WORK-FAMILY BALANCE SATISFACTION OF RACIALLY AND ETHNICALLY UNDERREPRESENTED MINORITY POSTDOCTORAL SCHOLARS IN THE STEM FIELDS
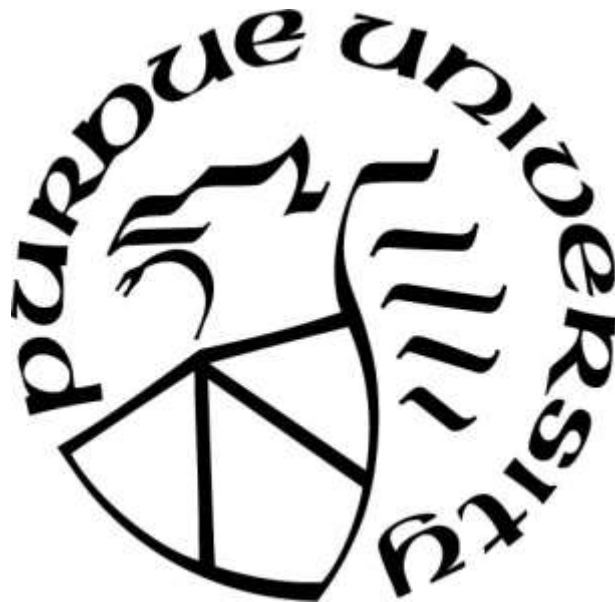
by

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For my dad. You have been with me throughout this whole journey.

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ABSTRACT

Author: Sullivan, Cristina, M. S. PhD
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Title: Work-Family Balance Satisfaction of Racially and Ethnically Underrepresented
     Minority Postdoctoral Scholars in the STEM Fields
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Postdoctoral scholars encounter various challenges as they navigate the gap between graduate school and faculty or industry positions, one of which includes the challenge of work-family conflict and balance. The science, technology, engineering, and mathematics (STEM) fields represent one sector of the workforce where a closer examination of work-family conflict and balance is important due to the rise in prominence of these fields and the unique populations of people who are underrepresented within these fields. Scholars have identified various experiences or constructs (e.g., bias) that suggest that STEM environments may not be particularly welcoming or supportive for racially and ethnically underrepresented minorities (URMs). The transitional stage of being a postdoctoral scholar in combination with high work demands and a "chilly" or unsupportive work environment may contribute to work-family conflict among racially and ethnically URM postdoctoral scholars in STEM, which could contribute to the underrepresentation of racially and ethnically URMs in the STEM fields and/or the premature exit of these postdoctoral scholars from STEM fields.

Using role congruity perspective (Diekman & Eagly, 2008), I examined the function of goal endorsement (communal or agentic) as a possible cultural moderator in the indirect relationship between work demand and work-family conflict. This study formulated and empirically tested the relationships between work demand, perceived

work environment, goal endorsement (communal or agentic), work-family conflict, and satisfaction with work-family balance. Two models were examined to differentiate two different aspects perceived work environment: (a) one using a supportive work environment variable as a mediator of the relationship between perceived work demand and work-family conflict, and (b) one using a hostile work environment variable as a mediator of the relationship between perceived work demand and work-family conflict. Hypotheses regarding the moderating role of a communal goal orientation and an agentic goal orientation in the indirect relationship between work demand and work-family conflict across the two models (supportive work environment and hostile work environment) were assessed.

Data was collected from 282 racially and ethnically underrepresented minority postdoctoral scholars in the STEM fields enrolled in postdoctoral positions at universities through an online survey. Using structural equation modeling, results revealed that the indirect effect between work demand and work-family conflict was significant and strongest at low levels of a communal goal endorsement and the indirect effect gradually became weaker until it was nonsignificant as racially and ethnically URM postdoctoral scholars' communal goal endorsement increased. The results suggest that in the face of microaggressions in the workplace, racially and ethnically URM postdoctoral scholars' high value of communion serves as a protective factor, which reduces the indirect effect of work demand on work-family conflict. Limitations of the study and recommendations for future research are presented alongside implications for counseling practice.

INTRODUCTION

Postdoctoral scholars face many challenges as they navigate the gap between graduate school and faculty or industry positions, one of which includes the challenge of work-family conflict and balance. Although work-family balance is not limited to individuals in romantic partnerships with children, postdoctoral scholars are typically at an age in which romantic partnering, having children, and navigating household roles are developmentally normal (Moors, Malley, & Stewart, 2014; Santrock, 2014). Furthermore, starting a family is often as important as career development for postdoctoral scholars, given their stage of life (Ferguson, Huang, Beckman, & Sinche, 2014; Puljak & Sharif, 2009). In a 2013 national survey of postdoctoral scholars, a majority of participants were between the ages of 30 and 35 (58%) and married or partnered (69%; Davis, 2005). Relatedly, 34% of postdoctoral scholars had children (Davis, 2005).

Lifecycle stage (e.g., single, dual income parents) is significantly associated with work-family conflict, indicating that individuals with responsibilities for the care of dependents (children or elders) are more likely to experience work-family conflict (Duxbury & Higgins, 2005). Work-family conflict, or interrole conflict between work and family, continues to impact individuals who maintain roles in the workforce and at home. Differing reports of endorsed work-family conflict exist. An estimated 25% to 50% of individuals aged 25-54 who live with family and also work at least part-time encounter work-family conflict (Bellavia & Frone, 2005). More recent research indicates that approximately that 70% of adults report experiencing work-family conflict (Schieman, Glavin, & Milkie, 2009). Work-family conflict and balance are studied in

terms of current conflict among working adults (e.g., Winefield, Boyd, & Winefield, 2014) and in terms of anticipated conflict among young adults and/or students (e.g., Coyle, Van Leer, Schroeder, & Fulcher, 2015).

The science, technology, engineering, and mathematics (STEM) fields represent one sector of the workforce where a closer examination of work-family conflict and balance is important due to the rise in prominence of these fields and the unique populations of people who are underrepresented within these fields. As of 2014, African Americans, Hispanic Americans, and American Indians comprised 30.5% of the United States population (National Science Foundation, 2015). Despite making up a large percentage of the United States population, this group is clearly underrepresented in the STEM fields as they comprise approximately 11% of Americans working in science and engineering occupations who hold college degrees, and about 13% of scientists and engineers employed at 4-year colleges or universities (National Science Foundation, 2015). For several decades, a goal of the United States has been to increase diversity in the STEM fields in order to ensure a quality STEM workforce and that the proportion of individuals in the STEM workforce mirror subgroups of the population of the United States (National Science and Technology Council, 2000). Additionally, it is imperative that diverse perspectives are brought forth to enhance the STEM workforce and compete globally, which requires that individuals of varied backgrounds are represented in the STEM fields (Ferrini-Mundy, 2013).

In order to remain competitive in the general workforce with global counterparts, a focus on research, skills, and innovation in the United States is critical (Ferguson et al., 2014). According to the National Postdoctoral Association (2007), a postdoctoral scholar

is "an individual holding a doctoral degree who is engaged in a temporary period of mentored research and/or scholarly training for the purpose of acquiring the professional skills needed to pursue a career path of his or her choosing" (para. 1). Completion of a postdoctoral position is essential in order to be competitive for procuring a faculty position and/or carrying out a career involving independent research in many science and engineering disciplines (Ferguson et al., 2014; National Science Board, 2016). Also, postdoctoral scholars in science and engineering disciplines conduct a large part of the research in the United States, thus they are essential to research (Ferguson et al., 2014; Gibbs, McGready, & Griffin, 2015; Puljak & Sharif, 2009).

The juncture between graduate school and the workforce is critical (Ferguson et al., 2014), and postdoctoral scholars face a variety of challenges and hold many responsibilities as they transition from graduate school to academic careers (Rybarczyk, Lerea, Whittington, & Dykstra, 2016). In terms of duties, postdoctoral scholars are responsible for conducting research, writing grant proposals, publishing research and scholarship, presenting research, and educating, training, and supervising other trainees (Ferguson et al., 2014; National Postdoctoral Association, n.d.b). Postdoctoral scholars seek support for career goals, guidance, and preparation (Ferguson et al., 2014). Ultimately, postdoctoral scholars are engaged in transitioning to career independence under the supervision of at least one postdoctoral advisor (National Postdoctoral Association, n.d.b).

Although a postdoctoral position centers on developing new skills and is temporary in nature, the position is also a full-time job involving traditional hours, salary, benefits, career development, and personal concerns (National Academy of Sciences,

2014). Eighty-seven percent of postdoctoral offices indicated that they have a centralized appointment process, allowing for postdoctoral scholars to be informed of the terms of their appointment and funding situations (Ferguson et al., 2014), which still means that some postdoctoral scholars may be unclear about such information. In comparison to permanent positions, salaries are typically lower for postdoctoral positions (National Science Board, 2016). Most institutions (63%) limit the maximum length of a postdoctoral appointment to five years across all institutions, but it is unclear how long postdoctoral scholars are spending in their respective positions (Ferguson et al., 2014). Puljak and Sharif (2009) noted that some postdoctoral scholars prolong their postdoctoral training because they cannot secure job. In conjunction with new and different work responsibilities, postdoctoral scholars may also encounter the responsibilities associated with starting a family or continuing to care for a family due to their average age, as noted above (Ferguson et al., 2014; Moors et al., 2014; Puljak & Sharif, 2009).

Over the past 30 years, the number of postdoctoral scholars has grown in all fields (National Academy of Sciences, 2014) for a variety of reasons such as the increasing competition for tenure-track and research-oriented academic positions and the need for specialized training (National Science Board, 2016). Estimations of the number of postdoctoral scholars in the United States and the number of postdoctoral scholars within disciplines differ depending on the source of data. According to Ferguson et al. (2014), there are approximately 79,000 postdoctoral scholars engaged in research in the United States. The National Postdoctoral Association's Institutional Policy Survey conducted in 2013 surveyed postdoctoral offices at 74 institutions and results from this survey indicated that 56% of postdoctoral scholars are male and 44% are female (Ferguson et al.,

2014). Interestingly, women following the academic career path are more likely to quit at the postdoctoral scholar to faculty juncture (Martinez et al., 2007). Additionally in regards to demographics, over half of postdoctoral scholars at most institutions are international individuals (Ferguson et al., 2014). Regarding the STEM fields, postdoctoral scholars in the engineering and social sciences fields have grown rapidly, but postdoctoral scholars in the life sciences comprise the majority of total postdoctoral scholars (National Academy of Sciences, 2014).

Regarding the growth of racially and ethnically underrepresented minorities (URMs) in postdoctoral positions, a 2003 survey of 7,600 postdoctoral scholars employed in universities, biomedical research institutions, and government institutes and laboratories revealed that 4% of postdoctoral scholars identified as Hispanic/Latino, 4% identified as Black/African American, and 1% identified as American Indian/Alaska Native (Davis, 2005). Women and underrepresented minorities have increasingly entered postdoctoral positions in recent years (National Academy of Sciences, 2014). Despite this increase, the numbers of African Americans and Latinos in postdoctoral positions remain below their representation in the United States population and their representation in the number of Ph.D. recipients (National Academy of Sciences, 2014).

In terms of postdoctoral scholars in the STEM fields, The National Science Foundation's Survey of Graduate Students and Postdoctorates in Science and Engineering estimated that there were 63,861 science, engineering, and health postdoctoral scholars in all institutions in 2015, 45,295 of which are in science and engineering fields specifically (NSF/NCSES, 2017). Disproportionately, 28,970 postdoctoral scholars in science and engineering fields are male and 16,325 are female

(NSF/NCSES, 2017); this male-to-female ratio contrasts the above noted 56% male to 44% female ratio reported in the general postdoctoral population (Ferguson et al., 2014). Of the postdoctoral fellows in science and engineering fields in 2015, 1,025 were Hispanic or Latino, 56 were American Indian or Alaska Native, and 641 were Black or African American (NSF/NCSES, 2017). In terms of racially and ethnically URM postdoctoral scholars in science and engineering fields who also identified as women, 506 were Hispanic or Latino, 29 were American Indian or Alaska Native, and 319 were Black or African American (NSF/NCSES, 2017). Despite all the postdoctoral growth, postdoctoral scholars have been understudied in the literature and data related to the postdoctoral experience, including their work-family balance experience, is difficult to find (Davis, 2005; Gibbs et al., 2015; National Academy of Sciences, 2014).

As noted above, obtaining and recording data on postdoctoral scholars and the postdoctoral experience has been limited. Only 45% of postdoctoral offices administer exit surveys, which allow for the examination of the success of postdoctoral programs and the tracking of career paths of postdoctoral scholars (Ferguson et al., 2014). Specifically, 77% of postdoctoral offices reported an inability to track postdoctoral scholars upon their completion of their postdoctoral appointments (Ferguson et al., 2014). Assessments and tracking during the duration of the postdoctoral appointment is also challenging. In terms of annual surveys disseminated to postdoctoral scholars, 50% of institutions ask about postdoctoral scholars' satisfaction with their current positions (Ferguson et al., 2014). Across 167 postdoctoral offices that serve the needs of postdoctoral scholars, "a lack of parity remains in postdoc funding, health insurance, appointment policies, collection of outcomes data, access to training programs, and

retirement benefits" (Ferguson et al., 2014, p. v), thus highlighting the need for further examination of postdoctoral scholars' experiences. Although some data has been collected across numerous institutions, many published studies have centered on postdoctoral scholars at a single institution (Gibbs et al., 2015). In sum, postdoctoral scholars represent an overlooked group studied within the literature, though ethnically and racially URM postdoctoral scholars employed within the STEM fields represent a unique, specific, and underexamined group of professionals to study.

Various experiences or constructs contribute to the dearth of African Americans, Hispanic/Latinos, and American Indians within the STEM fields. Racially and ethnically URM students and faculty members have reported experiencing bias in their respective STEM educational or occupational environments (e.g., Kameny, DeRosier, Taylor, McMillen, Knowles, & Pifer, 2014; Strayhorn, 2010; Turner, 2002). Related to bias, racially and ethnically URM students in the STEM fields also encounter stereotype threat (e.g., Tine & Gotlieb, 2013). Additionally, racially and ethnically URM students in STEM fields report a weaker sense of belonging or connectedness to their peers, university, and fields of study (e.g., Malone & Barabino, 2009). Taken together, such findings suggest that STEM environments may not be particularly welcoming or supportive for racially and ethnically URM students and faculty members in the STEM fields. Work environments are notorious for being "chilly" climates for women in STEM (Flam, 1991; Walton, Logel, Peach, Spencer, & Zanna, 2015), but they are likely to be unwelcoming for racially and ethnically URMs as well (Strayhorn, 2010) because racially and ethnically URMs are typically outnumbered in STEM. In addition to the stressors noted above, postdoctoral scholars in the STEM fields likely also encounter work-family

balance concerns given the developmental stage in which they are situated. The

transitional stage of being a postdoctoral scholar in combination with high work demands

and a "chilly" or unsupportive work environment may contribute to work-family conflict

among racially and ethnically URM postdoctoral scholars in STEM. Furthermore, work-

family conflict may be one contributor to the premature exit from STEM fields for

postdoctoral scholars. Work-family balance challenges may also contribute to the

underrepresentation of racially and ethnically URMs in the STEM fields, particularly in

combination with a "chilly work environment" and high work demands.

