberg, 1993;

Moorman, 1991). Fair perceptions are positively associated with organizational citizenship behaviors and negatively related to withdrawal indicators such as absenteeism and turnover intention (Cohen-Charash & Spector, 2001; Colquitt et al., 2001). ÇeliK (2020) conducted a study on a university's administrative staff in Turkey measuring the effect of organizational justice and organizational commitment on employee performance and measured the extent of employee performance increase in companies' commitment.

Job insecurity was indirectly related to organizational citizenship behaviors and self-rated performance through organizational justice-distributive, procedural, and interactional (Sora et al., 2021). The current study involved a mediation model explaining the relationship between a psychological contract and social exchange theory with a mediating role of organizational justice in terms of the type of contract. One study showed organizational justice as a concept in explaining employees' perceptions of an organization and their performance impacts on organization performance (Elamin & Alomaim, 2011; Perez et al., 2013). Another study showed a positive correlation between organizational justice and work motivation, confirming the importance of managerial justice perceptions for employees' underlying work motivation (Oren et al., 2013). The results showed that perceptions of organizational justice influenced job satisfaction for both Saudi employees and foreign workers (Elamin & Alomaim, 2011). This research further showed that honesty, courtesy, timely feedback, respect for rights, and the chance to express viewpoints are critical components for securing a satisfied workforce in Saudi Arabia.

Sarrafoğlu and Günsay (2020) researched the effects of organizational justice and silence on job satisfaction and employees' intention to leave their jobs. Their results showed significant relationships between distributive, procedural, and interpersonal sub dimensions of organizational justice and job satisfaction and intention to leave (Sarrafoğlu & Günsay, 2020). There was also a positive effect of organizational justice perception on job satisfaction (Sarrafoğlu & Günsay, 2020). Wei et al. (2020) studied psychological empowerment and organizational justice in Chinese employees related to their voice behavior and how organizational justice

moderates the effect of psychological charge on voice behavior. Their results showed that psychological empowerment and organizational justice were related to and explained the variance in voice behavior (Wei et al., 2020).

Vaamonde et al. (2018) identified the role of turnover intentions (TI) in strengthening and retaining valued employees for organizations by looking at mechanisms of turnover intention. The results of their structural equation modeling revealed that perceptions of distributive, procedural, and interpersonal justice indirectly affect turnover intention through burnout (Vaamonde et al., 2018). In addition, job satisfaction and perceptions of informational justice positively affected TI through job satisfaction.

Caleo (2016) studied gender roles leading to biased reactions in men's and women's work behaviors. The results of this investigator's four experimental studies demonstrated that men and women receive differential performance evaluation ratings and reward recommendations when they violate specific organizational justice rules that coincide with the content of gender stereotypes (Caleo, 2016). The research findings implied that gender norms could potentially damage and limit women in the work environment (Caleo, 2016). The research centered on the importance of organizational justice, a multidimensional construct that captures employee perceptions of fairness in the workplace. Hashmi and Waqar (2018) investigated the relationship between organizational justice and workplace reactivity using telecommunication employees based on gender. Their results showed that organizational justice correlates negatively with workplace reactivity and its components in all three subscales—that is, when the score of organizational justice perception increases, the score on workplace reactivity decreases (Hashmi & Waqar, 2018).

For women, interactional justice perception is common, leading to dissatisfaction; however, it can be controlled by knowing the specific individual's general tendency to perceive interactions as unfair and by looking at the workplace scenarios more objectively (Hashmi & Waqar, 2018). Kobayashi and Kondo (2019) examined professionals and managers in Japan and their interactional justice between managers and professionals to other employees. Their results showed that



low organizational justice leads to a higher risk of poor health than other workers. Their study examined the associations between perceived organizational justice and psychological distress and stress-related behaviors (Kobayashi & Kondo, 2019). Mathisen et al. (2013) studied how female directors of corporate boards of directors (BoD) experience boardroom dynamics, proposing that female directors often established an out-group within the BoD, preventing them from experiencing positive boardroom dynamics. These researchers reported that female directors experience less justice, lower cohesion, and higher conflicts within the BoD than their male counterparts (Mathisen et al., 2013).

Positive relations in honesty, fairness, equality, and dignity among employees established an increase in employee level of attachment in organizations and reduced stress levels in work environments (Mushtaq et al., 2020). Nazir et al. (2019) analyzed the relationships between organizational justice, innovative organizational culture, POS, affective commitment, and innovative behavior (IB). Their results indicated that organizational justice (distributive, procedural, and interactional justice), innovative organizational culture, and perceived organizational support are significantly related to affective commitment and employees' IB (Nazir et al., 2019). There is a close connection between individual performance and company performance; if employee work performance is good, company performance will also be good (Sinabariba et al., 2018). The performance appraisal aims to develop or motivate people, and the employee will be satisfied if it is perceived to be fair in terms of organizational justice (Crossman & Cook, 2004). Results have shown a correlation between organizational justice and performance appraisal satisfaction contributing to the performance appraisal system in the organization's fairness (Percunda et al., 2020). Organizational justice dimensions are the moderator of the relationship between the need for independence and turnover intention (Birecikli et al., 2016). Supervisors' evaluations and trust relationships in management are also strongly related to distributive and procedural dimensions of organizational justice (Alexander & Ruderman, 1987).

Procedural justice is how the distribution of rewards is generated as objective or subjective and whether they are consistent, accurate, and unbiased (Hashmi & Waqar, 2018; Thibaut & Walker, 1975). Procedural justice indicates that when an organization supports its workers, enhancing employees' relationship within the organization, perceived organizational support enhances their commitment to organizational policies, procedures, and goals (Nazir et al., 2019). When employees experience high levels of procedural justice, they are more likely to develop positive emotions and have higher intentions to stay with an organization (Posthuma et al., 2007). Harris et al. (2020) studied healthcare workers' on procedural justice by defining how workgroup members use fair procedures to make decisions. These scholars found that external clients' justice was a unique predictor of employee organizational citizenship behavior toward clients (Harris et al., 2020). Hausknecht et al. (2009) found perceptions of justice to be a more significant predictor of turnover intentions for high-performing employees than for low-performing employees.

The third dimension of organizational justice is interactional justice, referring to employees' treatment as managers' decisions. Interactional justice comprises two sub dimensions: interpersonal, referring to how much employees are treated at the interpersonal level by superiors transmits respect/respectfulness. The second dimension is informational fairness, referring to truthfulness/trustworthiness of information given to employees when implementing new processes (Cropanzano et al., 2007; Gurbuz & Mert, 2009; Perez et al., 2013; Rodell et al., 2017). Kaur and Carreras (2021) studied procedural justice and interactional justice together, enhancing the effectiveness of causal mapping workshops using Group Explorer software combined with the Decision Explorer tool. Their model showed how participants' voice in group workshops using causal mapping is strengthened with an authentic outcome representing participants' thinking (Kaur & Carreras, 2021). Their results showed a strong correlation between procedural justice, interactional justice, and voice effect (Kaur & Carreras, 2021). The structural equation is the relationship between organizational justice and TI (Vaamonde et al., 2018). The results of this study showed that burnout and job

satisfaction mediate organizational justice and turnover intentions in an interconnected chain (Vaamonde et al., 2018).

Perceived organizational support can be measured using a six-item scale developed by Eisenberger et al. (1997). POS is also positively related to organizational characteristics like fair treatment or job autonomy, which predicts job satisfaction, job involvement, and intention to remain in the organization, and reduced withdrawal behaviors (Rhoades & Eisenberger, 2002). Jolly et al. (2021) studied perceived organizational support indirectly in the hospitality industry with managers to understand whether enriching job characteristics such as job variety may diminish the relationship between pay and benefits satisfaction. These scholars found that low pay and benefits related to job variety could reduce employee turnover by improving employee-organization relationships (Jolly et al., 2021). Huang et al. (2021) reported on the role of perceived organizational support in the semiconductor industry findings of a study that examined the influence of leader-member exchange (LMX) on employees' turnover intention and presentism. Their results revealed that perceived organizational support significantly related to employees' turnover intention and mediated the relationship between LMX and turnover intention (Huang et al., 2021). The study results are significant for high-tech companies, which continuously strive for innovation, efficiency, and sustainability (Huang et al., 2021).

Perceived organizational support typically helps organizations retain employees, yet POS may ironically repel some older workers to the extent that it imposes an undesirable, excessive obligation (Garcia et al., 2021). Lee and Peccei (2007) found that POS led to more significant affective commitment through socio-emotional mechanisms. The findings' summary remained open because the results only examined the interactive effects of psychological contracts and POS among older workers. Côté et al. (2021) evaluated the mediating effect of work engagement in the relationship between presentism and job satisfaction. Perceived organizational support refers to the individuals' perception of how the organization values their contributions and cares about their well-being (Côté et al., 2021).

Nazir et al. (2019) analyzed the relationships between POS, organizational justice, innovative organization culture, affective commitment, and innovative behavior. Their results showed that POS, organizational justice, including distributive, procedural, and interactional justice, and innovative organization culture are significantly related to affective commitment and employees' IB (Nazir et al., 2019). Singh et al. (2018) investigated factors that trigger the relationship between work-family conflict (WFC) and women engineers' intention to leave their careers. Harris (2018) studied positive associations of perceived organizational support (POS) with desirable workplace outcomes like high performance and high commitment. Their results support that the relationships between POS and key individual outcomes rated by the supervisor may be nonlinear (Harris, 2018).

Organizational commitment is a physical link between an employee's attitude toward their organization or a psychological level that categorizes employee relationships within their organization, which results in the decision to continue membership in the organization (Herachwati & Rachma, 2018). Landry and Vandenberghe (2009) proposed that organizational commitment is the psychological state that characterizes the relationship between employees and employers. Shabir and Gani (2020) conducted a quantitative study examining 580 healthcare employees in India on the significance between work-life balance and organizational commitment among women in healthcare. Their results showed a positive relationship between work-life balance and organizational commitment (Shabir & Gani, 2020). Ramos et al. (2021) studied organizational commitment in the financial industry, stating that further research was needed to test motivational and organizational culture barriers in organizations and concluded that workers who perceived barriers to advancement would have less job satisfaction and low organizational commitment (Ramos et al., 2021).