Role congruity perspective, which delineates from social role theory, will serve as

the guiding theoretical framework for the current study (Diekman & Eagly, 2008),

allowing for the examination of a cultural moderator in the overall investigation of

racially and ethnically URM postdoctoral scholars' work-family balance experience in

the STEM fields. According to role congruity perspective, men and women tend to

occupy different social roles within society that differ in their fostering of *agency* or

communion, which leads them to typically seek and accomplish goals that are afforded by

their specific roles (Diekman & Eagly, 2008; Eagly & Wood, 2012; Eagly, Wood, &

Diekman, 2000; Wood & Eagly, 2002). Falling in alignment with the division of labor

roles fosters communally- and agentically-oriented traits that are associated with such

roles, and the dichotomization of communal and agentic orientations perpetuates gender

stereotypes and constitutes gender roles (Eagly & Wood, 2012). One of the key

components of role congruity perspective is the importance placed on achieving role

congruity, which means that individuals' behavior becomes aligned with the demands of

their roles (Diekman & Eagly, 2008). Although gender roles have been largely studied in

conjunction with role congruity perspective given their ubiquity and general acceptance (Eagly et al., 2000), the benefits of experiencing role congruity should motivate behavior across various types of roles (e.g., cultural roles; Diekman & Eagly, 2008). As individuals behave in ways and seek roles (e.g., occupational, family) that are congruent with their social roles and help them fulfill important goals (e.g., communal or agentic), they reap benefits of achieving role congruity (Eagly & Wood, 2012). Benefits of making progress toward goals that are in alignment with social roles include improved well-being, increased likelihood of persevering on goals, and receiving positive evaluation from others (Diekman & Eagly, 2008; Eagly & Diekman, 2005). The current study extends role congruity perspective by examining communal and agnetic goal endorsement from a cultural roles lends instead of a gender role lens.

Purpose of the Study

To understand the work-family balance experience of racially and ethnically URM postdoctoral scholars in STEM fields as a potential leak in the pipeline or stressor among such postdoctoral scholars, particular consideration must be given to cultural factors and cultural context. Whiston, Campbell, and Maffini (2012) summarized the work-family balance literature to date and noted the gap in the literature regarding the study of work-family balance among racial and ethnic minorities. Relatedly, additional researchers have called attention to the fact that much of the research on work-family issues has been conducted on White individuals (e.g., Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Cole & Secret, 2012). Similarly, Ford, Heinen, and Langkamer (2007) noted the dearth of research that has examined the impact of cultural variability on work-family conflict in their meta-analysis. Additionally, researchers have identified the

various barriers racially and ethnically URM students and faculty members face in their educational and occupational settings. Postdoctoral scholars in the STEM fields face a critical transition because they must navigate the gap between graduate school and the workforce, maneuver barriers in the STEM fields, and developmentally balance work and family. Thus, the purpose of the current study is to examine the satisfaction with work-family balance of racially and ethnically URM postdoctoral scholars currently employed in postdoctoral positions in the STEM fields by investigating the predictors of work-family conflict and work-family balance satisfaction. The current study extends the research on work-family conflict and role congruity perspective literature by investigating the function of goal endorsement (communal or agentic) as a possible cultural moderator in the indirect relationship between work demand and work-family conflict.

Terminology and Concepts

The following is a list of terms that are operationally defined for the purposes of this study:

Work

Eby, Maher, and Butts (2010) combined definitions from researchers and defined work as "instrumental activities that provide goods and services to support life and generally refers to paid work" (p. 600). In addition to Eby et al.'s (2010) definition, work will also be limited to the duties aligned with and time spent in the postdoctoral positions that participants hold.

Family

Schultheiss (2006) moves beyond the traditional view of family (i.e., married heterosexual couple with children) and inclusively defines family as including "lesbian, gay, and bisexual couples, single parent families, unmarried life partners with and without children, and other unions in which some form of family or home life emerges" (p. 335) given that "all people who live interconnected communal lives" (p. 334-335) are affected by work and family challenges. In alignment with Edwards and Rothbard's (2000) definition of family, family members contribute to their family, or social organization, with the purpose of improving the well-being of family members and maintaining the family.

Work-Family Conflict

Greenhaus and Beutell (1985) defined work-family conflict as "a form of interrole conflict in which the role pressures from work and family domains are mutually incompatible in some respect" (p. 77). Frone, Yardley, and Markle (1997) proposed the idea of bidirectionality, which was inherent in Greenhaus and Beutell's (1985) definition, meaning that work can interfere with family and family can interfere with work.

Science, Technology, Engineering, and Mathematics (STEM)

The National Science Foundation (2015) defines science, technology, engineering, and mathematics (STEM) broadly. In reports generated on women, racial and ethnic minorities, and persons with disabilities in science and engineering fields, fields such as earth science, psychology, anthropology, and economics are included

(National Science Foundation, 2014). The National Science Foundation's (2015)

definition of STEM will be used in this study.

Postdoctoral Scholars

Postdoctoral scholars will include all individuals who have obtained their doctoral

degrees and are currently employed in a designated postdoctoral position, which is in

alignment with the National Postdoctoral Association's (2007) definition of a

postdoctoral scholar reported above. Ferguson et al. (2014) noted that institutions use

various titles such as postdoctoral scholar, postdoctoral fellow, postdoctoral trainee,

research fellow, and research associate. For continuity, the term "postdoctoral scholar"

will be used throughout this paper.

Underrepresented Minorities (URMs)

Underrepresented minorities (URMs) will be operationally defined as any

individual who identifies as African American or Black, Hispanic or Latino, and/or

Native American. This definition is in alignment with the definition provided by various

STEM- and diversity-related organizations (e.g., National Academy of Sciences, 2014;

National Action Council for Minorities in Engineering, 2013; National Institute of

General Medical Sciences, 2017). For the purpose of the current study, the term "URM"

will refer to racially and ethnically URMs.

Relevance and Significance to the Field of Counseling Psychology

The proposed research project is highly relevant to the field of counseling

psychology for a variety of reasons. Additionally, the present study is expected to

contribute to both theory and practice. First, the foundation of the proposed study is

rooted in a few unifying themes and core values of the field of counseling psychology. According to Gelso and Fretz (2001), an emphasis on person-environment interactions and an emphasis on educational and career development and educational and vocational environments serve as two unifying themes of the field of counseling psychology. The focus of this study involves the intrapsychic experiences of postdoctoral scholars while also taking into consideration the interpsychic experiences, or environment, by examining perceived work environment. Furthermore, the interaction between person and environment is a critical focus of the proposed study. Additionally, the project involves an examination of the vocational demands and perceived vocational environment, thus aligning with another unifying theme of the field of counseling psychology. Relatedly, the project centers on the experience of postdoctoral scholars, which is a specific educational stage that occurs within a unique educational environment. Delgado-Romero, Lau, and Shullman (2012) noted diversity as a core value of the field of counseling psychology. Diversity and multiculturalism are key to the proposed research project because the work-family balance experience of racially and ethnically URMs will be examined in the context of their cultural experience (e.g., communal goals). Multicultural competence is highly valued in the profession of counseling psychology, which contributes to counseling psychologists' ability to provide psychotherapy from a holistic perspective (Sue, 2001). Clinically, in order to be a multiculturally competent psychologist, one needs to be able to address cultural differences and similarities with clients when appropriate (La Roche & Maxie, 2003). An understanding about relevant cultural variables that may impact the work-family balance experience of racial and

ethnic minority clients will likely contribute to a more culturally competent therapeutic

approach and thus, enhanced therapeutic outcomes.

Second, Whiston et al. (2012) summarized the work-family balance literature

through a counseling psychology lens in an American Psychological Association

handbook chapter and noted the gap in the literature when it comes to studying work-

family balance among racial and ethnic minorities. Clearly, work-family conflict and

work-family balance are experiences relevant to people in our society and are experiences

that are studied among counseling psychologist researchers, yet the experience of work-

family balance of racial and ethnic minorities remains understudied.

Third, instead of simply using a measure of work-family conflict as the outcome

or dependent variable, a measure of satisfaction with work-family balance will be used,

which examines a more affective response. Incorporating an affective component is

useful to the field of counseling psychology because therapy conducted from a variety of

theoretical orientations such as an interpersonal process approach emphasizes emotion

and affect as a means for conceptualizing clients (e.g., Teyber & McClure, 2011). In

terms of practical applications, if a client is seeking counseling for work-family balance

difficulties, affect and emotions will become central to the therapeutic work. Relatedly,

the proposed research project is useful and relevant to the various STEM fields. The

results of the study could lead to the development of better work-family balance support

mechanisms for racially and ethnically URM postdoctoral scholars in the STEM fields,

which may lead to greater satisfaction among postdoctoral scholars and higher retention

of racially and ethnically URMs in all STEM fields. Postdoctoral scholars are at a

disadvantage because support services, including mental health services, are not as well

defined for them in comparison to the support services available to administration,

faculty, staff, and undergraduate and graduate students (National Postdoctoral

Association, n.d.a), thus this study may assist in highlighting unique stressors racially and

ethnically URM postdoctoral scholars face that may necessitate support services.

Chapter Organization

The following chapter details the relevant literature behind the theories and

concepts used in the study, including social role theory, role congruity perspective, goal

endorsement (agentic or communal), work demand, perceived work environment, work-

family conflict, and work-family balance. Additionally, research questions and

hypotheses will be presented. The third chapter will go on to describe the methodology of

the study. The final chapters will summarize the results and related discussion from the

study.

LITERATURE REVIEW

This chapter is organized according to relevant theories and variables used to conceptualize the current study. It begins with a discussion about social role theory and role congruity perspective, and then moves forward to describe the constructs of goal endorsement, work demand, perceived work environment, work-family conflict, and work-family satisfaction. The chapter ends with a section describing the purpose, overarching research questions, and hypotheses of the current study.

History of Guiding Theoretical Framework: Social Role Theory

In the current study, I examine the role of cultural moderators (communal and agentic goals) in the overall investigation of racially and ethnically URM postdoctoral scholars' work-family balance experience in the STEM fields, and these cultural moderators stem from role congruity perspective. Role congruity perspective delineates from social role theory, thus a brief discussion on social role theory is warranted. Social role theory is broad in scope and comes from a social psychology perspective that centers on social roles and role-related processes as an explanation for sex differences and similarities (Eagly, 1987; Eagly & Wood, 2012). The concept of roles are important because of the interaction that occurs between the person and the environment (Eagly & Wood, 2012). In short, differences and similarities between men and women reflect individuals' gender role beliefs (Eagly, 1987), which then represent their perceptions of the social roles men and women occupy in their society (Eagly & Wood, 2012).

Broad Overview

According to social role theory, a biosocial theory, a variety of components contribute to sex differences and similarities (Eagly & Wood, 2012). Physical specialization of the sexes and local conditions interact to contribute to the division of labor (Eagly & Wood, 2012; Wood & Eagly, 2002). Physical sex differences evolved such that men are larger, faster, and stronger, and women carry and nurse babies (Wood & Eagly, 2002; Eagly & Wood, 2012). Such physical sex differences contribute to a division of labor with men typically engaging in paid work, particularly in positions of power, and women typically engaging in domestic and caretaking work, even when in the paid workforce (Eagly & Wood, 1999).

The division of labor between men and women leads to gender role beliefs, resulting in socialization that also facilitates this division (Eagly & Wood, 2012). At the time of the development of social role theory, emerging work on stereotypes described men as "agentic" and women as "communal," and such stereotypes constitute gender roles (Eagly & Wood, 2012). Agentic traits encompass independence, assertiveness, dominance, and aggression, whereas communal traits encompass friendliness, emotional expression, unselfishness, and a concern for others (Bakan, 1966; Eagly & Wood, 2012). The engagement of more women in roles that are mostly facilitated by communal traits and more men in roles mostly facilitated by agentic traits contribute to the gender stereotypes and gender roles that women are more communal and men are more agentic (Eagly & Wood, 1991; Eagly & Wood, 2012). Thus, it also comes to be expected by individuals and society that women possess high levels of communally-oriented traits and men possess high levels of agentically-oriented traits (Eagly & Wood, 1991). It is

important to note that gender roles are malleable and mirror the typical work and family roles of men and women, which can change as a result of technology, the economy, and broader social structure (Diekman & Eagly, 2000; Eagly & Wood, 2012). Socialization from society also occurs, which promotes personality traits and skills that enable role performance in roles such as work and family (Eagly & Wood, 2012; Wood & Eagly, 2002).

Through the biological and psychological processes of hormonal regulation, social regulation, and self-regulation, gender role beliefs act on behavior (Eagly & Wood, 2012). For example, gender roles become internalized by individuals as self standards or gender identities, prompting the regulation of their own behavior in order to receive benefits such as increased self-esteem and approval (Eagly & Wood, 2012; Wood & Eagly, 2010). A conceptual diagram of social role theory is presented in Figure 1.
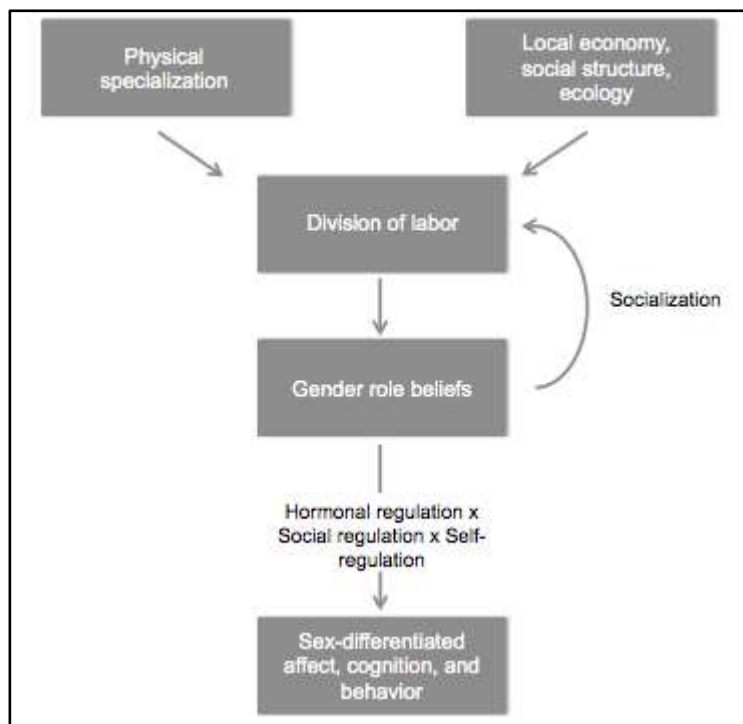
Figure 1. Conceptual model of social role theory.

Guiding Theoretical Framework: Role Congruity Perspective

Role congruity perspective delineates from social role theory and seeks to understand sex differences and similarities in motivation (Diekman & Eagly, 2008). Although role congruity perspective is grounded in social role theory, it is individually important and has a unique focus (Eagly & Karau, 2002). Role congruity perspective goes further than social role theory to examine the congruity between gender roles and other roles (Eagly & Karau, 2002), how roles influence the goals of men and women, and the methods of pursuit that men and women elect to meet their goals (Diekman & Eagly, 2008).

Broad Overview

A common belief is that life goals are prioritized differently among men and women such that men primarily seek prestige and power, whereas women desire close relationships and intimacy (Diekman & Eagly, 2008). Goals that align with the opportunities afforded by society lead to rewards such as more ease in completing important tasks and building interpersonal relationships (Diekman & Eagly, 2008). Whether done consciously or not, individuals work to maximize rewards and minimize costs, given the opportunities within and limitations of the role system embedded within society (Diekman & Eagly, 2008). Men and women typically occupy different social roles within society and these roles frame the differing motivations and methods of achieving such motivations among men and women (Diekman & Eagly, 2008; Wood & Eagly, 2002). Individuals also tend to seek and accomplish goals that are afforded by their specific roles (Diekman & Eagly, 2008).

According to role congruity perspective, it is important for individuals to achieve role congruity, which involves the alignment of individuals' behavior with the demands of their roles (Diekman & Eagly, 2008). The role congruity perspective adheres to the assumption that beliefs about the consequences of behaviors and beliefs about the approval of behaviors from important others will interact to influence an individual's behavior (Diekman & Eagly, 2008). Thus, benefits gained as a result of achieving role congruity motivate behavior across various types of roles (e.g., cultural roles), but to date, the role congruity perspective has largely been conceptualized and examined with a focus on gender roles (Diekman & Eagly, 2008). Gender roles have been of primary focus within the role congruity perspective literature given their pervasiveness, applicability to everyone, and general acceptance by everyone (Eagly et al., 2000). Additionally, even people who have embraced alternative gender beliefs still face the impact of gender roles because others adhere to and apply gender norms within society (Ridgeway & Correll, 2004). Gender roles apply across various settings and all parts of life, unlike more specific roles (e.g., mother, engineer) that are more relevant to behavior depending on the context of a group or organizational setting (Diekman & Eagly, 2008). Given their pervasiveness, gender roles also coexist with the more specific roles that individuals hold (Diekman & Eagly, 2008).

Because role congruity perspective delineates from social role theory, many conceptual pieces of the role congruity perspective overlap with conceptual components of social role theory. As noted above, role congruity perspective also adheres to the social role theory idea that the division of labor reflects the physical specialization of men and women, which thus contributes to gender roles (Eagly & Wood, 2012; Diekman & Eagly,

2008; Wood & Eagly, 2002). As a result of the division of labor, men and women may aim for goals that relate to their sex-differentiated roles (Diekman & Eagly, 2012). Men's and women's roles differ in their fostering of *agency* and *communion*, which are defined above, and such orientations come from the roles that men and women have typically held (i.e., men in male-dominated roles often with more power and authority, women in caretaking roles; Diekman & Eagly, 2008; Eagly & Wood, 2012; Eagly et al., 2000). Different goals become internalized, which is evidenced by studies in which men and women self-report their communal and agentic traits (Diekman & Eagly, 2008).

An individual, others, or a combination of both can set the standards used to evaluate role congruity (Diekman & Eagly, 2008). Role congruity results in rewards, whereas role incongruity results in punishments (Diekman & Eagly, 2008; Eagly & Diekman, 2005). In other words, engaging in behavior that is in alignment with gender roles can lead to positive outcomes, whereas role incongruity can be troublesome (Diekman & Eagly, 2008; Eagly & Diekman, 2005). Regardless of whether an individual achieves role congruity or faces role incongruity, intrapersonal (e.g., positive affect) and interpersonal (e.g., acceptance from others) consequences occur (Diekman & Eagly, 2008). In terms of intrapersonal consequences, as role congruity improves, individuals' well-being improves, indicating the benefits of working toward specific goals that correspond to one's motivational drives (Diekman & Eagly, 2008). Additionally, individuals are more likely to continue working towards their goals and also attain their goals when making progression toward role congruity (Diekman & Eagly, 2008). In terms of interpersonal consequences, demonstrating fit to gender roles is beneficial for individuals given that they will likely be positively evaluated by others, whereas

demonstrating a misfit to gender roles may sometimes be ignored, but can also be negatively evaluated (Diekman & Eagly, 2008; Eagly & Diekman, 2005).

In alignment with much of what is noted above related to social role theory, internal and external mechanisms contribute to the social roles of men and women, which then lead to different motivations (Diekman & Eagly, 2008). In terms of external mechanisms, the separation of men and women into different social roles primarily leads to sex differences (Diekman & Eagly, 2008). Such a division between men and women begins as early as childhood through means such as the encouragement of children to engage in gender-normative activities (Diekman & Eagly, 2008; Lytton & Romney, 1991). In terms of the external mechanism of environmental affordances, the differing contexts of male- and female-dominated roles afford individuals the opportunity to pursue different goals, which means that individuals should be drawn to roles that afford the pursuit of goals that are personally important (Diekman & Eagly, 2008). For example, caretaking roles afford opportunities for empathy and fostering the development of others (Diekman & Eagly, 2008). Individuals are more likely to select and remain in occupations that they perceive as affording the pursuit of their important goals (Diekman & Eagly, 2008). Social interaction represents an additional external mechanism that ultimately contributes to differences in motivation and behavior among men and women. Individuals who have not internalized gender norms may also seek gender-normative goals given that simply interacting with individuals who adhere to gender-stereotypical beliefs can evoke gender-stereotypical behavior (Diekman & Eagly, 2008; Geis, 1993). Automatically activated goals represent a third external mechanism. Goals corresponding to roles individuals hold can be automatically activated without awareness by cues

inherent to these roles or their physical or social environments, thus leading to role-congruent behavior and cognition (Diekman & Eagly, 2008).

Internal mechanisms also contribute to the social roles of men and women which then lead to different motivations (Diekman & Eagly, 2008). The activities and rewards related to sex-typed roles become linked to the self such that sex-typical goals are internalized (Diekman & Eagly, 2008). In terms of the internalized mechanism of the self-concept, individuals self-regulate their behavior in order to conform to gender-normative goals and standards because gender role is an important component of the self concept and individuals learn of the consequences of conforming to or deviating from gender roles (Bussey & Bandura, 1999; Diekman & Eagly, 2008; Wood & Eagly, 2002). Self-efficacy represents an additional internalized mechanism (Diekman & Eagly, 2008). Individuals should engage in behaviors that they think they will execute successfully given that people tend to work toward maximizing perceived utilities (Diekman & Eagly, 2008). Internal and external mechanisms intersect to contribute to differences in motivations and behavior (Diekman & Eagly, 2008). For example, individuals who are consistently exposed to particular roles will internalize role-relevant goals, and individuals who have internalized goals regarding roles will seek or create environments that facilitate such goals (Diekman & Eagly, 2008).

Ultimately, alignment with important social roles is a strong motivational force, and social roles will play a role in the kinds goals individuals elect and how they pursue such goals given the opportunities for goal pursuit that social roles afford (Diekman & Eagly, 2008). It is important to note that individual differences exist between men and women regarding gender differences in agency and communion, and that even though

individuals may strive for both agency and communion, gender roles may shape methods of pursuit (Diekman & Eagly, 2008). Individuals reap rewards when they fit to gender roles, but often encounter resistance from others when entering into nontraditional roles, thus making social change difficult (Diekman & Eagly, 2008; Eagly & Diekman, 2005). Gender roles can restrict individuals from behaving in ways they desire if these ways are atypical of their gender (Diekman & Eagly, 2008). When roles change, behavior changes, which is positive given the changes occurring in terms of gender roles, but a society that is respectful of people behaving in ways they desire is ideal for allowing individuals to achieve aspects of both agency and communion (Diekman & Eagly, 2008).

Goal Endorsement

As noted above, stereotypes describing men as agentically-oriented and women as communally-oriented comprise gender roles (Eagly & Wood, 2012), thus a discussion on these goal endorsements is imperative. To reiterate, an agentic-orientation encompasses independence, assertiveness, dominance, and aggression, whereas a communal-orientation encompasses friendliness, emotional expression, unselfishness, and a concern for others (Bakan, 1966; Eagly & Wood, 2012). Accommodating to division of labor roles fosters traits that are associated with such roles, which also perpetuates the gender stereotypes and gender roles (Eagly & Wood, 2012). Given that roles shape motivation, individuals aim to fulfill motivations in ways that are congruent with their gender roles (Eagly & Wood, 2012). Furthermore, individuals will select roles (e.g., occupational, family) that fulfill important goals (e.g., communal or agentic). Additionally, individuals internalize different goals and thus value and describe themselves in terms of these communal and agentic goals (Diekman & Eagly, 2008).

According to social role theory and role congruity perspective, men display agentic behaviors more often than women given their greater presence in authority and status roles (Diekman & Eagly, 2008). Although more women have entered into the paid labor force since the 1950s, men's participation in the paid labor force has remained stable (Diekman & Eagly, 2008). In alignment with social role theory's delineation that gender roles are dynamic (Diekman & Eagly, 2008), women's levels of agency in terms of masculine-stereotyped characteristics (Twenge, 1997), assertiveness (Twenge, 2001), desire for control (Burger & Solano, 1994), and value of economic success (Diekman & Eagly, 2008; Eskilson & Wiley, 1999) have increased over time, whereas men's have remained stable. Additionally, differences in achievement motivation between men and women have not emerged in more recent research (Diekman & Eagly, 2008; Mendez & Crawford, 2002). In sum, although research indicates that men engage in more agentic behavior compared to women, women appear to be increasingly engaging in agentic behavior given their entry into male-dominated roles (Diekman & Eagly, 2008).

According to Diekman and Eagly (2008), although women appear to be adopting more agentic traits, they continue to display more communal traits compared to men given their entry into jobs that involve caretaking (England, Budig, & Folbre, 2002) and value of communal characteristics (Cejka & Eagly, 1999). Relatedly, the division of labor of family roles has seen little change in terms of gender composition as evidenced by the discrepancies in hours spent completing household activities, caring for household members (Bureau of Labor Statistics, 2016), and caring for elderly family members (Brewer, 2001) such that women contribute more hours compared to men. Women's levels of communion in terms of feminine-stereotyped characteristics (Twenge, 1997),

caring personality traits such as tender-mindedness (Feingold, 1994), and expression of concern and responsibility for others' welfare (Beutel & Marini, 1995) are higher than those of men's communal characteristics. Research suggests that women place greater importance on attaining family goals in comparison to men (Eskilson & Wiley, 1999), but both men and women's goals transition to family-related goals upon transitioning to parenthood, despite the change in goals still being stronger for women (Salmela-Aro, Nurmi, Saisto, & Halmesmäki, 2000).

Earlier research regarding the work-family interface primarily used objective characteristics of an individual's work or family roles (e.g., education level, job type, marital status, number of children), which clouded the complexity of work and family roles (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). Thus, the measure of goal endorsement used in this study is a more phenomenologically rich construct.

Race/Ethnicity and Goal Endorsement

Although gender roles have been the primary focus within the role congruity perspective, gender roles represent only one type of role that impacts behavior (Diekman & Eagly, 2008). Culture also shapes motivation (Diekman & Eagly, 2008). Beyond gender roles, cultural roles warrant a brief examination because they can also lead to role congruity or incongruity. Additionally, a few cultural values important to racially and ethnically underrepresented minorities parallel the goal endorsement of communion.

Collectivistic values encompass the placement of in-group needs above individual needs (Hofstede, 1980) and such values are central to African Americans, Latinos, and Native Americans (Gaines et al., 1997). According to Triandis (1995), obligation to and consideration of one's social identity group or community needs above personal needs

comprises collectivism. Collectivism represents an important aspect of African American racial identity (Carson, 2009; Nobles, 1991). Navajos, who represent one subgroup of Native Americans, also demonstrate collectivistic values in addition to individualistic characteristics (Hossain, Skurky, Joe, & Hunt, 2011). Latinos adhere to more of a collectivist ideology, in comparison to their White counterparts (De Luca & Escoto, 2012). Relatedly, traditional values of Latino culture emphasize the value of giving back to one's community (De Luca & Escoto, 2012). According to Hofstede (1997), Latinos embrace an allocentric orientation, or community-minded emphasis. The connection between collectivism and racially and ethnically URM groups in the literature has led to culturally-informed scale development such as the Collectivistic Coping Styles Measure for international students of minority backgrounds (Moore & Constantine, 2005).

Similar to collectivism, *familismo* is an organizing principle important to the Latino population, which indicates that family ties are strong and typically reach beyond the nuclear family (Flores, Robitschek, Celebj, Andersen, & Hoang, 2010; Marín & Marín, 1991; Paniagua, 2005). Although *familismo* and collectivism are different concepts, familism represents a facet of a collectivistic orientation (Spector et al., 2004). In conjunction with the above literature on social role theory and role congruity perspective, collectivism and familismo conceptually parallel notions of communal goals such as serving community, helping others, connection with others, and caring for others. The consistency between communal goals and notions of collectivism and familismo bears noting given that racially and ethnically URMs and their goal endorsements will be examined in this study. In a study conducted by Soto and Deemer (2018) drawing on the same parallel between communal goals, collectivism, and familismo, communal goals

emerged as a significant positive predictor of academic satisfaction for Latino students at a predominantly White institution, but not for White students.

Recent research has also broadened role congruity perspetive to cultural roles, connecting communal goals with racially and ethnically URM groups. Boucher, Fuesting, Diekman, and Murphy (2017) discussed the applicability of communal goal incongruity to racially and ethnically URM groups in college, noting that perceiving academic culture as rewarding of independence above interdependence can lead to a mismatch, which can impact overall success in college. Given that members of racially and ethnically URM groups tend to highly value communal goals, the perception that STEM fields are less communal can be detrimental to their success (Boucher et al., 2017). Smith, Cech, Metz, Huntoon, and Moyer (2014) found that Native American students in STEM endorsed communal goals more highly than individualistic work goals, and that Native American students in STEM endorsed communal goals significantly more than White male students in STEM. Additionally, they identified connections between communal goals and feelings of belonging uncertainty, reduced motivation, and perceived poor performance given the mismatch between communal goals and STEM. In their reivew, Boucher et al. (2017) argued that communal goal incongruity acts as a barrier for racially and ethnically URM groups in STEM. Moreover, they noted that URM groups highly value collaborative and altruistic motivations, or in other words, communal goals, and called for the examination of the positive impact that communal goal congruity may have on racially and ethnically URMs' experiences in STEM. Although, gender roles have been the primary focus within the role congruity perspective, cultural roles, communal goals, and communal goal incongruity represent emerging research areas.