Al Momani (2017) examined the mediating effect of organizational commitment on the relationship between work-life balance and intention to leave. This scholar's results showed that adopting work-life balance programs in Jordanian hospitals would improve the commitment of working women, enhance employee participation in decision-making, and improve organizational

commitment (Al Momani, 2017). Holmgren et al. (2013) determined whether organizational climate and work commitment predict a return to work and discovered being engaged in work or committed to working positively influences occupational health for the individual and the organization. Delobbe and Vandenberghe (2000) studied organizational commitment among Belgian employees, examining the reliability and validity of four dimensions of organizational commitment, internalization, compliance, and practical and continuance commitment.

Career commitment is the attitude of an individual working towards a lifelong pursuit of building a meaningful career (Carswell & Allen, 2000). Career commitment includes how work activity is reflected in a person's life plan and a person's desire to keep working in his chosen career (Carswell & Allen, 2000). Herachwati and Rachma (2018) researched the effect of career satisfaction on organizational commitment and career commitment as a variable that mediated the relationship between career satisfaction and career commitment. These authors found that age affects career satisfaction and is influenced by the age-related structure of respondents between the ages of 26 and 30 years old (Herachwati & Rachma, 2018).

Malone and Issa (2013) studied job satisfaction, work-life balance, and organizational commitment in women employed in the U.S. construction industry. Their results showed differences in the participants' commitment over different time intervals and their satisfaction with employer benefits based on whether they had children under 21 years old living at home (Malone & Issa, 2013). Park and Jung (2015) reviewed how future time perspective is related to the career-related variables of occupational self-efficacy, career commitment, and organizational commitment and how it indirectly influences turnover intention. Their results showed that future time perspective directly affected career commitment and indirectly affected turnover intention through occupational self-efficacy and career commitment (Park & Jung, 2015).

Koslowsky et al. (2012) examined how the relationships between career commitment, organizational commitment, and intentions to leave were moderated

by the ease of movement and sector affiliation. Through this study, the researcher aimed to understand the differences between career and organizational commitment and how employers in the high-tech sector should advance employees' organizational commitment (Koslowsky et al., 2012). Finally, Aggarwal et al. (2018) tested the mediation role of women's psychological empowerment on the relationship between structural empowerment and employees' affective commitment in nursing in India. Their results showed that psychological empowerment mediates all the proposed relationships between different dimensions of structural charge and affective commitment (Aggarwal et al., 2018).

Mushtaq et al. (2020) conducted a study contributing to ethical behavior by assessing the role of justice, supervisor support, and group cohesiveness indirectly affecting organizational commitment through ethical behavior. The results of this study supported that ethical behavior as a mediator, organizational justice, and group cohesiveness is significantly associated with organizational commitment (Mushtaq et al., 2020). Zhou et al. (2014) studied nurses' job burnout to test the mediator role of organizational commitment, and there were significant relationships between core self-evaluations and dimensions of job burnout and organizational commitment.

Blair-Loy and Cech (2017) studied how cultural meanings influence peoples' experiences of work-life demands. The focus of this study was the cultural beliefs about work influence and how people interpret work and family demands based on the professional expertise of women who feel overworked and continue their career dedication for fear of penalties in employment (Blair-Loy & Cech, 2017). Seierstad and Kirton (2015) researched work-life balance in women in high commitment careers like politicians and nonexecutive directors in Norway. Their results highlighted the competing and contradictory policy practices at different levels around work-life balance social expectations in Norway (Seierstad & Kirton, 2015).

Herachwati and Rachma (2018) studied career satisfaction on organizational commitment and career commitment with the aim of determining organizational commitment's effect as a variable mediating the relationship between career

satisfaction and career commitment (Herachwati & Rachma, 2018). The results showed four impacts: the influence of career satisfaction on career commitment, the power of career satisfaction on organizational commitment, the effect of organizational commitment on career commitment, and the influence of career satisfaction on career commitment (Herachwati & Rachma, 2018).

Lin and Chen (2004) studied career commitment as a moderator against turnover intentions. Their results showed that perceived organizational support and justice influences on organizational commitment are similar for high and low career commitment groups (Lin & Chen, 2004). Jyoti et al. (2021) studied career commitment and job involvement in government higher education teachers in India based on person-job fit and organizational commitment. These investigators aimed to explore the impact of person-job fit on organizational commitment through job involvement and career commitment in finding employees to generate better job involvement and commitment (Jyoti et al., 2021).

Wallace (2013) completed a study about social relationships related to well-being and career commitment in Western Canada. These authors investigated whether the interaction effects of social relationships were harmful or beneficial in the same domain or different domains. Their results showed that domain specificity is not a key to documenting interaction effects and suggested that not all support resources or interactive activities are beneficial and may harm employees' well-being and career commitment (Wallace, 2013).

Ahmed (2019) studied the relationship between self-efficacy, career satisfaction, organizational commitment, and career commitment. The results showed that self-efficacy and organizational commitment positively correlate with career commitment within a manufacturing company (Ahmed, 2019). Nesje (2017) conducted a study investigating professional commitment as a moderator between job demands and emotional exhaustion in Norwegian nurses. The results showed that individuals with a higher degree of professional commitment had a weaker association between job demands and emotional exhaustion than nurses with a lower degree of responsibility (Nesje, 2017).

Odunayo et al. (2014) conducted a study to analyze career commitment's influence on bankers' organizational commitment in Lagos, Nigeria. Based on the results, the researchers recommended that by management improving employees' commitment to their jobs would boost their commitment to the organization and increase productivity and organizational effectiveness (Odunayo et al., 2014). In addition, highly career-committed employees are more motivated to contribute and stay committed to organizations that support their career satisfaction (Odunayo et al., 2014).

In the healthcare industry in China, Cai et al. (2018) researched full-time chemists linking career commitment through organizational commitment, where organizational commitment mediated career commitment based on the social exchange theory. The findings revealed that the employee perspective was the most appropriate source of measurement to quantify perceived career commitment and organizational commitment since these are all subjective perceptions (Cai et al., 2018).

Finklea and Osborn (2019) studied college students' experience and anxiety about choosing a primary career path. These researchers analyzed commitment anxiety through cognitive information processing theory and career tension (Finklea & Osborn, 2019). Their results showed a positive relationship between a student's commitment anxiety and career tension levels, suggesting that commitment anxiety and career tension are distinct but related concepts (Finklea & Osborn, 2019). Kim et al. (2016) researched the perception of a linkage between organizational ethical behavior and career success using career commitment and motivation to participate in training and turnover. The relationship between perception of organizational politics and turnover intentions was partially mediated by career commitment (Kim et al., 2016). There is a need to study career commitment of women in STEM careers in the United States.

Research is needed on career commitment and organizational commitment among women in STEM careers in the United States. In addition to career commitment among women in STEM careers, researchers have indicated a retention issue among women leaving STEM careers at a higher rate than men



(Cech & Blair-Loy, 2019; Corbett & Hill, 2015). For example, in one study, the scholars reported that women leave the technology industry at a rate of 41% compared to only 17% for men (Ashcraft et al., 2016), and surveys have shown that women are half as likely as men to remain in engineering careers by the time they reach their 50s (Hill et al., 2010). Furthermore, the high turnover rates among women in STEM careers negatively affects businesses given the recruiting and training efforts in losing highly educated, skilled employees (Lambert, 2003; Ng & Feldman, 2007).

The imbalance of women in STEM careers reflects a lack of workforce diversity. Diversity in the workforce benefits organizations by enhancing innovation and organizational performance by representing a well-rounded set of backgrounds and experiences (Diaz-Garcia et al., 2013; Friedman et al., 2016; Herring, 2009; Hoever et al., 2012; Steele & Derven, 2015). Continual innovation is necessary to meet consumers' ever-changing needs and demands for products and services (Dobni et al., 2018; Steele & Derven, 2015). Organizations need to build products and services to meet the interests of market populations that are becoming more diverse and therefore need more internal diversity to serve a broader range of customers (Salomon & Schork, 2003; U.S. National Science & Technology Council, 2018).

As revealed in the current literature review, there is a need to study career commitment as a moderator to organizational commitment among women working in the United States in STEM careers. There are limited studies investigating the retention of women in STEM careers through these variables. The current researcher explored career and organizational commitment variables to understand why women stay in STEM careers. The next chapter covers the research design and methodology of the instruments and population used to investigate the influence of these variables on the retention of women in STEM careers.

### **Chapter 3 – Methodology**

This chapter outlines the research methodology used to investigate the influences of organizational justice, perceived organizational support, and career commitment as a moderator to organizational commitment on women's intention to continue in STEM careers. The researcher administered four previously designed surveys from Blau (1985), Colquitt et al. (2001), Mowday et al. (1982), and Eisenberger et al. (1986) to collect the data related to these variables.

A quantitative approach was employed to measure and analyze the statistical significance of organizational commitment when career commitment is a moderator. The researcher calculated descriptive statistics and conducted hierarchical regression analysis to determine the effect of career commitment as a moderator to organizational commitment using the independent variables of organizational justice and perceived organizational support.

The researcher created and distributed an online survey to working women in STEM careers in the United States. These individuals were recruited using nonprobability sampling to ensure that they possessed the relevant characteristics that would enable them to inform this study (Creswell & Creswell, 2018). The recruiting of individuals involved a synthesis of two sampling methods. The first sampling method was convenience sampling to obtain willing and available participants to be studied (Creswell & Creswell, 2018). The other sampling method of recruiting participants was snowball sampling, in which participants were asked to identify others to become members of the sample (Creswell & Creswell, 2018). The sample population involved stratification by identifying the characteristics of the population members before selecting the sample (Creswell & Creswell, 2018). The specific characteristics of the individuals were (a) identifying with the female gender and (b) having worked in science, technology, engineering, and mathematics for a minimum of 2 years in the United States.

The data analysis involved independent variables of organizational justice and perceived organizational support with organizational commitment and then conducting another comparison by using career commitment as a moderator in the equation across women working in STEM careers in the United States. The

remaining sections in this chapter include a justification of the research design, variables, population and sample, instrumentation, data cleaning, ethical considerations, and data analysis procedures to test the hypotheses. The chapter concludes with a study of the variables.