The aim of the current study is to continue the extension of role congruity perspective to cultural roles and the experience of racially and ethnically URM postdoctoral scholars in the STEM fields. Given the literature on collectivism, familismo, and recent research on communal goal incongruity, it is clear that culture impacts perceptions of interpersonal obligation, which likely influences individuals' experiences of work-family balance. Much of the research to date has centered on the impact communal goal incongruity has on work experiences in STEM, yet communal goals as a cultural process that impacts ways of interacting with others, perceptions, and behavior likely impacts domains involving others beyond work, like family or the work-family interface. Thus, the current study furthers the emerging research on role congruity perspective among URMs in STEM by examining goal endorsements of URM postdoctoral scholars in STEM fields and their impact on the work-family interface.

Additional Role Congruity Perspective Literature

Some researchers have examined the roles that masculinity and femininity and/or particular occupational values that parallel the constructs of communion and agency from role congruity perspective in the context of careers. For example, Weisgram, Dinella, and Fulcher (2011) studied the impact masculinity/femininity, occupational values, and the perceived value affordances of one's expected career have on career choice. Related to the current study, they found that women scored higher in femininity than men and men scored higher in masculinity than women, which is important given that the goals endorsements (agentic and communal) within the role congruity perspective mirror the constructs of masculinity and femininity and such goal endorsements also stem from gender roles. Weisgram et al. (2011) also found that women endorsed values of family

and altruism more than men, which are values that are conceptually similar to communal goals. Furthermore, women expected their future job to afford them time to spend with their family and opportunities to help others more than men. Additionally, the researchers found that men endorsed the value of money more than women, which is a value that conceptually aligns with agentic goals. In regards to additional findings on gender differences in goal endorsement, Evans and Diekman (2009) noted that women typically endorse communal goals more in comparison to men. Specifically, women tend to place greater value on interpersonal relationships and helping others than men (Konrad, Ritchie, Lieb, & Corrigall, 2000).

Simon, Wagner, and Killion (2017) examined the role that masculinity and femininity play in STEM career outcomes among men and women by studying STEM and non-STEM majors. Given role congruity perspective and gender roles, masculinity connects with agentic goals and femininity connects with communal goals. The researchers found that STEM majors endorsed significantly lower scores on the femininity scale compared to non-STEM majors. Interestingly, scoring higher on the femininity scale was related to a decreased likelihood of majoring in STEM for female participants, but not male participants. Simon et al. (2017) argue that such results may be due to the different meanings masculinity and femininity have depending on whether men or women are displaying the two traits. Moreover, they noted that men displaying feminine traits, like communal values, may be viewed as particularly well-rounded for STEM, whereas women displaying feminine traits may be guided toward female-dominated careers instead. Another interesting finding from Simon et al.'s (2017) study is that men who endorsed higher scores on the femininity scale also endorsed higher scores

on a communitarian/altruistic occupational value scale, which in turn was related to a decreased likelihood of majoring in STEM, though independently, men who endorsed higher scores on the femininity scale were more likely to major in STEM.

Role congruity perspective and the construct of goal endorsement is becoming increasingly prominent in the career development literature. Some research, in fact, has explicitly used role congruity perspective as its underlying theoretical framework and centered on the STEM fields. Diekman, Brown, Johnston, and Clark (2010) specifically employed role congruity perspective in order to examine whether careers are perceived as compatible with or as affording particular goals, and if these particular perceptions play a role in interest and disinterest in certain careers. The researchers specifically sought to determine factors impacting differential interest in STEM, male-stereotypic/non-STEM (e.g., lawyer), and female-stereotypic (e.g., nurse) careers. Results indicated that participants perceived STEM careers as the most inhibitory of communal goals of the three groups of careers examined. Furthermore, the endorsement of communal goals inhibited or negatively predicted interest in STEM (even when controlling for math-science experience and self-efficacy), whereas the endorsement of agentic goals facilitated or positively predicted interest in STEM. Interestingly, communal goal endorsement facilitated interest in female-stereotypic careers, whereas agentic goal endorsement inhibited interest. Communal goal endorsement also mediated the relationship between gender and STEM interest, indicating that the endorsement of communal goals may provide a unique explanation as to why women are disinterested in pursuing careers in STEM. In sum, even if women are talented in the areas of STEM, they may forgo pursuing STEM careers because such careers are perceived as inhibiting

communal goals, which are highly valued (Diekman et al., 2010). An individual's goals
and his or her notions as to whether certain careers provide the opportunity for such goals
to be met are key factors to consider when assessing career interest and choice (Diekman,
et al., 2010). Careers tend to be perceived as either affording communal or agentic goals,
such as the perception that STEM careers hinder communal goals (Diekman et al., 2010).

An additional study conducted by Diekman, Clark, Johnston, Brown and
Steinberg (2011) demonstrated that an understanding of communal goals and stereotypes
about goal affordances assists in understanding attitudes about pursuing STEM. More
specifically, the researchers found that women endorsed communal goals more than men
and men marginally endorsed agentic goals more than women, indicating that gender
differences are primarily found for communal goal endorsement, rather than agentic goal
endorsement. Similar to the previous study noted, Diekman et al. (2011) found that
participants perceived STEM careers as less affording of or impeding communal goals in
comparison to other male-stereotypic careers and female-stereotypic careers.
Alternatively, participants perceived male-stereotypic careers as affording agentic goals
most, followed by STEM careers, and then female-stereotypic careers. In addition,
science emerged as less closely related to "warmth" (vs. "power") and "together" (vs.
"alone"), which are components of communion, in comparison to medicine using Implicit
Association Tests (IATs), particularly among women compared to men. Diekman et al.
(2011) continued to test the impact of situationally activated communal goals on STEM
interest by activating communal goals through a writing task. The researchers found that
although situationally activating communal goals did not impact participants' interest in
male-stereotypic or female-stereotypic careers, the activation of communal goals reduced

interest in STEM careers. Such results demonstrate that communal goals can become more salient in particular environments, which in turn leads to their stronger impact. Finally, Diekman et al. (2011) found that science careers framed as involving collaboration, indicating they afford communal goals, were viewed more positively, particularly among women and individuals who highly endorsed communal goals. In sum, Diekman et al. (2011)'s study demonstrates that communal goals and stereotypes about the goal affordances of STEM careers play a role in the pursuit of or avoidance of STEM careers. STEM careers are perceived as less attractive for those who endorse communal goals, including men, which indicates a "communion" problem may be part of the larger "gender" problem in STEM. Additionally, communal goals and stereotypes about goal affordances are malleable, which is particularly important for interventions aimed to increase the representation of underrepresented groups in the STEM fields (Diekman et al., 2011).

Brown, Thoman, Smith, and Diekman (2015) found that the more students (male and female) and individuals not enrolled in college perceive careers in STEM as affording communal goals, the more they are interested in STEM careers. Participants also expressed more positivity toward research tasks when they perceived careers in STEM as affording communal goals. Additionally, the researchers found that individuals who endorsed a stronger communal orientation expressed less interest in STEM careers. Furthermore, Brown et al. (2015) noted that undergraduate research assistants reported enhanced STEM motivation at the end of the semester when they perceived science as affording communal goals at a point in time mid-semester. Ultimately, beliefs about the affordance of communion is important for career motivation, particularly STEM

motivation for communally oriented people, which points to the promise of interventions that aim change the uncommunal stereotypes about STEM in order to retain people in STEM and interest more people in STEM.

All encompassing, Eby et al. (2005), reported a gap in the work-family literature concerning the examination of individual differences and their impact on the work-family interface, thus the implementation of goal endorsement as a variable, which relates to individual role values, attitudes, and motives, assists in adding to the work-family literature.

Work Demand, Perceived Work Environment, and Work-Family Conflict

Work Demand

In this section, first, I will present an overview of work demand and provide information on the conceptualization of work demand. Then, I will describe the research related to work demand and its relationship to work-family conflict in general. Finally, I will summarize the work demand literature dealing with URMs in the STEM fields.

General Overview of Work Demand

Job demands predict work-family conflict, which means that experiencing greater demands and pressure at work is associated with increased work-family conflict (Butler, Grzywacz, Bass, & Linney, 2005). Work demand is an important work-related factor to consider in work-family conflict research given possible crossover effects between coupled individuals. Partners can experience spillover and crossover effects, where by job demands negatively interfere with family life and increase exhaustion and/or life dissatisfaction, which then become transferred to the other partner (Demerouti, Bakker, &

Schaufeli, 2005). Thus, negative experiences can transfer between work and family and also between people (Demerouti et al., 2005).

Work hours per week is most studied when conceptualizing work demand (Barnett, Gareis, & Brennan, 1999; Duxbury & Higgins, 2005). In regards to work demand conceptualized in terms of time or hours, work time demands are positively related to work-family conflict (Carlson & Kacmar, 2000; Carlson & Perrewé 1999). Similarly, Grzywacz and Marks (2000) noted that working more hours was associated with increased work-family conflict for men and women. Working overtime was positively related to work-family conflict in a study conducted by Van Der Hulst and Geurts (2001). According to Hammer, Saksvikm, Nytrø, Torvatn, and Bayazit (2004), work-family conflict positively correlates with job demands. Nielson, Carlson, and Lankau (2001) also reported a significant positive correlation between hours worked and work-family conflict. According to O'Driscoll, Ilgen, and Hildreth (1992), work time demand was positively related to work-family conflict, but this was not the case when examining non-work demands of time such as participating in family activities or household responsibilities. Conversely, engaging in non-work activities was associated with reduced work-family conflict and psychological strain (O'Driscoll et al., 1992). A study conducted by van Daalen, Willemsen, and Sanders (2006) indicated that working hours positively correlated with both time-based and strain-based work-family conflict. In a meta-analysis, Ford et al. (2007) noted that hours worked per week was positively correlated with work-family conflict. Similarly, Bryon (2005) noted in his meta-analysis that employees who spend more time at work experience more work-family conflict.

According to Fox and Dwyer (1999), quantity of workload, work variability, and the frequency of stressful events are significantly associated with work-family conflict.

Beyond correlations, Delgado and Canabal (2006) found that hours worked per week significantly impacted negative spillover from work to family. Michel, Mitchelson, Pichler, and Cullen (2010) reported that work time demand predicted work-family conflict as well. Similarly, hours spent at work, work distress, and work overload, predicted work-family conflict (Frone et al., 1997). In a meta-analysis, Ford et al. (2007) noted that hours worked per week and work stress emerged as significantly unique predictors of work-family conflict (Ford et al., 2007). Work demands predicted 21% of the variation of work to family interference in a sample of Canadian men and 20% of the variation for Canadian women (Duxbury & Higgins, 2005). Men and women are more likely to report higher work-family conflict if they work longer hours each week, work unpaid overtime, perform supplemental work at home, and take part in more job-related travel (Duxbury & Higgins, 2005). More specifically, employment in a workplace that promotes a "culture of hours" predicts work-family conflict for men and women, but more strongly for men (Duxbury & Higgins, 2005). A "culture of hours" as defined by Duxbury and Higgins (2005) indicates that minimal room for advancement exists if an employee does not work long hours. Similarly, Lewis and Dyer (2002) identified a "long hours culture" as a work culture in which employees dedicating long hours in the workplace are viewed as committed, loyal, and productive. Across a variety of work-family models examined in a meta-analysis conducted by Michel, Mitchelson, Kotrba, LeBrenton, and Baltes (2009), work time demands strongly predicted work-family conflict.

Valcour (2007) found a negative relationship between work hours and satisfaction with work-family balance. Thus, spending more time at work, one form of work demand, increases the challenge of tending to various role demands, which decreases work-family balance satisfaction (Valcour, 2007). Control over time at work appears to be important. When time spent at work increases, having more control over work time buffers or moderates the decline of work-family balance satisfaction (Valcour, 2007). Clark (2002) found that employees' sense of control at work mediated the relationship between two work factors (intrinsic value of the work and flexibility) and work-family conflict. More schedule flexibility relates to reduced work-family conflict (Byron, 2005). Relatedly, more control over a work environment (e.g., choice in deciding tasks to complete) also related to reduced work-family conflict in a study conducted by Grzywacz and Marks (2000).

Although, work demand is most often conceptualized in terms of work hours per week, work demand can also be conceptualized in additional ways or more generally. Increased job pressure was related to increased negative spillover in a study conducted by Delgado and Canabal (2006). Higher job stress is an antecedent of higher work-family conflict (Byron, 2005; Frone, Russell, & Cooper, 1992), but Dikkers et al. (2007) also found that, quantitative workload, or work demand, can be a result of work-family conflict in addition to a predictor of work-family conflict. Work demands defined in terms of work hours, but also extra work without notice, job insecurity, and time pressure were positively associated with work-family conflict and also accounted for 20% of the variance in work-family conflict (Voydanoff, 2004). A negative work environment characterized by various stressors, demands, and pressures typically exacerbates the

experience of work-family conflict among employees (Whiston et al., 2012). In a review of prior literature, Eby et al. (2005) concluded that the experience of work-family conflict is exacerbated among employees who work more hours and have higher work demands.

In two studies conducted with psychologists and senior managers, hours spent at work positively correlated with reports of work-family conflict and this relationship was stronger for women in comparison to men (Gutek, Searle, & Klepa, 1991). Although these two variables correlated with one another, the researchers argued that work-family conflict cannot directly reflect work hours given the correlation coefficients, thus they encouraged the examination of different, interacting variables (Gutek et al., 1991). Although they worked approximately the same number of hours per week, women reported more work-family conflict compared to men (Gutek et al., 1991). Furthermore, women perceived spending long hours in the workplace as interfering with their families (Gutek et al., 1991). In a longitudinal study conducted by Ilies et al. (2007), workload (hours worked and subjective perceptions of workload) positively correlated with work-family conflict. Futhermore, workload emerged as a predictor of work-family conflict while controlling for the number of hours spent at work, which indicates that an individual's subjective perception of workload has an impact on the work-family conflict experience independent of the impact of the number of hour spent at work (Ilies et al., 2007). Given the complexity of conceptualizing work demands and the research that has pointed to the importance of an individual's perceived work demands, this study will use a scale measuring perceptions of general work demand.

Work Demand among URMs in STEM

Finding studies that assess work variables such as perceived work demand among racially and ethnically URMs in STEM proved difficult, yet some studies assess perceived work demand or similar constructs among groups within our target population such as racially and ethnically URMs or groups similar to our target population such as university employees. In the world of academia, which is an environment postdoctoral scholars in this study inhabit and also an environment many postdoctoral scholars aim to obtain positions in after their training, expectations run high to prioritize work, understand that academic work does not end, limit outside interests and responsibilities, and remain productive (Bailyn, 2003; Fox, Fonseca, & Bao, 2011; Ward & Wolf-Wendel, 2004). Related to the work demands in academia, increased work pressure predicted work-family conflict in a study conducted by Winefield et al. (2014) using university employees. Similarly, in a sample of academic, administrative, and other staff members at a university in Hong Kong, role conflict, role overload, and hours spent on work all positively predicted work-family conflict (Fu & Shaffer, 2001). The researchers also found that women experienced more family interference with work conflict, whereas men experienced more work interference with family conflict, which aligns with traditional Chinese values (Fu & Shaffer, 2001).

Work demands and their impact have also been studied among racially and ethnically URMs employed in a variety of occupations. For example, Shelton, Danes, and Eisenman (2008) studied minority entrepreneurs and found that in terms of minority groups relevant to the current study, Mexican-Americans experienced greater work role demands from their jobs in comparison to African Americans and Whites. Additionally,

Delgado, Canabal, and Serrano (2004) found that increased pressure on the job related to higher work-family conflict among a group of Latino workers, which conceptualized work demands in terms of job pressure. In terms of work demands conceptualized in terms of time and pressure, longer work hours and higher levels of work-related pressure were both associated with higher levels of work-family spillover in a sample of White, Black, and Hispanic workers (Roehling, Jarvis, & Swope, 2005). More literature appears to center on the relationship between work demands and work-family conflict among African Americans. For example, job-related demands placed African American employees of Fortune 1000 companies at risk for greater work-family conflict stress (Cole & Secret, 2012). McLoyd, Toyokawa, and Kaplan (2008) studied work demands, work-family conflict, and child adjustment among African American children and their single or married/cohabitating, employed mothers. Results indicated that single mothers who reported more work demands, also reported more work-family conflict. Moreover, increased work demands predicted increased work-family conflict among single African American mothers. In terms of work demands and job satisfaction, Holder and Vaux (1998) conducted a study examining the experience of African Americans professionals working in predominantly White work environments (20% or fewer African American professionals). The researchers found that routine work stressors (e.g., role ambiguity, role conflict, occupational stress) were significantly and negatively related to job satisfaction. Furthermore, routine work stressors explained 31% of the variance in job satisfaction, indicating that routine work stressors negatively predicted job satisfaction among African American professionals (Holder & Vaux, 1998).

In a study conducted by Spector et al. (2004), the relationship between work hours, one form of work demand, and work-family stress was tested among participants from three regions: Anglo, China, and Latin America. Interestingly, Spector et al. (2004) found that the group of Anglo participants demonstrated a stronger positive relationship between work hours and work-family conflict compared to the groups of Latin American and Chinese participants. Spector et al. (2004) argued that Anglo participants who come from individualistic-oriented regions may view working more hours as reducing their family time and thus inducing greater feelings of work-family pressure. On the other hand, Latin American and Chinese participants who come from more collectivistic-oriented regions may view working more hours differently (e.g., as a way of supporting family; Spector et al., 2004). Such a study offers an interesting incorporation of individualist and collectivistic orientations, similar to the current study's employment of agentic and communal goal endorsement.

Although no studies arose that examine work demands and work-family conflict of racially and ethnically URM postdoctoral scholars within the STEM fields during the literature search, a few closely related studies are worth noting. By examining downloading location and downloading time of journal articles and other literature from Springer, Wang et al. (2012) examined one behavior that contributes to the work hours of scientists. They observed that many scientists continued to work on research past traditional working hours on weekdays, sometimes late into the evenings, and also on weekends. In particular, scientists in the United States tended to work overnight more often in comparison to scientists from other countries. Wang et al. (2012) argued that dedicating more time to work than initially intended may complicate the boundary

between work and home, thus possibly impacting work-family conflict and balance. More specifically related to the target population of this study, postdoctoral scholars work approximately 53 hours per week, which is well above standard full-time hours (Stephan, 2013). Highlighting gender differences, female postdoctoral scholars with children reported spending six hours less per week in the lab compared to their female peers without children, whereas male postdoctoral scholars with children reported spending only three hours less per week in the lab compared to their male peer without children (Davis, 2005). Davis (2005) pointed to the discrepancy in child-rearing responsibilities between men and women with women carrying more of such responsibilities as an explanation for why female postdoctoral scholars identified easy access to childcare and additional family-friendly policies as important. One study examined work demands and work-family conflict among a sample of participants that bears considerable similarity to the current study's target population. Bozzon, Murgia, Poggio, and Rapetti (2017) noted that a fragmented and demanding workload among postdoctoral scholars at two Italian universities, some of whom worked in the STEM fields, negatively impacted their non-work lives. Results from this qualitative study point to the idea of work impacting non-work, which is conceptually similar to work-family conflict. Clearly, work demands must be taken into consideration when examining the work-family conflict and balance experience of racially and ethnically URM postdoctoral scholars in the STEM fields.

Perceived Work Environment

In this section, first, I will present an overview of perceived work environment and provide information on the conceptualization of perceived work environment. Next, I

will describe the research related to perceived work environment and its relationship to work-family conflict in general. Then I will summarize the perceived work environment literature dealing with racially and ethnically URMs in the STEM fields.

General Overview of Perceived Work Environment

There are various reasons why a work environment may be perceived as supportive or unsupportive. Support within the workplace has been conceptualized or examined in terms of interpersonal support, support of work-family balance specifically, general support, and support in additional ways. Supportive work environments offer a variety of benefits and are linked to improved work-family conflict experiences. Support from coworkers is negatively associated with work-family conflict such that increased coworker support relates to decreased work-family conflict (Hammer et al., 2004). Carlson and Perrewé (1999) also connected work support with less work-family conflict by highlighting their findings that social support indirectly reduces work-family conflict by reducing perceived role stressors and time demands. Support at work may buffer work-family conflict by reducing distress at work and work overload given that supervisor support was negatively related to work overload among Canadian employees (Frone et al., 1997). In a meta-analysis, Ford et al. (2007) noted that work support was negatively correlated with work-family conflict. Additionally, work support emerged as a significant and unique predictor of work-family conflict (Ford et al., 2007). A supportive work environment in the form of managerial support emerged as a predictor of reduced work-family conflict in a study conducted by Cinamon and Rich (2010). Eby et al. (2005) concluded in their review of prior literature that a supportive work environment, supervisor, or mentor typically assists in the reduction of work-family conflict. Similarly,

a work organization that is perceived as more family-supportive predicts less work-family conflict according to a study conducted by Allen, Herst, Bruck, and Sutton (2000).

As noted above, an individual can specifically receive support regarding work-family conflict issues and the desire to balance work and family. In terms of a work environment that is particularly supportive regarding the work-family balance experience, work-family culture can be conceptualized as the extent to which a place of work helps or supports employee's efforts to balance work and family responsibilities (Thompson, Beauvais, & Lyness, 1999). In a study conducted by Thompson et al. (1999), work-family culture operationalized as stated above in conjunction with other components such as managerial support, accounted for 18% of the variance in work-family conflict, demonstrating that a more supportive work culture related to less work-family conflict. An occupational culture or environment that is perceived as supportive of people's needs to balance their work and personal lives is critical (O'Driscoll et al., 2003). Employment in an organization that promotes the balance of work and family is associated with significantly lower reports of work-family conflict (Duxbury & Higgins, 2005). Similarly, the availability of work-family benefits within an organization contributed to a more supportive work-family culture, which then related to decreased work-family conflict in a study conducted by Fiksenbaum (2014). Individuals with a mentor endorsed significantly lower levels of work-family conflict in comparison to individuals without a mentor (Nielson et al., 2001). More specifically, having a mentor who is particularly supportive of a mentee's desire to balance work and family demands significantly reduced a mentee's experience of work-family conflict (Nielson et al., 2001).

On the other hand, unsupportive work environments can be detrimental and have a harmful impact on work-family conflict. In a meta-analysis conducted by Byron (2005), an unsupportive work environment predicted work-family conflict such that individuals with less supportive co-workers or supervisors experienced more work-family conflict. Less support at work from supervisors and co-workers was related to increased work-family conflict, particularly among women in comparison to men (Grzywacz & Marks, 2000). Interestingly, social support received from a supervisor increased time-based work-family conflict among women, but decreased this type of work-family conflict among men in a study conducted by van Daalen et al. (2006). This indicates that the link between social support and work-family conflict may be different for men and women given additional variables and differences in perception.

A handful of researchers have examined the conceptual relationships between role stressors, social support, and work-family conflict in order to determine where social support best fits in a conceptual model. Carlson and Perrewé (1999) studied social support as a moderator between stressors and work-family conflict, as a mediator between stressors and work-family conflict, as an antecedent to stressors, which then impacts work-family conflict, and as an independent antecedent of work-family conflict. Although Carlson and Perrewé (1999) found the best fit (88% of paths significant) with the antecedent model, the researchers also found good fit (83% of paths significant) with the mediation model. Such results suggest that social support may act as a critical coping mechanism against work-family conflict by helping to reduce perceptions of stressors like time demands, which then reduces work-family conflict (Carlson & Perrewé, 1999). Michel et al. (2010) also examined social support as an independent antecedent of work-

family conflict, as a mediator between stressors (e.g., work time demands) and work-family conflict, and as an antecedent of stressors (e.g., work time demands), which then predict work-family conflict. The researchers found support for the model in which social support was an antecedent of stressors such as work time demands, which then predicted work-to-family conflict (Michel et al., 2010). Thus, having strong social support at work reduces an individual's perceptions of environmental work stressors such as work time demands, which then lowers the work-family conflict experience (Michel et al., 2010). Support from a supervisor also buffered the relationship between working hours and work-family conflict, particularly for those who spend more time on work and work-related tasks (Fox & Dwyer, 1999).

Perceived Work Environment among URMs in STEM

An environment may be perceived in a variety of ways such as supportive, warm, unsupportive, or even hostile. Apart from just STEM environments, Latino students at a predominantly White institution viewed their campus' racial climate less favorably in comparison to their White peers (Soto & Deemer, in press), indicating that racially and ethnically URMs may negatively perceive college campus environments. Some research indicates that STEM environments are perceived as unwelcoming for racially and ethnically URMs in the STEM fields given their interactions with other individuals. For example, racially and ethnically URM undergraduates majoring in the STEM fields often encounter faculty members and peers who hold negative perceptions and stereotypes about minorities in general and about minorities in STEM fields specifically (Strayhorn, 2010). Repeated encounters with such people reduce sense of belonging in the STEM fields among racially and ethnically URMs (Strayhorn, 2010). Beyond undergraduate

students, a hostile racial climate negatively impacts job satisfaction for Black and Latino faculty members (Jayakumar, Howard, Allen, & Han, 2009), which is particularly salient for the current study because this study includes a satisfaction-based measure. Additionally, early and mid-career minority researchers in the behavioral sciences reported repeatedly encountering racism and experiencing low expectations of success from colleagues and supervisors, which they perceived was a result of their racial and/or gender identities (Kameny et al., 2014).

More specifically related to gender, Morgan (1992) surveyed undergraduate students at three different universities to examine students' perceptions of barriers to women entering the fields of science and engineering. The researcher found that college students believed that one of the main deterrents for women entering the science and engineering fields was the perception that men resent their female colleagues. Morgan (1992) argued that this fear is likely a result of the underrepresentation of women in nontraditional fields. Such perceptions likely do not foster a sense of a supportive work environment and these perceptions may also be present for URMs who are also underrepresented in the STEM fields. Relatedly, eighty female faculty members at Research One universities also reported experiencing overt and subtle discrimination in the workplace in a large qualitative study (Monroe, Ozyurt, Wrigley, & Alexander, 2008), which points to the "chilly environment" women also face in academia in general. Clearly, relationships with individuals in your environment contribute to your perception of your environment. Although the studies reported above were conducted with undergraduates and faculty members, it is clear that postdoctoral scholars, who are

sandwiched in between the populations studied, are likely not immune from similar experiences and perceptions of a negative environment.

In alignment with the above discussion on an unwelcoming environment within the context of academia, some research has centered on racial/ethnic bullying in other places of work, which likely impacts the way in which a work environment is perceived. For example, Fox and Stallworth (2005) studied racial/ethnic bullying among Asian, African American, Hispanic/Latino, and White employees and found that all three minority groups reported being a victim of racial/ethnic bullying more often in comparison to the group of White employees. Such experiences of racial/ethnic bullying related to higher levels of emotional responses to bullying such as becoming upset and/or experiencing decreased commitment to the job. Interestingly, participants reported that supervisors more often than co-workers perpetrated both general and racial/ethnic bullying (Fox & Stallworth, 2005). In a study of African American women working in Fortune 1000 companies, a majority of participants (61%) reported hearing racial/ethnic jokes in the workplace (Cole & Secret, 2012). Additionally, reporting a less positive workplace culture related to higher work-family stress among participants. In terms of racial bias in the workplace, subtle racial bias contributed to increased work-family stress. Take together, such findings highlight the impact an unwelcoming environment particularly related to race can have on work-family conflict (Cole & Secret, 2012).

As described above, Holder and Vaux (1998) examined the experience of African Americans professionals working in predominantly White work environments. In addition to their findings related to work demands or work pressure, they also examined race-related stressors in the workplace. They found that race-related stressors (e.g., race-

related workplace climate, workplace racial treatment, personal discrimination) were negatively related to job satisfaction. Furthermore, race-related stressors significantly and negatively predicted job satisfaction by accounting for 42% of the variance in job satisfaction. Beyond race-related stressors, Holder and Vaux (1998) also examined support in the workplace. They found that work-related support from a co-worker and/or supervisor accounted for 20% of the variance in job satisfaction. These results indicate that work-related support positively predicts job satisfaction for African American professionals who are underrepresented in terms of racial/ethnic makeup in the workplace. Additionally, support from colleagues and supervisors buffered some of the negative effects of race-related stressors (Holder & Vaux, 1998).

Further research has been conducted on the relationship between supportive work environments or work-related supports and work-family conflict among racially and ethnically URMs. For example, Delgado and Canabal (2006) found that supervisor support had a significant impact on negative spillover for Latinos and non-Latino White workers such that increased supervisor support was related to decreased negative spillover. Lower levels of supervisor support also related to higher levels of work-family spillover in a sample of White, Black, and Hispanic workers (Roehling et al., 2005). Similarly, lower supervisor support and a lower perceived culture of support in the workplace both related to higher work-family conflict among a group of Latino workers in a study conducted by Delgado et al. (2004). Among a sample of academic, administrative, and other staff members at a university in Hong Kong, increased support from a supervisor moderated or reduced the effects of role conflict (i.e., conflict in the workplace) on work-family conflict (Fu & Shaffer, 2001), which relates to the work

environment of focus for the current study. In a study conducted with employees of two Native American organizations (approximately 50% identified as Native American), perceiving a sense of community at work negatively correlated with work-family conflict (Clark, 2002). Such a study is particularly related to the current study given the overlap in the variable of perceiving a sense of community at work. In a relatively diverse sample of women (31% minorities), leader-member exchange, defined as emotional and career support from a supervisor, reduced work-related stress, thus improving work-family conflict (Bernas & Major, 2000). Clearly, work-related support or a positively perceived work environment, particularly in the form of having a supportive supervisor, is related to reduced work-family conflict.