### **Research Design**

A quantitative approach was used to examine the relationships between variables when working with larger samples and applying findings to a more general population (Creswell & Creswell, 2018). In addition, a quantitative approach was appropriate for this study due to the nature of the study population and the need to investigate the statistical relationships between multiple variables and make inferences and predictions based on the statistical relationships between variables (Creswell & Creswell, 2018). The variables in this study centered around career commitment of women working in the United States in STEM careers with a minimum of 2 years' experience.

### **Instrumentation**

An online survey was created in Qualtrics and the link to the survey was shared via email to the participants and professional organizations. Qualtrics complies with all federal regulations regarding privacy and is ISO 270001 compliant (Barnhoorn et al., 2015). The data was exported from Qualtrics to SPSS 28.0 statistical software application for statistical and analytical analysis. Descriptive statistics and regression testing were conducted to analyze the data. The survey questions came from four different researched and validated instruments used in measuring organizational justice, perceived organizational support, career commitment, and organizational commitment. The survey included 10 demographic items and 47 content questions, using 5-point and 7-point Likert scales with six to eight inquiries related to the control variables (see Figure 2). The online survey included an implied consent statement before entering the question section of the survey. Before entering the response sections of the survey, participants were presented with a clear explanation of the study's purpose and a list of the procedures. The survey was completely anonymous, and no personally

identifiable information was captured as part of the survey process. There were no data privacy concerns because participants did not provide any personal information.

The four different instruments used in this research were from four different authors. The moderating variable, career commitment, was measured using Blau's (1985) survey with a coefficient alpha range from .76 to .88. The first independent variable, perceived organizational support, was measured using Eisenberger et al.'s (1986) survey describing employee perceptions about the organization. The reliability coefficient alpha values range from .74 to .95. The second independent variable, organization justice, was measured using Colquitt et al.'s (2001) scale to assess employees' perceptions of fairness. This scale has four dimensions: distributive, procedural, informational, and interpersonal justice. The reliability coefficient alpha values range from .78 to .92 (Colquitt et al., 2001). The dependent variable is organizational commitment to measure attitudinal or affective commitment and correlated positively with power and success of employee's work, perceived opportunity for advancement, work involvement, and employee satisfaction with work schedule flexibility (Fields, 2013). This researcher utilized the shortened version of the 15-item Organizational Commitment Questionnaire (OCQ) by Mowday et al. (1982), consisting of nine items. The reliability has a coefficient alpha value ranging from .74 to .92, as noted in the variable coding table (Appendix B).

Measurements of the variables of organizational justice, perceived organizational support, organizational commitment, and career commitment were based on participants' ratings on the statements in the questionnaire. These values were determined on a Likert scale with a value of 1 (*strongly disagree*) to 5 (*strongly agree*). In five items, organizational justice, including distributive, procedural, interpersonal, and informative, measured by Colquitt et al. (2001) instrument ( $\alpha = 0.93$ ). The instrument by Eisenberger et al. (1986) measured perceived organizational support through five items ( $\alpha = 0.94$ ). The instrument of Mowday et al. (1982) measured organizational commitment with five items ( $\alpha = 0.92$ ). Finally, career commitment, was measured using five items on Blau's (1985)

instrument ( $\alpha = 0.88$ ). The variable coding table identifies all instruments and variables (see Appendix B).

### ***Control Variables***

A control variable is a type of independent variable that is a secondary interest and neutralized through statistical procedures to eliminate it as a possibility (Creswell & Creswell, 2018). Control variables are generally personal demographic attributes or characteristics (Tuckman, 1999). The control variables in this study were time in career, time in the organization, and education (bachelor's degree or lower and master's degree or higher). Other demographic variables in this study included the area of STEM and age.

### ***Organizational Justice (IV)***

Organizational justice is based on four components: distributive justice, procedural justice, interpersonal justice, and informational justice. In addition, organizational justice is defined as the variable of work-life balance and how participants felt about the workplace factors. Colquitt et al. (2001) developed and validated their survey in a study that looked at the dimensionality of organizational justice, including work-life balance. Their results provided evidence to create validity for a new justice measure. The survey consisted of 19 open-ended questions, and the responses were based on a 5-point Likert scale (1 = *to a small extent* to 5 = *to a large extent*).

### ***Perceived Organizational Support (IV)***

In the current study, perceived organizational support was defined as "workers' global views of how an organization appreciates their contributions and cares about their well-being" (Eisenberger et al., 1986, p. 501), which affects their job satisfaction, job outcomes, and job commitment. Organizational support is essential to all employees in an organization and even more important to women in STEM careers due to various challenges. For example, organizational support includes allowing employees to participate in decision-making, listening and responding to concerns, providing support for work-life balance, offering fair

rewards, and providing growth opportunities. In addition, employees with higher levels of POS have been shown to have more trust, obligation, and affective commitment to their organizations (Rhoades & Eisenberger, 2002). The survey consisted of 17 open-ended questions, and the responses were based on a 7-point Likert scale (1 = *strongly disagree* and 7 = *strongly agree*).

### ***Organizational Commitment (DV)***

In this study, organizational commitment was defined as the strength of the employee's perceived relationship with the company, which promotes their continued employment with the same company. The scale by Mowday et al. (1982) is the most popular measure of organizational commitment, and it gauges attachment to the organization in its broadest sense. Measurement of organizational commitment variables uses instruments from Mowday et al. to quantify employees' emotional attachment, identification, and involvement. Previous researchers have examined organizational commitment as a dependent variable (Earl & Bright, 2007).

Responses were based on the instrument of Mowday et al. (1982) to measure the perceptions of participants' organizational commitment. The scale consisted of nine items measuring attitudinal or affective commitment. This measure has been used to describe a commitment to a profession and an organization (Vandenberg & Scarpello, 1994). All the statements were measured on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*; Aggarwal et al., 2018; Fields, 2013).

### ***Career Commitment as a Moderator***

In this study, career commitment was defined as the power level of a person's motivation to keep working in the career role chosen and being pursued. Measurement of career commitment variables uses Blau's (1985) model to identify individuals' commitment to their careers and profession. Blau's model uses indicators that measure employee consideration for switching professions based on salary received, employee desire to have a career for themselves in the current occupation, the level of motivational strength of employees to continue their

profession, and the views of employees about the work being performed (Fields, 2013).

A moderating variable is a predictor variable that affects the direction and the strength of the relationship between independent and dependent variables (Thompson, 2006). A moderated hierarchical regression analysis was conducted to test the simultaneous contribution of antecedents, moderators, and their interaction. Before the analysis was performed, the relevant variables were identified (Koslowsky et al., 2012).

### **Procedure**

Participants were recruited through professional network connections and professional organizations. For example, emails were sent out from the researcher's SEU email account to professional network connections of women in STEM careers. In addition, social media posts were created on personal Facebook and LinkedIn accounts with a link to the survey for anonymity. The social media posts used hashtags to reach members of professional organizations sites like Women in Tech Leadership, Women Who Code, AAUW Leadership & Women in STEM, STEM Women, Women in STEM @ FIT, Inspiring Women in STEM, and Women in STEM Thriving. The target population was specifically women working in STEM careers as scientists, technologists, engineers, or mathematicians.

Data were collected through an online survey distributed to approximately 500 female participants working in full-time positions in STEM careers in the United States, who were recruited through emails (see Appendix B) and social media posts. In addition to the validity of the instruments used in this survey, additional survey questions were used for the control variables (see Figure 2) to ensure the reliability of the survey data. The collected data were prepared for analysis by assigning a numeric score for the record number, assessing the types of scores to use, using SPSS as the statistical program, importing the data into SPSS, and cleaning up the database for analysis (Creswell & Creswell, 2018). After importing the data, those participants were eliminated from the dataset if there were errors in the data or missing scores. Only those participants whose data were complete were included in the data analysis (Creswell & Creswell, 2018). To

mitigate the elimination of any participants or missing data from the study, an answer was required for each question in the survey. In addition, any participant surveys with missing data content scores were removed from the dataset (Creswell & Creswell, 2018). Standard deviation and scatter plots guided the researcher in identifying outliers and scores' upper or lower ceiling effects (Creswell & Creswell, 2018).

### **Population and Sample**

The population of this study included women currently working in STEM careers in the United States for at least 2 years. The researcher determined the need for a sample of at least 110 participants to mitigate the possibility of testing errors and ensure statistical significance (Creswell & Creswell, 2018). Statistical significance testing guided the results in answering the request questions and the hypotheses, assessing whether the observed scores reflect a pattern other than chance (Creswell & Creswell, 2018). The researcher used effect size to identify the conclusions' strength regarding the variables' relationships (Creswell & Creswell, 2018). The number of variables for this study—two independent variables, one dependent variable, and four control variables—met the criteria for statistical testing (Creswell & Creswell, 2018).

Following the proposal defense and IRB approval, data collection occurred over 40 days. The researcher administered the survey through Qualtrics and distributed it via an anonymous link sent out through email and social media to contacts and organizations representing current working women in STEM careers. The number of participant responses was 140. Data cleaning was performed on the dataset by accounting for missing data, duplicates, outliers, and deleted cases from the dataset, resulting in a final sample size of  $n = 111$  (Table 2). Table 2 shows the dispersion of the responses by age band, STEM field, education level, and years of experience.



**Table 2***Frequency Counts for Control Variables*

Variable and category	<i>n</i>	%
<b>Age</b>		
20–30	16	14.4%
31–40	37	33.3%
41–50	26	23.4%
Over 50	32	28.8%
<b>Field of STEM</b>		
Science	14	12.4%
Technology	57	51.1%
Engineering	36	31.9%
Mathematics	4	3.5%
<b>Education</b>		
Bachelor's or below	51	45.1%
Master's or higher	60	53.1%
<b>Years in organization</b>		
1-10 years	42	37.8%
11-20 years	27	24.3%
21-30 years	29	26.1%
Over 30 years	13	11.7%

*Note.* *N* = 111.