Some research centers on the relationship between work environment or work-related support and work-family conflict among STEM employees. In a study about academic scientists' work-family conflict experiences, a more competitive and stressful departmental climate predicted greater work-family conflict among men and women (Fox et al., 2011). Post, DiTomaso, Farris, and Cordero (2009) studied scientists and engineers in research and development (R&D) who balanced dependent care responsibilities as part of being in dual-earner families. The researchers found that having support from a supervisor and/or colleagues related to less work-family conflict and less dissatisfaction. Moors et al. (2014) studied the impact of support for family among postdoctoral scholars and faculty in science, technology, math, and medical science (STEMM) fields within academia, which is highly related to the current study. In their first study of postdoctoral scholars across 19 universities, Moors et al. (2014) found that participants who perceived more institutional support for family responsibilities also endorsed increased job

satisfaction and belonging in the workplace. Interestingly, for postdoctoral scholars in the STEMM fields, gender emerged as a moderator between family support and both job satisfaction and sense of belonging, but not for postdoctoral scholars in non-STEMM fields. Moreover, perceiving less institutional support for family responsibilities more strongly related to reduced job satisfaction and a reduced sense of belonging in the workplace for female postdoctoral scholars in the STEMM fields, but not male postdoctoral scholars in the STEMM fields. Moors et al. (2014) also found that higher perceived institutional support for family responsibilities predicted increased job satisfaction and belonging in the workplace for tenure-track faculty members primarily in the STEMM fields. In sum, perceiving a work environment as supportive and/or having work-related supports in place alleviates work-family conflict, improves satisfaction, and increases sense of belonging at work, whereas an unsupportive environment has an opposite impact. Thus, the current study will examine two different perceptions of percieved work environment: a supportive work environment and a hostile work environment.

Work-Family Conflict

In this section, I will present an overview of work-family conflict. I will start by providing information on the conceptualization of work-family conflict and its effects. Next, I will describe the research related to work-family conflict in general. Then I will summarize the work-family conflict literature dealing with URMs in the STEM fields. Finally, I will present the research detailing why work-family conflict among racially and ethnically URM postdocs in the STEM fields warrants further examination.

General Overview of Work-Family Conflict

Work is interconnected and interrelated to all other domains of life, including family, thus the work experience is studied in conjunction with other domains (Blustein, 2001; Guerts & Demerouti, 2003). Individuals do not experience work and family as separate domains that do not impact one another or overlap, thus studying the interconnections between work and family is imperative (Blustein, 2001). According to Greenhaus and Beutell (1985), work-family conflict is defined as "a form of interrole conflict in which the role pressures from work and family domains are mutually incompatible in some respect" (p. 77). Bidirectionality is applicable, meaning that work can interfere with family and family can interfere with work (Greenhaus & Beutell, 1985). In alignment with Greenhaus and Beutell (1985), Frone et al. (1992) and Frone et al. (1997) proposed a model that further highlighted the bidirectionality of the relationship between work and family. Furthermore, Frone (2003) proposed a fourfold taxonomy of work-family balance, which includes work-to-family conflict, family-to-work conflict, work-to-family facilitation, and family-to-work facilitation. Work-to-family conflict arises when work conflicts or interferes with family or negative spillover crosses from work to family (Bellavia & Frone, 2005; Byron, 2005; Frone, 2003). This study focuses on work-to-family conflict, which has been referred to by various terms (e.g., work interference with family) in the literature, but has been and will be referred to as work-family conflict throughout this paper.

Work-related factors (e.g., work demand, work environment) contribute work-family conflict, which in turn impact family factors (Ford et al., 2007). Furthermore, work-related factors seem to impact work-family conflict more than family-related

factors (Byron, 2005). Although work-family conflict may vary across time (e.g., weekdays versus weekends, week to week; Ford et al., 2007), Rantanen, Kinnunen, Feldt, and Pulkkinen (2008) found that the experience of work-family conflict was rather stable (coefficient of .73) across six years in their longitudinal study. Given the prevalence of work-family conflict, work-family conflict may be a significant stressor contributing to the leak in the pipeline of URMs in the STEM fields, including postdoctoral scholars.

Gender

As delineated by a role congruity perspective, gender is an important factor in terms of role congruity, but gender also warrants further consideration given its examination in the work-family literature, particularly in relation to the variable of work-family conflict. Results appear somewhat mixed regarding the role of gender in work-family conflict. According to Byron's (2005) meta-analysis, men reported slightly more work-family conflict compared to women, but the difference was small indicating that a minimal relationship appears to exist between gender and work-family conflict. Similarly, Grzywacz and Marks (2000) noted that reports of work-family conflict did not significantly differ between men and women. In contrast, females reported higher levels of work-family conflict in comparison to males in a study conducted by Nielson et al. (2001), thus leading the researchers to control for gender in further analyses. Relatedly, women reported more strain-based work-family conflict in comparison to men, which means that strain in one domain interferes with the ability to effectively perform in the opposite domain (van Daalen et al., 2006).

Although family factors are not the focus of this study, they warrant a brief discussion given their contribution to work-family conflict and the embeddedness of

gender. As noted by Eby et al. (2005), family structure such as marital or parental status is an important construct in work-family conflict research. Family demands and responsibilities are more strongly associated with role overload for women in comparison to men (Duxbury & Higgins, 2005). Family responsibilities can encompass the care provided for other family members, which typically include children, but also can include older family members (Spector et al., 2004). Men and women report the highest work to family interference when they hold dual caregiving responsibilities (children and elders), followed by dependent care responsibilities, and then no caregiving responsibilities, thus indicating that having more responsibilities relates to more work-family conflict (Duxbury & Higgins, 2005). Although lifecycle stage (e.g., single, dual income parents) is significantly associated with work-family conflict for men and women, this link is stronger and lifecycle stage is a predictor of work to family interference for women, but not men (Duxbury & Higgins, 2005). Interestingly, Byron (2005) noted that the percentage of parents in a study's sample moderates the relationship between job stress and work-family conflict such that a higher percentage of parents in a sample leads to greater differences in work-family conflict between men and women. More specifically, mothers experienced more work-family conflict in comparison to fathers, whereas when fewer parents are in a study sample, men experienced more work-family conflict in comparison to women (Byron, 2005). In a study conducted by Cinamon and Rich (2002), women placed greater emphasis on their family role, whereas men placed greater emphasis on their work role, indicating the importance of examining the relationship between gender and values or roles.

Gender does not emerge as a strong moderator of the relationship between various constructs and work-family conflict, but a limitation to previous research is that gender differences have been examined in terms of self-reported work-family conflict (Ford et al., 2007). In contrast, Byron (2005) concluded that there was some support for the proposition that gender or gender roles moderate the relationship between various antecedents of work-family conflict (e.g., job involvement, parental status) and work-family conflict. Duxbury and Higgins (2005) concluded that gender differences in socialization continue to permeate society and impact the work-family conflict experience of women. Powell and Greenhaus (2010) suggested that gender differences may be best studied by examining differences in gender-related factors such as femininity. Ultimately, the reported results above suggest that the role of gender in the work-family conflict experiences be studied further.

Work-Family Conflict among URMs in STEM

Although the literature on work-family conflict among racially and ethnically URMs, particularly those in the STEM fields, is underdeveloped, some research has helped reduce the gap. Some researchers have examined the work-family conflict experience among racially and ethnically URMs in various professions. For example, Shelton et al. (2008) studied minority entrepreneurs and found that in terms of minority groups relevant to the current study, Mexican-Americans reported experiencing greater difficulty in managing work-family conflict compared to African Americans and Whites. Although entrepreneurship is different from postdoctoral work, entrepreneurs are employees nonetheless and Shelton et al.'s (2008) study represents one of few studies to examine the work-family conflict experience among racially and ethnically URMs.

Roehling et al. (2005) studied White, Black, and Hispanic individuals in order to determine whether variations in negative work-family spillover existed. Women and participants who had children reported higher levels of negative work-to-family spillover in comparison to men and participants without children, thus highlighting gender differences and also differences due to parental status. In terms of racial/ethnic differences, Roehling et al. (2005) found that negative work-to-family spillover was greatest among Hispanics with or without children in comparison to White and Black participants, and independent of gender-role attitudes. Additionally, the greatest disparity in negative work-to-family spillover between men and women occurred within the Hispanic group of participants, with women reporting higher levels of work-to-family spillover compared to men. Roehling et al. (2005) argued that the Hispanic group of participants represented the most traditional culture in their study, which led to their results given that there is less cultural support for Hispanic women to be in the workforce. The researchers found a smaller, but similar difference between White men and women, but did not have enough Black participants to sufficiently identify possible gender differences. Ford et al. (2007) noted that cross-cultural differences in work-family conflict issues and experiences may be the result of varying definitions and meanings of work and family, which may be at play in the Roehling et al. (2005) study as well as additional studies.

Given the added tension between the collectivistic, traditional, and family values of an ethnic minority group and the individualistic and personal goal achievement values of the Western workforce, racially and ethnically URMs may face particular challenges in terms of balancing work with family (Cinamon, 2006). To address this added tension,

Cinamon (2006) crafted a culturally-informed career intervention program for a minority group of Israeli Arab adolescents, which aimed to increase their self-efficacy to balance work and family. Although the group of participants did not identify with the racial/ethnic identities that are central to this study, Cinamon's (2006) study nonetheless points to the unique factors that may be at play for minorities experiencing work-family conflict or anticipated work-family conflict, the possibilities for early intervention related to work-family conflict, and the importance of implementing a multicultural lens when studying work-family conflict among minority groups.

Some literature also centers on work-family conflict among individuals within the STEM fields. Although such literature does not often incorporate a racially and ethnically URM focus, it relates to the current study's focus on the STEM fields. Related to the relationship between gender and STEM, Morgan (1992) found that college students believing that the difficulty of balancing work and home/family given the demands of the science and engineering professions would be a primary deterrence for women from participating in such fields. Dabney and Tai (2013) conducted a qualitative study using female doctoral students in physics programs and female professionals in science positions who previously received doctorates in physics. A few themes that emerged from their study included the difficulty of balancing school with life, perceiving a lack of time outside of school, anticipating difficulty in balancing a career with life, and perceiving or anticipating a lack of time specifically for family. Thus, it is clear that the challenge of balancing work and family is an active problem for some people and an anticipated threat for others.

The following studies center on work-family conflict and balance among researchers, some of which are employed in academia. Kameny et al. (2014) identified work-family balance challenges as a difficulty that early and mid career minority researchers in the behavioral sciences experienced. Similarly, Monroe et al. (2008) conducted a large qualitative study and found that female faculty members at Research One universities reported tension between work and family, which seemed particularly irresolvable for women in the bench and laboratory sciences. Fox et al. (2011) specifically studied work and family conflict among men and women scientists employed at research universities in the United States, which closely relates to the population of the current study. Interestingly, they noted the dearth of research focusing on work-family conflict among scientists that employs systematic sampling across fields and institutions. Their participants specifically included tenured and tenure-track faculty in science-related fields such as engineering, computer science, chemistry, psychology, mathematics, and physics. Results from their study indicated that academic scientists reported more work interferences with family than family interference with work. Furthermore, having children under the age of 18 predicted greater work-family conflict for men, whereas having children between the ages of 6-18 predicted greater work-family conflict for women. Additionally, female assistant professors, in comparison to female associate/full professors, had a higher probability of work-family conflict (Fox et al., 2011), which is interesting given that assistant professors are closer in proximity to postdoctoral scholars in terms of the ranks of academia.

Although less research has been conducted on postdoctoral scholars in relation to the work-family interface, some studies have examined work-family conflict and balance

among postdoctoral scholars or individuals who are in close proximity to the postdoctoral

stage such as graduate students. Interestingly, graduate students reported negative

perceptions of work-life balance as one reason for their movement away from the path to

academia (Fuhrmann, Halme, O'Sullivan, & Lindstaedt, 2011), which is important given

that many postdoctoral scholars seek to enter into academia. Similar to all individuals

maintaining a career, postdoctoral scholars must work to find a balance between their

personal and professional lives (National Postdoctoral Association, n.d.a). During

interviews that were conducted in conjunction with an initiative to provide psychological

services to graduate students and postdoctoral scholars in the School of Medicine at

Vanderbilt University, postdoctoral scholars identified finding balance between home and

work as one of many stressors they encountered (National Postdoctoral Association,

n.d.a). In a qualitative study of postdoctoral scholars who worked in two Italian

universities, some of which were in the STEM disciplines, participants reported

difficulties balancing work and non-work, despite having autonomy and flexibility in

their jobs (Bozzon et al., 2017). In sum, although there is a gap in the literature regarding

the work-family conflict experience of racially and ethnically URM postdoctoral scholars

in the STEM fields, the literature on racially and ethnically URMs, STEM employees or

students, and postdoctoral scholars independently suggests that work-family conflict is a

pressing issue.

<div align="center">**Work-Family Conflict and Work-Family Balance Satisfaction**</div>

Work-Family Conflict as a Predictor

Given that work-family conflict has been conceptualized and expanded upon

above, in this section, I will summarize literature dealing with work-family conflict as a

predictor of various outcomes. Work-family conflict can result in various negative side effects, which have been well documented in the literature. Work-family conflict is associated with reports of psychological strain (e.g., O'Driscoll et al., 2003). Additionally, the presence of work-family conflict has been linked to exhaustion (Demerouti et al., 2005). Psychological symptomatology, diminished well-being, and decreased life satisfaction are also related to work-family conflict (Adams, King, & King, 1996; Allen et al., 2000; Delgado & Canabal, 2006; Hughes & Galinsky, 1994; Fiksenbaum, 2014). Work-family conflict is negatively related to quality of work life, quality of non-work life, and quality of life in general (Md-Sidin, Sambasivan, & Ismail, 2010). Work-family conflict is also linked to psychological stress and depression (Allen et al., 2000). In terms of mental health, Frone (2000) found that individuals were 3.13 times more likely to meet criteria for a mood disorder, 2.46 times more likely to meet criteria for an anxiety disorder, and 1.99 times more likely to meet criteria for a substance dependence disorder if they experienced work-family conflict in comparison to individuals who do not experience work-family conflict. In addition, work-family conflict impacts various factors related to the workplace. Work-family conflict is associated with decreased job satisfaction (Adams et al., 1996; Allen et al., 2000), decreased engagement at work (Fiksenbaum, 2014), increased work-related stress (Allen et al., 2000), increased turnover intentions (Nohe & Sonntag, 2014; Allen et al., 2000), and burnout (Allen et al., 2000; Cinamon & Rich, 2010). Specifically related to the population of this study, work-family conflict is related to intentions to change one's place of work among scientists and engineers (Post et al., 2009). Given the deleterious effects of work-family conflict, work-

family conflict may be an important harbinger of premature exit from STEM fields for postdoctoral scholars.

Work-Family Balance Satisfaction

In this section, I will present an overview of work-family balance satisfaction. I will start by providing information on the conceptualization of work-family balance satisfaction. Next, I will describe the research related to work-family balance satisfaction in general and its relationship to work-family conflict. Then I will summarize the work-family balance satisfaction literature dealing with racially and ethnically URMs in the STEM fields.