**Data Collection**

The survey was created in the Qualtrics platform to track anonymous survey responses. The survey was open for approximately 40 days. The Southeastern University IRB approved the study on April 27, 2022. The survey was launched on May 16, 2022 and concluded on June 28, 2022. The collected data were exported from Qualtrics using the export feature with reverse and numeric data coding. The following sections address the data cleanup process, each hypothesis's regression analysis, and a summary of the findings. The survey resulted in 140 responses from

women in STEM careers in the United States minus 24 partial responses ( $n = 126$ ). The response rate was challenging because the distribution occurred through email notifications and social media and was answered anonymously. Nevertheless, the responses resulted from an estimated reach of approximately 500 participants (100 emails, 20 posts, and 17 reshares representing approximately 865 views), calculating an estimated response rate of 22.2%. After the data was exported, the next step involved the data cleaning process.

### **Data Cleaning**

Data cleaning is the process of preparing data for analysis and errors by removing or modifying data that is incorrect, incomplete, irrelevant, duplicated, or improperly formatted (Pallant, 2020). The data cleaning process involves identifying a strategy for missing data, outliers, normality, and reliability. Missing data are responses that participants do not supply to specific questions or items. This is because information may be lost, individuals may skip questions, participants may be absent when observational data are collected, or persons may refuse to complete a sensitive question (Creswell & Creswell, 2018). In this study, the total sample size loaded into SPSS was 140 participant records. There were 24 records identified with partial responses or missing data, so those records were deleted, resulting in  $n = 116$ . An additional three partial responses were identified after Question 28 through Question 56 with missing data; therefore, those responses were deleted from the sample, resulting in a sample size of  $n = 113$ . The next step in the data cleaning tests is identifying outliers in the data set by looking at the univariate and bivariate outliers (Creswell & Creswell, 2018).

Researchers identify outliers by locating data or organizations cited for achievements or distinguishing characteristics. This information helps identify outliers and scores' upper or lower ceiling effects (Creswell, 2015). Extreme case sampling is a form of purposeful sampling in which an outlier displays robust characteristics. First, the univariate outliers test was performed to obtain the z-score variables, then a second test was run to test the z-scores for a z-score of  $\pm 4$  using the minimum and maximum. Following the test for univariate outliers was test for multivariate outliers on the main variables, except for the z-scores, to obtain the

Mahalanobis variable. The number of variables in this set was  $df = 56$ , which shows from the Chi-Square table the  $p < .001$  for the outliers to be removed. In this test, zero records were more significant than 86.66; therefore, no records were removed from the dataset ( $n = 113$ ).

Normality means that the standard deviation becomes evident by graphing a theoretical distribution of scores. By graphing the sample of scores and plotting them on a graph, the graph would look like a bell-shaped curve, also known as a normal distribution or standard probability curve. Actual scores may not simulate the normal distribution, but by plotting the means of many samples, a standard curve would result (Creswell & Creswell, 2018). In this study, all intervals and scale variables were tested for assumptions of normality and checked for skewness and kurtosis (Creswell & Creswell, 2018). The normality test was performed on the nominal variables minus the categorical variables by checking kurtosis and skewness with a skewness of  $\pm 2$ . A reliability test was done on all the variables to test for reliability among the variables. When running the test for normality, two additional records of data were removed from the dataset because they were negatively skewed at  $\geq |2.0|$  ( $n = 111$ ).

Before the reliability test and regression analysis, five questions were transformed by computing variables for reverse scoring. The questions that were reversed scored were Questions 24 and 26 in Eisenberger's (1986) POS instrument and Questions 51, 52, and 55 in Blau's (1985) CC instrument. These variables were adjusted for reverse scoring before the reliability test was completed and before the mean calculation completion on each scale. The mean calculation was then constructed for each of the four instruments. A hierarchical regression analysis was then completed based on the control, independent, and moderating variables on the dependent variable of organizational commitment.

### **Ethical Considerations**

Ethical standards in research are essential to protect subjects involved in research and ensure the study's integrity and credibility (Israel, 2015). Researchers are responsible for ensuring the dignity and welfare of all participants. Therefore, research participants should be protected from harm, unnecessary risks, and mental

or physical discomfort. Before conducting this study, a proposal was submitted to the Southeastern University's IRB committee. To prepare for IRB approval, the researcher designed the research plan following all ethical guidelines in the Belmont Report. The principles in this report provide ethical guidelines for human subjects' protection. In addition, Qualtrics complies with all federal regulations regarding privacy and is ISO 270001 compliant (Barnhoorn et al., 2015).

The online survey included an implied consent statement to which participants were required to agree before they could access the questions in the study. Before entering the response sections of the survey, participants were presented with a clear explanation of the study's purpose, and all participants confirmed that they were over 18 years of age. The survey was completely anonymous, and no personally identifiable data were captured as part of the survey process. There were no data privacy concerns because participants entered no personal information. Participants could complete the survey in privacy and in a place that made them feel comfortable and free of interaction with those who may cause discomfort.

### **Summary of Methodology**

In this chapter, the researcher outlined the selected research methodology and provided a rationale for using a quantitative design to test the hypotheses and answer the research questions. The sections in this chapter included discussions of the research design, participant selection, data collection, data cleaning, missing data, outliers, and ethical considerations. The following chapter summarizes the results from data collection and the participants' response rates, and demographic and descriptive characteristics of the variables. The variables in this study were the independent variables of perceived organizational support and organizational justice, the moderator variable of career commitment, and the dependent variable of organizational commitment.

## Chapter 4 –Results

Through this study, the researcher aimed to examine the relationship between organizational commitment based on the independent variables of organizational justice and perceived organizational support when career commitment is a moderator. Scholars in the existing body of literature have conducted studies on women in STEM from a single collection of organizations like hospitals, businesses, or universities looking at the high rates of women's attrition in STEM careers. The findings were not clear, however, regarding why working women stay in STEM careers in the United States. Therefore, the researcher designed this study to discover the correlation between the identified variables. The previous chapters covered background information on the lack of women in STEM careers and the future economic projections of the shortfall of women in STEM careers in the United States. The researcher also established the literature foundation and justified the research design and methodology.

### Reliability

A reliability test was completed by calculating the Cronbach's alpha score for each of the Likert scale variables (POS, OC, OJ, CC) to ensure internal consistency. The results of this analysis are presented in Table 3. The researcher determined that all the items on the scale were correlated with each other and measured the same things.

**Table 3**

*Cronbach's Alpha Scores*

	Mean	Min.	Max.	Std.	Cronbach's Alpha	Cronbach's Alpha is Based on Standardized Items
OC	5.479	4.153	6.135	9.526	.898	.901
POS	5.066	4.613	5.468	10.215	.914	.917
OJ	3.646	2.829	4.351	16.531	.942	.949
CC	3.830	3.216	4.378	5.957	.851	.861

## Hypotheses

The following section is a presentation of the results of the statistical analysis conducted to answer the research questions and test the hypotheses. Hierarchical regression analysis was performed using the control variables and career commitment as a moderator for each model.

### *Research Question 1*

Researchers have shown that turnover intentions related to career commitment as a moderator is influenced directly by organizational commitment and organizational justice (Lin & Chen, 2004). The first research question of this study asked: How do perceptions of organizational justice relate to organizational commitment among women in STEM careers?

H<sub>1a</sub> There is a positive relationship between procedural justice to organizational commitment.

H<sub>1b</sub> There is a positive relationship between distributive justice to organizational commitment.

H<sub>1c</sub> There is a positive relationship between interpersonal justice and organizational commitment.

H<sub>1d</sub> There is a positive relationship between informational justice and organizational commitment.

Hierarchical regression analysis was performed using SPSS software to determine whether the control variables of age, STEM area, education B.S. or below and M.S. and above, and years in career and if the sub variables (DJ, IPJ, IFJ, PJ) explained the dependent variable of organizational justice. The findings revealed that organizational justice as a whole and two of the sub variables had a positive impact on organizational commitment among women in STEM careers. The results illustrated in Table 4 revealed that the dependent variable of OJ explained 48% ( $R^2 = .477$ ) of OC. Table 4 also showed the control variables of age, STEM area, education B.S. or below and M.S. and above, and years in career explained 10% ( $R^2 = .100$ ) of organizational commitment. Two of the sub variables of OJ were significant: interpersonal justice ( $\beta = .331, p < .001$ ) and informational justice ( $\beta = .290, p < .05$ ).

**Table 4***Hierarchical Regression Analysis Predicting OJ and Sub dimensions of OJ to OC*

Variable	$\beta$	$t$	$R$	$R^2$	$\Delta R^2$
<u>Block 1</u>			.316	.100	.100
Age	-.183	-.992			
STEM area	-.133	-1.408			
Education level	.180	1.891			
Years in career	.037	.201			
<u>Block 2</u>			.691	.477	.377
Organizational Justice	.668	8.795***			
<u>Block 3</u>			.733	.537	.061
Distributive Justice	-.119	-1.078			
Interpersonal Justice	.331	3.768***			
Procedural Justice	.288	1.752			
Informational Justice	.290	2.136**			
Total $\Delta R^2$					.538

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ***Alternate Analysis***

An alternate analysis was conducted to determine the significance of the organizational justice sub variables when the control variables were removed from the model. The control variables consisting of age groups, level of education, and years in STEM did not show any significance as a predictor of organizational commitment. Consequently, this alternate analysis using the mean of the DJ, IPJ, PJ, and IFJ still showed a positive significance in Table 5 and explained 48% ( $R^2 = .484$ ) of the dependent variable of organizational commitment.

**Table 5**

*Hierarchical Regression Analysis Predicting OJ and Sub dimensions of OJ by Removing Control Variables to OC*

Variable	$\beta$	$t$	$R$	$R^2$	$\Delta R^2$
<b>Block 1</b>			.696	.484	.484
Distributive Justice	-.094	-.858			
Interpersonal Justice	.313	3.571***			
Procedural Justice	.246	1.507			
Informational Justice	.319	2.356**			
Total $\Delta R^2$					.484

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

The results under Research Question 1 supported the hypotheses for OJ as a whole and within OJ, the two sub dimensions of interpersonal justice and informational justice on OC, with a positive significance for interpersonal justice at the  $p < .001$  level and informational justice at  $p < .05$ . The results of the alternate analysis remained significant; however, the results on organizational commitment decreased from 54% to 48% by removing the control variables. Although there is no significance with the control variables, further research should be done on the control variables to determine their impact on predicting interpersonal and informational justice from an individual component.