General Overview of Work-Family Balance Satisfaction

According to Valcour (2007), work-family balance satisfaction is defined as "an overall level of contentment resulting from an assessment of one's degree of success at meeting work and family role demands" (p. 1512). The intermingling of cognitive and affective components is crucial. The construct of work-family balance satisfaction involves a cognitive appraisal of whether an individual has successfully met multiple demands and an affective appraisal of whether a positive emotional state follows. Work-family balance satisfaction differs from other work-family variables because conflict is not central to its definition (Valcour, 2007), such as work-family conflict (Greenhause & Beutell, 1985). Although some researchers such as Higgins, Duxbury, and Johnson (2000) include the ability to manage work-family conflict or have low work-family conflict in their definition of work-family balance, there has been little research empirically equating work-family balance satisfaction with low low-family conflict

(Valcour, 2007). In other words, an individual who experiences low work-family conflict does not necessarily feel entirely satisfied with work-family balance (Valcour, 2007). Additionally, the construct of work-family balance satisfaction does not center on the cross-domain transfer processes involving experiences from work impacting experiences at home and vice versa. Similarly, work-family balance satisfaction does not imply directionality (Valcour, 2007), such as work-to-family facilitation or family-to-work facilitation (Frone, 2003). Instead, work-family balance satisfaction involves an overall consideration of how well one is meeting the sum of work and family role demands. Work-family balance satisfaction is unique in that it is a holistic construct (Valcour, 2007).

As noted by Valcour (2007), work-family balance satisfaction is a newer construct that has been less studied in the work-family literature despite its prevalence in popular, non-academic usage. Instead, work-family conflict is often the focus of researchers (Abendroth & den Dulk, 2011). In alignment with Valcour's (2007) definition of work-family balance satisfaction, Abendroth and den Dulk (2011) found that demands, particularly job demands, predicted work-life balance satisfaction such that greater demands resulting in decreased work-life balance satisfaction. Additionally, instrumental (e.g., job control) and emotional (e.g., colleague support) workplace support and emotional private-life support (e.g., quality of relationship with relatives) positively impacted work-life balance satisfaction. Furthermore, support buffers the negative impact of job demands on an individual's work-life balance satisfaction (Abendroth & den Dulk, 2011).

Valcour (2007) identified working hours as negatively impacting work-family balance satisfaction, but noted that variables such as job control can positively impact work-family balance satisfaction. In other words, working more hours can reduce an individual's perceived ability to meet the demands of work and family demands, but having control over work time buffers the relationship between work hours and work-family balance satisfaction (Valcour, 2007). Relatedly, McNamara, Pitt-Catsouphes, Matz-Costa, Brown, and Valcour (2013) found that the negative relationship between work hours and work-family balance satisfaction was stronger for individuals low in satisfaction with work-family balance, indicating that they may lack resources critical for dealing with long work hours. Additionally, a supportive work-family culture and flexibility to fulfill work and personal needs both act as moderators in reducing the negative relationship between work hours and work-family balance satisfaction (McNamara et al., 2013). White (1999) examined differences in work-family balance satisfaction among men and women in one-earner families (women as homemakers), part-time dual earner families (women as part-time worker), and dual-earner families (women as full-time worker). Results indicated that women reported greater work-family balance satisfaction compared to men in one-earner families and part-time earner families, whereas men reported more work-family balance satisfaction compared to women in dual-earner families (White, 1999).

Beham and Drobnič (2010) also contributed to the satisfaction with work-family balance literature. They found perceptions of high time demands and perceptions of high psychological job demands (i.e., stressors about job tasks) to be negatively related to workers' work-family balance satisfaction among a group of German office workers

(Beham & Drobnič, 2010). Relatedly, having more job control and more social support at work was related to increased work-family balance satisfaction (Beham & Drobnič, 2010). It is important to note that Beham and Drobnič (2010) found work-family conflict to be negatively related to work-family balance satisfaction, given that work-family conflict as an antecedent of work-family balance satisfaction is less studied in the work-family literature. Furthermore, work-family conflict mediated the relationship between work demands and work-family balance satisfaction indicating that high work demands contribute to work-family conflict, which is associated with decreased work-family balance satisfaction. Such a mediation model parallels one part of the current study's model. Interestingly, social support at work partially offsets the negative impact of work-family conflict on the relationship between work demands and work-family balance satisfaction, which points to the importance of support in the workplace (Beham & Drobnič, 2010).

To date, much of the literature has focused on indicators that explain a seemingly smaller part of work-family balance satisfaction such as work satisfaction or home satisfaction, but do not capture the holistic nature of work-family balance satisfaction (Valcour, 2007). Although work-family balance satisfaction is conceptually unique from other constructs, it nonetheless likely relates to other satisfaction constructs such as job satisfaction. As work-family conflict increases, satisfaction with work and family decreases (Allen et al., 2000; Ford et al., 2007). Stressors and demands that stem from one role, work or family, produce conflict in the opposite role, which then reduces an individual's satisfaction in the opposite role (Frone et al., 1992). For example, family stressors and demands create conflict in the work role, thus reducing work satisfaction

and vice versa (Frone et al., 1992). According to a meta-analysis conducted by Ford et al. (2007), 7% of the variance in family satisfaction is accounted for by work-specific variables and 7% of variance in job satisfaction is accounted for by family-specific variables. Work stress impacts family satisfaction more than family stress impacts work satisfaction (Ford et al., 2007), yet it is clear that work- and family-related variables impact satisfaction in the opposite domains. Similarly, Allen et al. (2000) noted that work-family conflict is positively correlated with family-related stress. Additionally, Carlson and Kacmar (2000) highlighted the negative relationship between increased work-family conflict and decreased family satisfaction. In regards to a situation that does not involve the crossing of domains, a work organization that is perceived as more family-supportive predicts greater job satisfaction according to a study conducted by Allen et al. (2001). In fact, Michel et al. (2009) found that work-family conflict better predicted job satisfaction instead of the cross-domain satisfaction of family satisfaction. Altogether, although there is some evidence for the the relationship between work-family conflict and various satisfaction outcomes as noted above, Michel et al. (2009) noted that these relationships are low, pointing to possibility that the construct of work-family balance satisfaction may be more important to examine.

Work-Family Balance Satisfaction among URMs in STEM

Given that the literature on work-family balance satisfaction is limited in general, there is also a gap in the literature regarding the work-family balance satisfaction among racially and ethnically URMs in the STEM fields. A few studies have centered on satisfaction-related constructs among racially and ethnically URMs engaged in a variety of occupations. For example, negative work-to-home spillover predicted lower overall

life satisfaction for both Latinos and non-Latino White individuals in a study conducted

by Delgado and Canabal (2006). Additionally, women reported more negative spillover

and lower levels of life satisfaction in comparison to men (Delgado & Canabal, 2006). In

an additional study, work-family stress was negatively related to job satisfaction, mental

well-being, and physical well-being among all groups in a study that examined Anglo,

Latin American, and Chinese managers in varied fields (e.g., finance; Spector et al.,

2004). Job satisfaction, mental well-being, and physical well-being relate to satisfaction

with work-family balance given the underlying components of satisfaction and wellness.

As noted above in multiple sections, Holder and Vaux (1998) found that routine work

stressors and race-related stressors negatively predicted job satisfaction among African

American professionals working in predominantly White work environments, and job

satisfaction represents a conceptually smaller piece of the holistic construct of work-

family balance satisfaction. Of importance is the fact that although African American

professionals who worked in predominantly White work environments in psychology,

business, and engineering experienced stressors in the workplace, they still reported a

measure of job satisfaction, which could be due to the buffering effect support in the

workplace had on the damaging effects of routine and race-related work stressors (Holder

& Vaux, 1998). In a study that centered on African American children and their mothers,

results indicated that single mothers who reported more work-family conflict also

reported more depressive symptoms (McLoyd et al., 2008). Although depressive

symptoms are not of importance to this study, they nonetheless represent a construct that

is different from, and even opposite of, any satisfaction-related construct.

Some researchers have conducted studies examining satisfaction-related variables among scientists, engineers, university employees, and tenure-track faculty, which most closely relates to the current study's population of postdoctoral scholars in STEM fields. As noted above, Post et al. (2009) found that support from supervisors and colleagues relates to improved satisfaction with work among scientists and engineers employed in R&D laboratories. Additionally, the researchers found that increased work-family conflict was associated with increased work dissatisfaction among these scientists and engineers. Again, work satisfaction is not equated with work-family balance satisfaction, but the two satisfaction-related constructs are similar nonetheless. Also as reported above, Moors et al. (2014) found that higher perceived institutional support for family responsibilities predicted increased job satisfaction among postdoctoral scholars and tenure-track faculty members in the STEMM fields, which is a unique study in that postdoctoral scholars, who will be examined in the current study, are specifically studied.

Winefield et al. (2014) examined the relationship between work-family conflict and well-being among university employees, and the university setting is the workplace setting of postdoctoral scholars in the current study as well as the anticipated long-term work setting for some postdoctoral scholars seeking careers in academia. Increased work-family conflict related to increased psychological strain and increased physical symptoms. Furthermore, increased work-family conflict predicted increased psychological strain and increased physical symptoms. Most notably, work pressure indirectly impacted psychological strain and physical symptoms via work-family conflict, which is a pathway similar to the pathways in the models being tested in the current study. Winefield et al. (2014) argued that work-family conflict may have acted as a

mechanism by which job demands such as work pressure impairs employee health. Although psychological strain and physical symptoms, which were used to capture well-being, are different from satisfaction with work-family balance, the three constructs fall under the umbrella of concepts aiming to measure well-being. In sum, work-family balance satisfaction is rarely studied among racially and ethnically URMs in the STEM fields given that it is a less studied construct in general, thus the examination of work-family balance satisfaction among URM postdoctoral scholars in the STEM fields represents a unique contribution to the work-family literature.

The Present Study

Given the above literature and notable gaps in the literature, examining the work-family interface among racially and ethnically URM postdoctoral scholars in the STEM fields is important. The present study extended research on work-family conflict and work-family balance experiences of racially and ethnically URMs by investigating the work-family balance satisfaction of racially and ethnically URM postdoctoral scholars in the STEM fields. I investigated the direct and indirect relationships that work demand, perceived work environment (supportive and hostile), and different role orientations have with work-family conflict and, thus, satisfaction with work-family balance. More specifically, I examined whether the indirect relationship between perceived work demand and work-family conflict through perceived work environment (supportive and hostile) varied as a function of role orientation. According to role congruity perspective, which theoretically guides the proposed study, role orientation can either be agentic or communal (Diekman & Eagly, 2008). The current study furthers role congruity perspective by examining goal endorsement (communal or agentic) from a cultural role

lens instead of a gender role lens, aligning with recent literature highlighting communal goals as highly important to URMs (Boucher et al., 2017) and STEM fields as not affording of communal goals (Diekman et al., 2010). To incorporate culturally-relevant variables, I also controlled for individualistic and collectivistic values.

In alignment with the review of the relevant literature, it appears as though the social community at work, a measure of support, would be perceived as weak among postdoctoral scholars in the STEM fields. There is reason to suspect that postdoctoral scholars who are more agentically-oriented may be less negatively affected by a weak social community at work because such conditions are congruent with their goals; the environment affords them the opportunity to be more independently productive and advance their careers. Additionally, this lack of incongruence should not exacerbate work-family conflict nor reduce work-family balance satisfaction for agentically-oriented postdoctoral scholars. Conversely, postdoctoral scholars who are more communally-oriented may be more negatively affected by a weak social community at work because such conditions are incongruent with their goals; the environment does not align with their aims of maintaining a sense of connection with others or possible focus on family. Such incongruence would exacerbate work-family conflict and thus, reduce work-family balance satisfaction.

According to the review of the relevant literature, it also appears as though racially and ethnically URM postdoctoral scholars would report experiences of microaggressions at work. There is reason to suspect that postdoctoral scholars who are more agentically-oriented may be less negatively affected by the experience of microaggressions at work because such a poor work environment gives way to more

easily focusing on independence and self-direction, without needing to invest as much in working relationships. Additionally, this lack of incongruence should not exacerbate work-family conflict nor reduce work-family balance satisfaction. Conversely, postdoctoral scholars who are more communally-oriented may be more negatively affected by the experience of microaggressions at work because such work conditions are incongruent with their goals in that the environment does not align with their aims of maintaining a sense of connection with others and community. Such incongruence will exacerbate work-family conflict and, thus, reduce work-family balance satisfaction. In addition to differences in perceived work environment and goal orientations, differences between men and women also merit attention. Given that women in particular endorse more communal goals and are also in gender-incongruent fields of work, their experience of role incongruity may be most notable among the participants in this study.

To attend to the gaps in the literature, I aimed to address two primary research questions. First, how does the indirect relationship between work demand and work-family conflict vary in strength at higher and lower levels of an agentic goal orientation? Second, how does the indirect relationship between work demand and work-family conflict vary in strength at higher and lower levels of a communal goal orientation? Both research questions were addressed using two models: (a) one using a supportive work environment variable as a mediator of the relationship between perceived work demand and work-family conflict (supportive model), and (b) one using a hostile work environment variable as a mediator of the relationship between perceived work demand and work-family conflict (hostile model).

Hypotheses

Below are the hypotheses most strongly related to the purpose of the study. The following hypotheses relate to both models (supportive and hostile) tested in the current study:

> *Hypothesis 1*: Women will report a stronger endorsement of communal goals compared to men.
>
> *Hypothesis 2*: Men will report a stronger endorsement of agentic goals compared to women.

The following hypotheses relate to the hypothesized supportive work environment model:

> *Hypothesis 3*: The indirect effect between work demand and work-family conflict will be moderately positive at low levels of an agentic goal endorsement.
>
> > a. The indirect effect between work demand and work-family conflict will be nonsignificant at high levels of an agentic goal endorsement.
>
> *Hypothesis 4*: The indirect effect between work demand and work-family conflict will be positive and strongest at high levels of communal goal endorsement.
>
> > a. The indirect effect between work demands and work-family conflict will be positive but weakest at low levels of communal goal endorsement.

An alternative model examining the mediating influence of perceptions of a hostile work environment was tested in this study. The following hypotheses relate to the alternative hostile model:

Hypothesis 5: The indirect effect between work demand and work-family conflict will be positive, but weakest at high levels of an agentic goal endorsement.

    a. The indirect effect between work demand and work-family conflict will be moderately positive at low levels of an agentic goal endorsement.

Hypothesis 6: The indirect effect between work demand and work-family conflict will be positive and strongest at high levels of communal goal endorsement.

    a. The indirect effect between work demands and work-family conflict will be moderately positive at low levels of communal goal endorsement.

METHOD

The following chapter delineates the participants, measures, and procedure used to study the variables. The chapter concludes with the research design and data analysis plan used to test the hypotheses described in Chapter 2. In this study, the satisfaction with work-family balance of racially and ethnically URM postdoctoral scholars in the STEM fields was empirically examined. Structural equation modeling (SEM) was used to investigate the function of role orientation (agentic or communal) as a possible moderator in the indirect relationship between work demand and work-family conflict using using two (hypothesized supportive and alternative hostile) models. See Figures 2 and 3 for diagrams of this study's models. Given that the purpose of the study was to examine direct and indirect effects between variables, the study tested a hypothesized relational model using a non-experimental quantitative, correlational design. All data are cross-sectional given that they were collected through self-report via an online survey.