### ***Research Question 2***

Career-related resources delivered by organizations, such as career development opportunities and perceived career support, have been proven to enhance work engagement (Lee et al., 2016). The current researcher developed the following research question: Does perceived organizational support relate to organizational commitment among women in STEM careers?

H<sub>2</sub> There is a positive relationship between perceived organizational support and organizational commitment.



A hierarchical regression analysis was performed in SPSS to answer the research question and test the hypothesis that perceived organizational support positively correlated with organizational commitment among women in STEM careers working in the United States. According to the regression model summary, POS represented 57% of organizational commitment ( $R^2 = .567$ ,  $p < .001$ ) and was significant as a predictor to OC (Table 6).

**Table 6**

*Hierarchical Regression Analysis Predicting POS to OC*

Variable	$\beta$	$t$	$R$	$R^2$	$\Delta R^2$
<u>Block 1</u>			.316	.100	.100
Age	-.183	-.992			
STEM area	-.133	-1.408			
Education level	.180	1.891			
Years in career	.037	.201			
<u>Block 2</u>			.753	.567	.467
Perceived Organizational Support	.706	10.539***			
Total $\Delta R^2$					.567

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

The results of Research Question 2 showed positive support of perceived organizational support at  $p < .001$  using the control variables on organizational commitment for women in STEM careers in the United States.

### **Research Question 3**

Scholars have revealed that career commitment positively affects organizational commitment (Abdullah & Ramay, 2012; Nazish et al., 2013; Odunayo et al., 2014). The third research question of this study asked: What effect does career commitment as a moderator have on the relationship between organizational justice and organizational commitment among women in STEM?

H<sub>3a</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and procedural justice.

H<sub>3b</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and distributive justice.

H<sub>3c</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and interpersonal justice.

H<sub>3d</sub> Career commitment has a positive moderating effect on the relationship between organizational commitment and informational justice.

Hierarchical regression was performed in SPSS to determine whether career commitment had a moderating effect between organizational commitment and the sub variables of organizational justice among women in STEM careers in the United States. The control variables reflected 10% ( $R^2 = .100$ ) of OC. The mean of OJ sub variables of DJ, IPJ, IFJ, and PJ represented 54% ( $R^2 = .537$ ) of OC  $p < .001$ , with career commitment as the moderator as shown in Table 7 reflecting 57% ( $R^2 = .572$ ) of OC at  $p < .005$  level. The results of the beta coefficients in Table 7 for the sub variables of OJ shown in Model 2 reflect a significance in the variable IPJ ( $\beta = .371, p < .001$ ). Informational justice also showed a significance ( $\beta = .292, p < .05$ ) when career commitment was added as a moderator. These results indicated a negative correlation and inverse relationship based on career commitment as a moderator; as the coefficient increased, the significance decreased, and vice versa. CC as a moderator resulted in significance ( $\beta = .211, p = .05$ ) reflecting a positive correlation on OC.

**Table 7**

*Hierarchical Regression Analysis Predicting Sub dimensions of OJ with CC as a Moderator to OC*

Variable	$\beta$	$t$	$R$	$R^2$	$\Delta R^2$
<u>Block 1</u>			.316	.100	.100
Age	-.183	-.992			
STEM area	-.133	-1.408			
Education level	.180	1.891			
Years in career	.037	.201			
<u>Block 2</u>			.733	.537	.437
Distributive Justice	-.122	-1.147			
Interpersonal Justice	.371	4.314***			
Procedural Justice	.190	1.167			
Informational Justice	.292	2.228**			
<u>Block 3</u>			.756	.572	.035
Career Commitment	.211	2.840*			
Total $\Delta R^2$					.572

\* $p < .05$ , \*\* $p < .005$ , \*\*\* $p < .001$

The results of Research Question 3 ended with two of the sub variables of OJ and the hypotheses being supported with a positive significance. IPJ was significant at the  $p < .001$  level. IFJ was also significant at the  $p < .05$  level when career commitment was added a moderator. In addition, CC as the moderator was significant at  $p < .005$  level when combined with the sub dimensions of organizational justice on organizational commitment for women in STEM careers.

#### **Research Question 4**

Career commitment has been linked to organizational commitment, where organizational commitment mediated career commitment based on the social exchange theory (Cai et al., 2018). Researchers have recommended studies with more variability in the distribution of occupations and employee work status in

STEM fields (Cai et al., 2018). The fourth research question of this study was: What effect does career commitment as a moderator have on the relationship between perceived organizational support and organizational commitment among women in STEM careers?

H<sub>4</sub> Career commitment has a positive moderating effect on the relationship between perceived organizational support and organizational commitment.

A hierarchical regression analysis was conducted to answer the research question and determine whether career commitment has a positive moderating effect on the relationship between perceived organizational support and organizational commitment among women in STEM careers working in the United States. In the regression model summary, the variables used were the control variables, the mean of POS and career commitment to organizational commitment. The control variables explained only 10% of the variance ( $R^2 = .100, p = .084$ ). POS showed significance and represented 57% of the variance ( $R^2 = .567, p < .001$ ). CC as a moderator represented 58% of the variance ( $R^2 = .577, p = .123$ ).

The coefficients test further examined the variable significance based on the control variables (Table 8). Perceived organizational support ( $\beta = .666, p < .001$ ) in the relationship of OC with CC as a moderator ( $\beta = .211, p = .123$ ). Career commitment did not show any significance in the analysis. Perceived organizational support showed a slight increase in significance to organizational commitment when career commitment was introduced as a moderator.

**Table 8**

*Hierarchical Regression Analysis Predicting Perceived Organizational Support with Career Commitment as a Moderator to Organizational Commitment*

Variable	$\beta$	$t$	$R$	$R^2$	$\Delta R^2$
<u>Block 1</u>			.316	.100	.100
Age	-.183	-.992			
STEM area	-.133	-1.408			
Education level	.180	1.891			
Years in career	.037	.201			
<u>Block 2</u>			.753	.567	.467
Perceived Organizational Support	.666	9.334***			
<u>Block 3</u>			.760	.577	.010
Career Commitment	.211	1.556			
<b>Total <math>\Delta R^2</math></b>					<b>.577</b>

\* $p < .005$ , \*\* $p < .05$ , \*\*\* $p < .001$

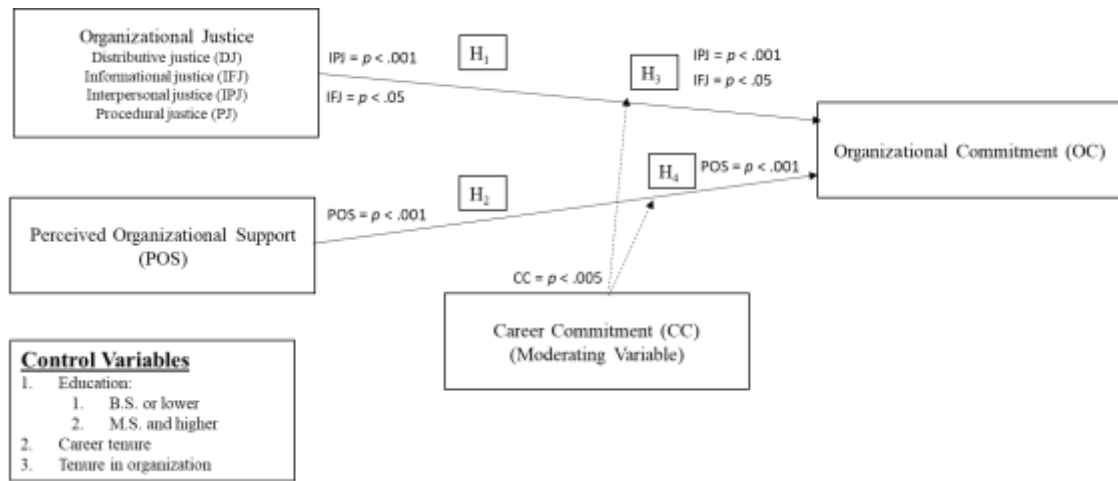
The results of Research Question four concluded with positive support for perceived organizational support at  $p < .001$  when career commitment was a moderator on organizational commitment for women in STEM careers in the United States.

### Summary of Findings

Figure 3 summarizes the results of all four research questions, hypotheses, and significances. The sub dimensions IPJ and IFJ were significantly associated with organizational commitment and even when career commitment was introduced as a moderator. In addition, POS was significantly related to organizational commitment when career commitment was introduced as a moderator. The next chapter provides a conclusion and summary of the study, including limitations and suggestions for further research.

**Figure 3**

*Summary of Results of Research Questions and Hypotheses*



*Note.* This is a summary of the significances in the conceptual framework of the research questions and the hypotheses.

## **Chapter 5 – Summary, Conclusions, Recommendation**

Through this quantitative study, the researcher aimed to examine why women stay in STEM careers based on career commitment and organizational commitment. The researcher examined the independent variables of perceived organizational support and the sub variables of organizational justice with career commitment as a moderator and organizational commitment as the dependent variable to determine their impact on the retention of women in STEM careers. Women in the United States represented approximately 50.4% of the workforce in 2017 and earned half of all STEM degrees, but only represented about 26% of those working in STEM jobs (U.S. Bureau of Labor Statistics, 2018). Women also leave professional STEM careers at a higher rate than their male counterparts (Cech & Blair-Loy, 2019; Corbett & Hill, 2015). In this study, quantitative analysis was completed to examine the relationships among four dimensions of organizational justice, perceived organizational support, career commitment, and organizational commitment among women in STEM careers.

### **Organizational Commitment**

Commitment is one of several energizing forces for motivated behavior and binds an individual to a course of action relevant to a specific target (Locke, 1997; Meyer & Herscovitch, 2001). There are numerous benefits to having a motivated and committed workforce (Locke & Latham, 1990; Meyer & Allen, 1997; Pinder, 1984). By combining the benefits and considering commitment as a component of motivation, it is possible to better understand workplace behavior (Meyer et al., 2004). Commitment involves psychological attachment and is an independent part of motivation, allowing an enhanced understanding of behaviors with varied social implications (Meyer et al., 2004).

Organizational commitment is a physical link between employee's attitudes toward their organization on a psychological level that categorizes employee relationships within their organizations, which results in the decision to continue membership in the organization (Herachwati & Rachma, 2018). Employees show high loyalty when they firmly commit to the organization (Herachwati & Rachma,

2018). The connection between the individual and the organization stems from moral and economic considerations (Delobbe & Vandenberghe, 2000). It also supports the distinction between the motivation to produce and the motivation to participate, which results in value attachment and instrumental commitment to the organization (Mayer & Schoorman, 1992, 1998). Organizational commitment also has three main characteristics: a strong belief in acceptance of organizations' goals and values, willingness to make an effort on behalf of the organization, and a strong desire to maintain membership (Chordiya et al., 2017, pp. 3–4).

### ***Research Question 1: Organizational Justice Sub dimensions***

The results from the hierarchical regression with interpersonal and informational justice showed support as a predictor of organizational commitment (see Table 4). Interpersonal justice concerns whether employees feel they are treated with respect and courtesy by supervisors (Bies & Moag, 1986; Greenberg, 1993; Moorman, 1991). Interpersonal justice has been the most studied form of justice in client justice research, as it is the most relevant form of justice when examining the employee–client relationship (Rupp & Spencer, 2006; Shao & Skarlicki, 2014; Skarlicki et al., 2008, 2016; Spencer & Rupp, 2009). Customers' interpersonal justice reflects when “an employee is treated with dignity and respect, and refrained from personal attacks” (Rupp & Spencer, 2006, p. 971).

Informational justice refers to the truthfulness/ trustworthiness of information given to employees when implementing new processes (Cropanzano et al., 2007; Gurbuz & Mert, 2009; Perez et al., 2013; Rodell et al., 2017).

Interactional justice violations can occur when women are expected to act interpersonally sensitively; therefore, it is seen as a breach of justice rules and a departure from prescriptive gender stereotypes (Eagly & Karau, 2002). Consequently, women who exhibit interactional injustice are penalized for violating organizational justice rules and failing to engage in stereotypical female behaviors (Caleo, 2016).

In this study, an alternate analysis was conducted by removing the control variables and testing the sub dimensions of organizational justice to examine whether the same significance levels occurred for IPJ and IFJ (see Table 5). The



significance levels declined for informational justice and went up for distributive and procedural justice. This test requires more detailed analysis to separate and evaluate each control variable for the significance of the variables and the relationship of organizational justice dimensions. More research should be conducted on these individual control variables and the connection with organizational justice and commitment among women in STEM careers in the United States.

### ***Research Question 2: Perceived Organizational Support***

The researcher conducted a hierarchical regression analysis to test the hypothesis that perceived organizational support is positively correlated with organizational commitment among women in STEM careers (see Table 6). POS is the factor that affects employees' motives, behaviors, and psychological commitment intentions (Daan Van & Ed, 2006), and it is essential for employees' socio-emotional interaction, respect, and care (Eisenberger et al., 1986).

Organizational characteristics like fair treatment or job autonomy are positively related to POS, predicting job satisfaction, job involvement, and intention to remain in the organization, along with reduced withdrawal behaviors (Rhoades & Eisenberger, 2002). Employees with high levels of POS may ignore an injustice because they might feel that the organization will provide them with their due rewards in the future (Shore & Shore, 1995). Conversely, employees with a low level of POS might react more harshly to the same injustice, as they will consider it a continuation of the organization's inability to treat them equally (Nazir et al., 2019). While numerous studies focused on POS as the main factor affecting employees' motives, behaviors and commitment, few studies have been conducted on women working in STEM fields in the United States. The results of the current study revealed a positive relationship between organizational commitment and perceived organizational support.

Perceived organizational support directly impacts the willingness of employees to remain in their jobs. It dramatically reduces the desire of employees to leave when motivated by a perception that they are receiving direct organizational support (Huang et al., 2021). This finding explains that POS

significantly affects employees' willingness to go or stay in the competitive high-tech industry. Further research on perceived organizational support and commitment is needed in the United States on women in STEM careers to explain the development of an employee's commitment to their organization.

***Research Question 3: Career Commitment as a Moderator to Organizational Justice***

In this study, career commitment was used as a measurement of a moderator for the sub dimensions of organizational justice. The hierarchical regression analysis was positive when career commitment moderated the sub dimensions of OJ and OC among women in STEM careers in the United States (see Table 7). In addition, interpersonal and informational justice showed positive support for organizational commitment, and career commitment was also significant in this relationship with the two relational justices.

Career commitment is an attitude of an individual working towards a lifelong pursuit of building a meaningful career, including how work activity is reflected in a person's life plan and a person's desire to keep working in his chosen career (Carswell & Allen, 2000). Commitment is vital to organizations because employers seek individuals who will help the organization succeed through their professional development efforts and dedication (Carswell & Allen, 2000). There is a need for future research relative to interpersonal and informational justice to career commitment on organizational commitment within STEM careers to determine the relational areas to increase organizational commitment.

***Research Question 4: Career Commitment as a Moderator to Perceived Organizational Support***

The results of the hierarchical regression analysis showed a positive moderating effect on the relationship between POS and OC among women in STEM careers. Contrary to organizational justice and the relationship with career commitment as a moderator, career commitment had little effect on the positive correlation between POS and CC. Further coefficient tests were closely examined with CC as a moderator (see Table 8). While there was a significant positive

relationship between POS and OC, CC as a moderator did not impact the significance for POS very much in the relationship and remained similar values.

Combining CC and POS together to affect OC means taking the attitude of an individual working towards a lifelong pursuit of building a meaningful career or career commitment (Carswell & Allen, 2000). Career commitment includes how work activity is reflected in a person's life plan and a person's desire to keep working in his chosen career (Carswell & Allen, 2000). While POS is the exchange between an employee and their overall organization and explains the development of an employee's commitment to the organization. POS is the drive of perceived extent of concern from the organization about the value of the employees' contribution and care for their well-being (Eisenberger et al., 2014). High POS helps organizations retain employees; when organizations fail to invest in their employees, employee engagement decreases noticeably (Eder & Eisenberger, 2008; Garcia et al., 2021). More studies need to be conducted in the United States using samples of women in technical fields regarding their CC and POS in order to further validate these results.

### **Implications**

The theoretical and practical implications of organizational commitment and career commitment among women in STEM in the United States are based on significant findings on the positive correlations of interpersonal and informational justice and perceived organizational support predicting organizational commitment. These highly relational variables combined are unique to any other study on women in STEM careers in the United States. Most careers have varying scales of relational issues in organizations to help employees relate to one another and the organization. Relational skills involve trust, the art of knowing, emotional support, legitimacy, politeness, and dignity. Interpersonal justice skills relate to self-confidence, verbal and nonverbal communication, positive attitude, empathy, listening, openness to feedback, and reliability. Information justice relates to politeness, dignity, respect, explanations, timeliness, specificity, and truthfulness. With this additional research, there is an opportunity to explore more in-depth theoretical frameworks and multiple lenses on relational theory and relational

issues among women in STEM careers in the United States. Organizations need to use this research as a foundation to expand the relational problems to increase career commitment and organizational commitment among women in STEM careers in the United States.

When President George Bush released the American Competitiveness Initiative for STEM in 2006, it began a chain reaction of STEM curriculums in secondary and primary institutions. The curriculums in education increased to support organizations in the United States in STEM careers. Based on these research findings on women in STEM careers, the following recommendations are suggested to increase career commitment to expand organizational commitment to increase the effectiveness of the American Competitiveness Initiative execution that began in 2006.

### ***Cross-Connect Business and Education Learnings***

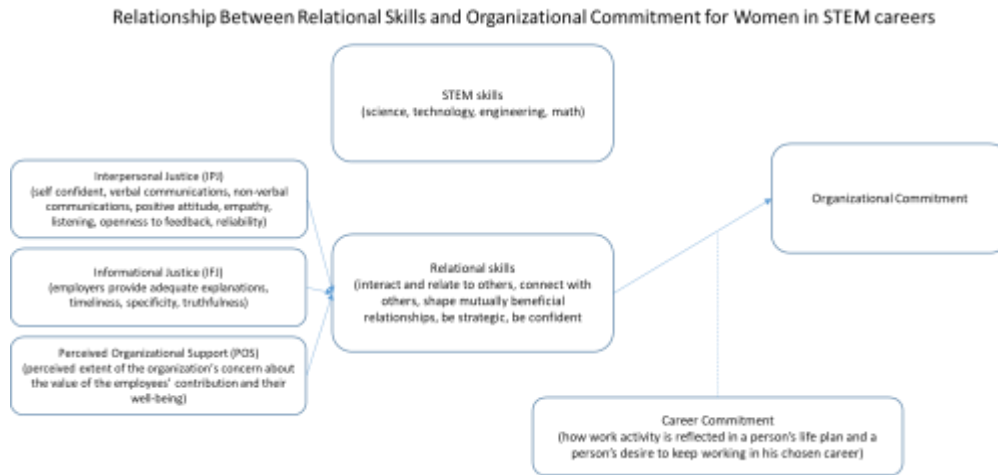
STEM programs in educational institutions contain coursework concentration in calculus, engineering, science, physics, and computer coding. Given this new research on relational justices and perceived organizational support, businesses and educational institutions need to expand their learnings to increase these skills in technical fields to increase the organizational commitment of women employed in STEM careers in the United States:

1. Technical businesses should review their initial onboarding learning and subsequent learning and training curriculums and certifications for STEM positions and build in relational skills and courses in addition to technical certifications.
2. Educational institutions with STEM degrees should examine their degree programs for bachelor's and master's degree programs and build in relational skills in the first year of the programs, and then build on those relational skills in subsequent years to expand on interpersonal and informational justices.
3. A complete quantitative assessment of STEM training and educational programs should be conducted to review the comprehensive skill set and assess whether the learning is based on technical or relational skills, along

with the overall percentages of technical to relational skills in each STEM program (see Figure 4).

### Figure 4

#### *Proposed STEM Education and Business Training Include Relational Skills*



#### ***Relational Personality Tests for Businesses***

The findings of this study support a relational skill gap in the equation of women in STEM careers and women leaving STEM careers within the first 5–10 years (Morgan et al., 2013). The following suggestions may help business leaders support their relational skills toward interpersonal and informational justices:

1. Utilize the correct type of relational assessments for their specific business to advance the understanding of organizational relational issues in STEM fields. Some examples of self-assessments and personality tests for project teams are Myers Briggs, DiSC, Enneagram, and MBTI.
2. Conduct Myers Briggs measures to categorize employees' personalities using four characteristics: sensing, intuition, feeling, and thinking (MBTIonline, n.d.).
3. Execute the DiSC profile, which is a personal assessment tool based on four personality types: dominance, influence, steadiness, and conscientiousness (DiSC Profile, 2021).
4. Use the Enneagram test to dissect employees' motivations and character structure to measure them as one of nine personality types characterized by their primary motivator (Hudson, 2019).

5. Administer job satisfaction survey assessments such as the MSQ and WCW, the results of which could provide critical input into understanding the relational issues in businesses with STEM careers (Fields, 2013).

Self-assessment tests focus on preferences, personality, interpersonal dynamics of human nature, and behaviors during times of stress and nonstress in education and business. For example, personality profile tests could increase relational skills, informational and interpersonal justice predictors, and perceived organizational support to increase career commitment and the outcome of organizational commitment.

### ***Persona Analysis of a Woman in a STEM Career***

A persona is used to identify the characteristics of a consumer in marketing and technology fields for building products. By identifying the persona characteristics of women in STEM careers, the findings will inform businesses for research teams and projects. Three types of personas provide guidance to project teams with existing assumptions, simple personas, qualitative personas, and statistical personas. In addition, personas can build on research questions, field studies, or usability tests.

1. Personas can define the specific market segment of women in STEM careers to identify characteristics and meet the needs of those characteristics in education fields and business. In addition, personas are used to aid businesses on project team collaboration.
2. Businesses could look at a more quantitative persona of the female in a STEM career to adjust their marketing and business engagements with education institutions to appeal to the relational focus and the technical skillset.
3. Education institutions could also expand the persona of the female students coming into STEM programs to market to the audience and add relational skills and learning to the STEM programs.

***Mentor Relationships and Support Structure for Women in STEM Careers***

Retaining women in STEM careers is a combination of technical and relating skills. A mentor relationship and a support structure for women in STEM careers can enhance POS by researching and examining the support structure that fits their specific STEM business.

1. Businesses should establish formal mentor processes for women in STEM careers and traditional education programs. Formal mentor programs need to be set for different years in the career—for example, 1–5 years or 10–20 years. Establishing the differences in mentor programs based on the years of service will support relational outcomes and perceived organizational support for women in STEM careers.
2. Businesses should review organizational commitment in their structure and align with the persona of a female in STEM careers with specific business goals.

***Team Projects is About the Process***

Teamwork is a relational skill and provides opportunities to develop further with the proper diversity, support, and coaching. Businesses and education programs should examine the team dynamics from diversity, skills, and support structure. Some relational skills built in teams are often clouded with dysfunctional teams, poor leadership, and lack of trust, with lack of trust being the majority of the reason for leaving teams (Lencioni, 2002). Teamwork is relational in nature and often involves multiple individuals' emotional intelligence working together to be more effective in work and personal lives (Goleman, 2019). Researchers have shown that individual emotional intelligence has a group analog and is critical to groups' effectiveness (Goleman, 2019). Previous scholars have indicated that STEM careers will have a shortfall because there are not enough male employees to fill all the open positions in the coming years (Blackburn & Heppler, 2019). The following are implications for the nature of diverse and effective teamwork:

1. To increase relational skills, businesses and STEM education programs must build effective teams and look at the more extraordinary team's emotional intelligence (Goleman, 2019).

2. When businesses are creating project teams to meet the business goals, they need to ensure diversity in the teams working together in order to build a high-performing organization.
3. Creating trust is another essential skill in building teams and increasing relational skills in STEM careers. Ensuring trust in teams is the foundation for high performing teams (Lencioni, 2002).
4. Most importantly, businesses need to provide the right coaching and skills for project team leaders just as much as training for the project team. A project team leader who is a servant team leader will enable the team to become a high performing team (Greenleaf, 2002).

### ***Culture Analysis for STEM Businesses***

Culture exists in businesses and affects people's working relationships. Culture assessments, job satisfaction surveys, job role surveys, work-family surveys, and workplace values can facilitate relational learning skills in business. Organizational factors over individual factors play a critical role in shaping women's work experiences. These external factors included job quality and labor empowerment, workplace climate, interpersonal and relational factors, multiple role management, and mentorship (Flores et al., 2021). Climate and culture assessments determine if a business is a place of trust and perceived organizational support for women in STEM careers.

1. STEM businesses will benefit from using an organizational culture assessment instrument (OCAI) to assess an organization's current and preferred organizational culture and desire for change (Cameron & Quinn, 2011). This survey's results help guide organizations and offer perceived organizational support and commitment.
2. STEM businesses could benefit by administering work-family conflict surveys to assess the organizational factors. The survey by Netemeyer et al. (1995) on role conflict and ambiguity used separate subscales to evaluate the extent of work-family and family-work conflicts (Fields, 2013). Since the COVID-19 pandemic and the associated lockdowns beginning in March 2020, many changes to family dynamics, children's education, and work



role conflict and ambiguity among parents have surfaced. The quantitative results from this survey could help businesses understand the dynamics of conflict to develop work-family programs for their employees.

### **Limitations and Suggestions for Future Research**

The generalizability of the findings of this quantitative research study are limited by this specific study sample and data collection. More extensive research needs to be conducted on career commitment and organizational commitment among women in STEM careers in the United States. In addition, the control variables need to be isolated per the alternate analysis as to which of the control variables has an impact on organizational justice variables. Furthermore, this study proposes that other constructs or relational theory could be relative to career commitment and organizational commitment concerning interpersonal and informational justices and perceived organizational support to continue based on the leadership styles of women in STEM in the United States.

### ***Limitations***

A limitation of this study was that data gathered from surveying women could accurately establish factors that motivate women to persist in STEM careers. The researcher assumed that survey respondents would answer the questions honestly, completely, and in a way that accurately reflected reality. The researcher aimed to capture a broad sample of women across the four areas of STEM, age, tenure in STEM, and education level. Assessing whether the study results correctly depict a general representation of women in STEM occupations in the United States is difficult, given the approach of gathering respondents through professional women's organizations, social media platforms, email, and using the snowballing method by asking women to forward the survey. In addition, the data collected only captured the perceptions of women in STEM occupations through self-reporting from an online survey. This analysis was cross-sectional and the results did not reflect career stages over time. The influence of standard method bias represents a limitation since all variables were assessed using self-reported measures at a single

point in time. This limitation suggests the need for further research among women in STEM careers who are also full-time mothers.

Based on the dependency on retrieving data from working women in STEM careers, the researcher recommends that future scholars recruit participants employed in various STEM fields, and within each STEM field and type of industry, who might have a unique work culture. New insight might be gained in the difference in career development programs of women who continue in STEM fields by industry or non-STEM fields. Further research with more scale testing and predictors focused on women in STEM could be conducted, and the scale could be broadened to include the male gender to measure differences in commitment in STEM careers based on gender.

A limitation was the number of women respondents based on the sample population of women working in STEM careers in the United States continues to decrease. More research needs to continue, especially during the years of COVID-19 and lockdowns that forced closed schools and presented challenges for working parents under role conflict and ambiguity. Further research could be centralized around the effects of the pandemic on working women and working parents, and at other variables that might have changed during this time to decrease the number of women in STEM. Future researchers may investigate a single business or entity and run a similar study on the company to get more specific business-focused results and apply more specific implications to the STEM industry to enhance the visibility of women in STEM careers.

### ***Future Studies***

Industry leaders are working hard to attract and retain more women in STEM fields; however, additional interventions are needed to keep women in the STEM fields (NES Global Talent, 2021). Such future studies should focus on business cultural instruments depending on the STEM focus and the industry of STEM careers for women. Similar studies could be replicated on a broader scale for a more extended time to engage more working women in STEM careers in the United States. In addition, similar studies based on gender could be conducted to determine the differences in career commitment and organizational commitment

levels and relational areas for participants in STEM careers. Another study could center on women in STEM in terms of how the COVID-19 pandemic affected their roles.

Future considerations for research include expanding the current study to a mixed methods study based on relational areas like interpersonal justice, informational justice, perceived organizational support, career commitment, and organizational commitment. This could be achieved by administering a similar survey and identifying a focus group on relational areas for the lived experiences of women in STEM careers.

Future research considerations could include an examination of Colquitt's measurement in other organizations like private versus government versus public industries. It would also benefit from using key outcome variables of the different justice dimensions, like outcome satisfaction and leader evaluation, to further validate this construct. Finally, the scale should be examined in multiple settings, so the context need is acknowledged and accounted for by research in the field to work towards a standard measure for organizational justice (Enoksen, 2015).

## **Summary**

In closing, the current researcher collected quantitative data regarding retaining women in STEM careers in the United States. Most of the investigations before women in STEM had been collected in other countries and other industries. The lack of women in STEM careers concerns organizational leaders and policymakers, given the competitiveness of global businesses to meet the workforce needs (Catalyst, 2018; Martinez & Christnacht, 2021). In addition, the U.S. economy will require a diversified group of talented scientists, technologists, mathematicians, and engineers in the future to support advances in technologies (Cech & Blair-Loy, 2019; Corbett & Hill, 2015; Fayer et al., 2017; U.S. House Education & Workforce Committee, 2013; U.S. National Science & Technology Council, 2018). Therefore, the researcher aimed to predict whether career commitment as a moderator for organizational commitment will help employers understand why women are underrepresented in STEM fields and why they are leaving STEM fields. The remainder of this paper covered the study's research

questions and hypotheses, conceptual framework, definitions of terms, literature review, methodology, participants, scope, limitations, results, and suggestions for further research.

The underrepresentation of women in STEM will continue until there is a focus on why women remain in STEM careers through career and organizational commitments. The underrepresentation of women in STEM careers has numerous reasons (AAUW, n.d.), and only a few scholars have explored organizational commitment from a quantitative viewpoint of women in STEM careers in the United States (Martinez & Christnacht, 2021). Researchers need to examine further why women are not committed to their STEM careers and the factors contributing to organizational commitment. The results from this study enhance the understanding of how to retain women in STEM careers to meet future economic and diversity goals in the United States.

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## Appendix A

### IRB Approval

SOUTHEASTERN  
UNIVERSITY



#### NOTICE OF EXEMPTION FOR HUMAN RESEARCH

**DATE:** December 14<sup>th</sup>, 2021  
**TO:** Joshua Henson, Patricia Rose  
**FROM:** SEU IRB  
**PROTOCOL TITLE:** An Analysis of Career Commitment as a Moderator to Organizational Commitment Among Women in STEM Careers  
**FUNDING SOURCE:** NONE  
**PROTOCOL NUMBER:** 2021 BE 08  
**APPROVAL PERIOD:** Approval Date: December 14<sup>th</sup>, 2021, Expiration Date: December 13<sup>th</sup>, 2022

Dear Investigator(s),

The Institutional Review Board (IRB) for the protection of human subjects has reviewed the protocol entitled, An Analysis of Career Commitment as a Moderator to Organizational Commitment Among Women in STEM Careers. The project has been approved for the procedures and subjects described in the protocol pending the following change:

- Please add IRB contact information to the informed consent ([irb@seu.edu](mailto:irb@seu.edu)).

Any changes require approval before they can be implemented as part of your study. If your study requires any changes, the proposed modifications will need to be submitted in the form of an amendment request to the IRB to include the following:

- Description of proposed revisions;
- *If applicable*, any new or revised materials;
- *If applicable*, updated letters of approval from cooperating institutions

If there are any adverse events and/or any unanticipated problems during your study, you must notify the IRB within 24 hours of the event or problem.

At present time, there is no need for further action on your part with the IRB. This approval is issued under Southeastern University's Federal Wide Assurance 00006943 with the Office for Human Research Protections (OHRP). If you have any questions regarding your obligations under the IRB's Assurance, please do not hesitate to contact us.

Sincerely,

Rustin L. Lloyd  
 Chair, Institutional Review Board  
[irb@seu.edu](mailto:irb@seu.edu)

## Appendix B

### Description of Variables and Coding

SPSS			Measurement
Name	Variable	Coding	Scale
ID	ResponseID	Number assigned to each survey	Nominal
Consent	Consent	Response to one item: <i>I am 18 years of age or older, and I consent to participate in this survey.</i> Responses are dummy coded as 1 = yes; 2 = no.	Nominal
Participant Background Variables		Definition and Coding	
	Gender	Response to one item: <i>Confirm that you are a female.</i> Responses are dummy coded as 1 = yes; 2 = no.	Nominal
	Work in the U.S.	Recoded response to one item: <i>Confirm you work in the United States.</i> Responses are dummy coded as 1 = yes; 2 = no	Nominal
	Age	Response to one item: <i>What is your age?</i> Responses are coded as 1 = 20-25; 2 = 26-30; 3 = 31-35; 4 = 36-40; 5 = 41-45; 6 = 46-50; 7 = over 50; 8 = under 20 (not eligible to participate).	Ordinal

SPSS			Measurement
Name	Variable	Coding	Scale
	STEM field	Response to one item: <i>Select the most appropriate description of your current STEM or STEM-related career?</i> Responses are dummy coded as 1 = Science; 2 = Technology; 3=Engineering; 4=Mathematics; 5=none of the above.	Nominal
	STEM role	Recoded response to one item: <i>Select the most appropriate description of your current role in STEM or STEM related career?</i> Responses are dummy coded as 1 = Scientist, Technologist, Engineer or Mathematician or Statistician; 2=Manager.	Nominal
	1 year in STEM	Response to one item: <i>Confirm you work in a STEM or STEM-related career for at least one year?</i> Responses are coded as 1 =yes; 2=no (then you are not eligible to participate if your experience is less than 1 year).	Nominal

SPSS		Measurement
Name	Variable	Coding
		Scale
	Current employment	Response to one item: <i>Please select one of the following?</i> Responses are dummy coded as 1=I currently work in a STEM career as previously defined; 2=I formerly worked in a STEM career.
	Education Level	Response to one item: <i>Select the option that most closely describes your education level.</i> Responses are dummy coded as 1=Bachelor's degree or below; 2=Master's degree or post graduate.
	Education-STEM or non-STEM	Response to one item: <i>Is your primary degree or training in STEM or non-STEM?</i> Responses are dummy coded as 1=STEM; 2=non-STEM.
	Years in career	Response to one item: <i>How many years total have you worked in a STEM-related occupation?</i> Responses are coded as 1=1-5 years; 2=6-10 years; 3=11-15 years; 4=16-20 years; 5=21-25 years; 6=26-30 years; 7=over 30 years.
<b>Dependent Variable</b>		<b>Organizational Commitment (Mowday, Steers, Porter, 1982)</b>

SPSS			Measurement
Name	Variable	Coding	Scale
OC	Effort in organization	Scale variable composed of the mean of nine items, each with a 7-point Likert response scale (1 = <i>strongly disagree</i> and 7 = <i>strongly agree</i> ): I am willing to put in a great deal of effort beyond what is normally expected in order to help this organization be successful; I talk up this organization to my friends as a great organization to work for; I would accept almost any type of job assignment in order to keep working for this organization; I find that my values and the organization's values are very similar; I am proud to tell others that I am part of this organization; This organization really inspires the very best in me in the way of job performance; I am extremely glad that I chose this organization to work for over others I was considering at the time I joined; I really care about the fate of this organization; For me, this is the best of all possible organizations for which to work.	Ordinal

SPSS			Measurement
Name	Variable	Coding	Scale
	<b>Independent Variable-RQ2</b>	<b>Perceived Organizational Support (Eisenberger, 1986)</b>	
POS	Perceived organizational support-H <sub>2</sub>	Scale variable composed of the mean of nine items, each with a 7-point Likert response scale (1 = <i>strongly disagree</i> and 7 = <i>strongly agree</i> ): This organization strongly considers my goals and values; Help is available from the organization when I have a problem; This organization really cares about my well-being; This organization is willing to extend itself in order to help me perform my job to the best of my ability; Even if I did the best job possible, the organization would fail to notice ®; This organization cares about my general satisfaction at work; This organization shows very little concern for me ®; This organization cares about my opinions; This organization takes pride in my accomplishments at work.	Ordinal
	<b>Independent Variable – RQ1</b>	<b>Organizational Justice (Colquitt, 2001)</b>	
DJ	Distributive Justice-H <sub>1b</sub>	Scale variable composed of the mean of five items, each with a 5-	Ordinal

SPSS Name	Variable	Coding	Measurement Scale
		point Likert response scale (1 = <i>strongly disagree</i> and 5 = <i>strongly agree</i> ): Evaluations and promotions reflect the effort I have put into my work; I am rewarded appropriately for the work I have completed; Evaluations and promotions reflect what I have contributed to my work; I agree with the feedback given about my performance; I am promoted based on work performance.	
SPSS name	Variable	Coding	Measurement Scale
IPJ	Interpersonal Justice-H <sub>1c</sub>	Scale variable composed of the mean of four items, each with a 5-point Likert response scale (1 = <i>strongly disagree</i> and 5 = <i>strongly agree</i> ): I am treated in a polite manner by my organization; My organization treats me with dignity; My organization treats me with respect; I have been subjected to improper remarks or comments.	Ordinal



SPSS			Measurement
Name	Variable	Coding	Scale
PJ	Procedural Justice-H <sub>1a</sub>	Scale variable composed of the mean of seven items, each with a 5-point Likert response scale (1 = <i>strongly disagree</i> and 5 = <i>strongly agree</i> ): Regarding decisions in the organization about evaluations, promotions, and assignments: I am able to express my views during evaluations of those procedures; Regarding decisions in the organization about evaluations, promotions, and assignments: I am able to influence decision procedures; Regarding decisions in the organization about evaluations, promotions, and assignments: The procedures are applied consistently; Regarding decisions in the organization about evaluations, promotions, and assignments: The procedures are free from bias; Procedures about decisions on pay, rewards, evaluations, promotions, and assignments are based on accurate information; I respect the goals and values of this organization; I believe this organization is	Ordinal

SPSS			Measurement
Name	Variable	Coding	Scale
		genuinely interested in my welfare.	
SPSS	Variable	Coding	Measurement
name			Scale
IFJ	Informational Justice-H <sub>1d</sub>	Scale variable composed of the mean of five items, each with a 5-point Likert response scale (1 = <i>strongly disagree</i> and 5 = <i>strongly agree</i> ): The organization is candid in its communications with me; The organization explains decision-making procedures thoroughly; Explanations regarding procedures in this organization are reasonable; Details are communicated to me in a timely manner; My organization tailors its communications to me on an individual basis.	Ordinal
<b>Dependent Variable (Moderator)- RQ4</b>		<b>Career Commitment (Blau, 1985)</b>	
SPSS	Variable	Coding	Measurement
name			Scale
CC	Career Commitment-H <sub>4</sub>	Scale variable composed of the mean of seven items, each with a 5-point Likert response scale (1 =	Ordinal

SPSS			Measurement
Name	Variable	Coding	Scale
		<p><i>strongly disagree</i> and 5 = <i>strongly agree</i>): I like this career too well to give it up; If I could go into a different profession which paid the same, I would probably take it ®; If I could do it all over again, I would not choose to work in this profession ®; I definitely want a career for myself in this profession; If I had all the money I needed without working, I would probably still continue to work in this profession; I am disappointed that I ever entered this profession ®; This is the ideal profession for a life's work.</p>	