Power Analysis

To estimate the sample size needed to detect significant mediation effects and avoid committing a Type II error, a Monte Carlo power analysis was performed using M*plus* statistical software (Muthén & Muthén, 1998-2016). The path coefficients used in the power analysis were obtained from the literature and related to the supportive work environment model. I ran the analysis on 500 randomly generated data sets. A Monte Carlo simulation was first conducted on a sample size of 150. The following coefficients were used in the power analysis: (a) -.21 for the relationship between perceived work

demand and perceived work environment/social community at work (Carlson & Perrewé, 1999), (b) .37 for the relationship between perceived work demand and work-family conflict (Boyar et al., 2007), (c) -.23 for the relationship between perceived work environment and work-family conflict (Ford et al., 2007), (d) and -.59 for the relationship between work-family conflict and work-family balance satisfaction (Beham & Drobnič, 2010). An N of 150 produced power ranging from 75-100% to detect significant paths in all of the proposed model [mean χ^2 (2) = 2.11, mean RMSEA = .030, mean SRMR = .022]. Thus, the goal was to obtain a sample size of at least 150 for the study.

Participants

Racially and ethnically URM postdoctoral scholars currently employed in the STEM fields comprised the sample for this study. All recruited participants needed to meet the following criteria: (a) be 18 years or older; (b) identify as a URM in terms of race and ethnicity (African American, Latino/a, and/or Native American); (c) be enrolled in a postdoctoral position at a university; and (d) conduct postdoctoral research in the STEM fields, as delineated by the National Science Foundation (2014).

A total of 630 participants responded to the survey. One hundred and ninety-six participants were removed for not self-identifying as Black/African American, Hispanic/Latino, and/or Native American. Thirty-eight participants were eliminated because they identified as 25 years old or younger, which does not align with the expected average age of a postdoctoral scholar. Thirty-five participants were removed because they did not report a postdoctoral position in the STEM fields. Nine cases were eliminated because of missing data. Such data were not missing at random and, instead, the missing data were on critical scales. In conjunction with the United States Congress

Joint Economic Committee (2012) definition of STEM, which does not include social

sciences, 70 cases were removed because participants identified the social sciences as

their postdoctoral field of study. After removing the above identified cases, 282 cases

remained. Further data screening was conducted to ensure that the data met the statistical

assumptions for planned analysis, which is reported in the data screening section.

Participants were asked to report a variety of demographic information.

Demographic information consisted of a self-constructed questionnaire with questions

about participants' age, gender, sexual orientation, racial/ethnic identity, generational

status, international student status, romantic relationship status, parental status,

socioeconomic status, field of doctoral study, field of postdoctoral study, current

postdoctoral university, current postdoctoral university geographical location, recruitment

method, and work setting gender and racial/ethnic minority ratios. A final question was

posed to participants at the end of the survey to inquire about who they had included in

their conceptualization of "family" (e.g., parents, grandparents, children, romantic

partner) as they took the survey, which allowed for more than one response. Such a

question assists in examining a more diverse conceptualization of family, which counters

the trend of researchers focusing on traditional family arrangements as noted by Casper et

al. (2007). See Appendix D for the full list of questions.

The final sample of participants ($N = 282$) in this study were racially and

ethnically URM postdoctoral scholars currently employed in the STEM fields. One

hundred and sixty two (57.4%) men, 119 (42.4%) women, and one participant who

identified as transgender (0.4%) comprised the final sample. Age of participants ranged

from 26 to 47 ($M = 31.90$, $SD = 3.80$). The racial/ethnic identification of participants

included: Black/African American ($n = 92$, 32.6%), Hispanic or Latino/a ($n = 173$, 61.3%), Native American ($n = 9$, 3.2%), biracial ($n = 3$, 1.1%), and multiracial ($n = 5$, 1.8%). One hundred and forty participants (49.6%) identified as 1st generation, 42 (14.9%) as 2nd generation, and 97 (34.4%) as 3rd generation or higher. Seventy-five participants (26.6%) identified as international students.

Participants included individuals in the postdoctoral fields of chemistry ($n = 55$, 19.50%), computer and information science and engineering ($n = 32$, 11.3%), engineering ($n = 29$, 10.3%), geosciences ($n = 8$, 2.8%), life sciences ($n = 124$, 44.0%), materials research ($n = 10$, 3.5%), mathematical sciences ($n = 10$, 3.5%), and physics and astronomy ($n = 14$, 5.0%). Employment in postdoctoral positions spanned the United States, with 57 (20.2%) postdoctoral scholars in the Northeast, 71 (25.2%) in the Southeast, 67 (23.8%) in the Midwest, 30 (10.6%) in the Southwest, and 52 (18.4%) in the West. On average, participants estimated the gender ratio in their work setting as 63% male and 37% female. Additionally, on average, participants estimated the race/ethnicity ratio in their working setting as 47% racial/ethnic minorities and 53% non-racial/ethnic minorities.

Romantic relationship status of participants was as follows, 29 (10.3%) single, not dating, 28 (9.9%) dating casually, 44 (15.6%) dating exclusively, 34 (12.1%) engaged to be married, 144 (51.1%) married or married-like, 2 (0.7%) separated or divorced, and 1 (0.4%) other. One hundred and fourteen participants (40.4%) noted that they are parents. In terms of who participants considered to be family while completing the questionnaire (more than one selection was allowed), frequency counts were as follows, 219 (77.7%) included a romantic partner, 94 (33.3%) included child(ren), 184 (65.2%) included

parent(s), 56 (19.9%) included sibling(s), 20 (7.1%) included aunt(s)/uncle(s), 24 (8.5%) included grandparent(s), and 12 (4.3%) included other (e.g., nieces, nephews, close friends, pets) as family member(s). For a depiction of additional demographic characteristics of the sample, see Table 1.

Table 1
Demographic Characteristics of Sample

Demographic Information	*n*	Frequency
Sexual Orientation		
Lesbian	1	0.4%
Gay	18	6.4%
Bisexual	6	2.1%
Queer	0	0.0%
Questioning	2	0.7%
Heterosexual	254	90.1%
Other	1	0.4%
Highest level of education of guardian 1		
Some grade school	6	2.1%
Completed grade school	2	0.7%
Some high school	7	2.5%
High school degree	25	8.9%
Some college	61	21.6%
Associate degree	46	16.3%
Bachelor's degree	92	32.6%
Master's degree	24	8.5%
Doctoral degree	17	6.0%
Don't know	1	0.4%
Question does not apply	0	0.0%
Highest level of education of guardian 2		
Some grade school	7	2.5%
Completed grade school	4	1.4%
Some high school	14	5.0%
High school degree	29	10.3%
Some college	55	19.5%
Associate degree	74	26.2%
Bachelor's degree	67	23.8%
Master's degree	18	6.4%
Doctoral degree	4	1.4%
Don't know	2	90.7%
Question does not apply	7	2.5%
Field of Doctoral Study		

Table 1 continued

Chemistry	57	20.2%
Computer and Information Science and Engineering		
	31	11.0%
Engineering	31	11.0%
Geosciences	8	2.8%
Life Sciences	98	34.8%
Materials Research	6	2.1%
Mathematical Sciences	30	10.6%
Physics and Astronomy	14	5.0%
Social Sciences	1	0.4%
STEM Education/Learning Research	4	1.4%
Other	2	0.7%

Note. $N = 282$

Measures

This section provides information about the measures used in the study along with the psychometric properties of each. In addition to the demographic information sheet (Appendix D) noted above, participants completed the following measures: (a) the Perceived Work Demand Scale (PWD; Boyar, Carr, Mosley, & Carson, 2007; Appendix E), (b) the Diekman Goal Endorsement Measure (Diekman et al., 2010; Appendix F), (c) the Social Community at Work (SCW) subscale of the second version of the Copenhagen Psychosocial Questionnaire (Pejtersen, Søndergård, Borg, & Bjorner, 2010; Appendix G), (d) the Workplace and School Microaggressions (WSM) subscale of the Racial and Ethnic Microaggressions Scale (Nadal, 2011; Appendix H), (e) the Horizontal and Vertical Individualism and Collectivism Scale (Triandis & Gelfand, 1998; Appendix I), (f) the Work-Family Conflict Scale (WFC; Netemeyer, Boles, & McMurrian, 1996; Appendix J), and (g) the Satisfaction with Work-Family Balance Scale (SWFB; Valcour, 2007; Appendix K).

Work Demand

The Perceived Work Demand Scale (Boyar et al., 2007) was used to measure perceived work demands among postdoctoral scholars. Participants are asked to rate 5 items on a 5-point Likert-scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of a specific response item is "My job requires all of my attention." See Appendix E for the full scale. In terms of validity, Boyar et al. (2007) demonstrated the discriminant validity of the perceived work demand scale from work role overload, work role ambiguity, and work role conflict in two samples: one of consisting of correction officers and one consisting of university employees. Additionally, Boyar et al. (2007) found the perceived work demand scale to be predictive of both work interfering with family and family interfering with work, thus highlighting the predictive validity of the perceived work demand scale. In regards to reliability, Boyar et al. (2007) reported a Cronbach's alpha coefficient of .83 with a sample of correction officers and .89 with a sample of university employees in the United States.

Goal Endorsement

The Diekman Goal Endorsement Measure (Diekman et al., 2010) was used to measure agentic goal and communal goal endorsements. Participants are asked to rate the 23 items based on their personal importance. Items are rated on a 7-point Likert-type scale ranging from 1 (*not at all important*) to 7 (*extremely important*). Example goal items include "Status," "Serving the community," and "Self-promotion" and participants are requested to rate how important each goal is to them personally. Diekman et al.'s (2010) original results categorized the 23 items into either agentic goals (14 items) or communal goals (9 items). See Appendix F for the full scale. Diekman et al. (2010)

demonstrated construct validity of their goal endorsement measure given that a two-factor solution best fit the data and distinguished agentic goals from communal goals. Furthermore, agentic goals and communal goals did not significantly correlate with one another (Diekman et al., 2010). With respect to the differential validity of Diekman et al.'s (2010) goal endorsement measure, Soto and Deemer (2018) found that communal goals were significant positive predictors of academic satisfaction for Latino/a students, but not European American students, which is consistent with the importance placed on collectivistic values within the Latino culture. In terms of reliability, Diekman et al. (2010) found that the Goal Endorsement Measure possesses acceptable internal consistency reliability (Agentic goals, $\alpha = .87$; Communal goals, $\alpha = .84$). Diekman et al. (2011) also reported a Cronbach's alpha coefficient of .84 for both the communal and agentic goal endorsement scales in a sample of introductory psychology students.

Supportive Work Environment

The Social Community at Work subscale of the second version of the Copenhagen Psychosocial Questionnaire (Pejtersen et al., 2010) was used to measure perceptions of a supportive work environment. Participants are asked to respond to three statements based on a 5-point Likert-type scale with response options including: always, often, sometimes, seldom, never/hardly ever. An example of a specific question is ''Is there a good atmosphere between you and your colleagues?'' See Appendix G for the full scale. In terms of validity, the social community at work subscale positively correlated with subscales measuring social support from supervisors and social support from colleagues, thus demonstrating concurrent validity (Pejtersen et al., 2010). In terms of reliability, the researchers responsible for creating the scale reported a Cronbach's alpha

coefficient of .85 for the social community at work subscale (Pejtersen et al., 2010). Given that the social community at work scale is subscale, little research has explored the reliability and validity of the subscale, and the implications of this gap in the literature is further discussed in the 'Limitations' section in Chapter 5.

Hostile Work Environment

The Workplace and School Microaggressions subscale of the Racial and Ethnic Microaggressions Scale (Nadal, 2011) was used to measure perceptions of a hostile work environment. Participants are asked to respond to five statements by indicating the number of times that a microaggression occurred in the past six months with 0 = *I did not experience this event in the past six months,* 1 = *I experienced this event 1 time in the past six months,* 2 = *I experienced this event 2 times in the past six months,* 3 = *I experienced this event 3 times in the past six months,* 4 = *I experienced this event 4 times in the past six months*, and 5 = *I experienced this event 5 or more times in the past six months.* An example of a specific statement is ''An employer or co-worker treated me differently than White co-workers.'' See Appendix H for the full scale.

To test reliability and validity, the researcher tested the subscale and total scale using the above noted scoring system, but also ran testing using dichotomous coding (0 = *did not experience the event in the past 6 months* and 1 = *experienced the event at least once*) because his pilot study resulted in less variance than anticipated (Nadal, 2011). In terms of validity, the workplace and school microaggressions subscale positively correlated with the RaLES-B, a scale measuring racism, thus demonstrating concurrent validity. Also, the researcher demonstrated construct validity given that most of the participants in his study were able to identify that the racial and ethnic microaggressions

scale measured racial discrimination after responding to the measure. Using the dichotomous scoring system, the workplace and school microaggressions subscale positively correlated with the DLE-F, a scale measuring perceptions of racism, which also demonstrates concurrent validity. Regarding reliability, Nadal (2011) reported a Cronbach's alpha coefficient of .85 for the workplace and school microaggressions subscale among college and community participants. Additionally, the workplace and school microaggressions subscale produced high internal consistency reliabilities with Black/African Americans (α = .85), Latinos (α = .83) and multiracial persons (α = .93). Using the dichotomous scoring system, the researcher reported a Cronbach's alpha coefficient of .79 for the workplace and school microaggressions subscale using college and community participants.

Individualism and Collectivism

The Horizontal and Vertical Individualism and Collectivism Scale (Triandis & Gelfand, 1998) was used to measure horizontal and vertical individualism and collectivism among postdoctoral scholars. Participants are asked to rate 16 items on a 9-point Likert-scale ranging from 1 (*never or definitely no*) to 9 (*always or definitely yes*). Horizontal individualism is based on 4 items, including "I'd rather depend on myself than others." Vertical individualism is based on 4 items, including "It is important that I do my job better than others." Horizontal collectivism is based on 4 items, including "The well-being of my coworkers is important to me." Vertical collectivism is based on 4 items, including "It is my duty to take care of my family, even when I have to sacrifice what I want." See Appendix I for the full scale.

In terms of validity, Triandis and Gelfand (1998) demonstrated the convergent validity of the horizontal and vertical individualism and collectivism scale by correlating the four horizontal and vertical individualism and collectivism constructs with scenarios that had four multiple choice answers in which each answer corresponded to the four constructs. Additionally, the researchers also demonstrated convergent validity given that the four constructs related to other measures of individualism and collectivism (e.g., vertical individualism related to competition, horizontal individualism related to self-reliance, vertical collectivism related to family integrity, and horizontal collectivism related to interdependence). Triandis and Gelfand (1998) also demonstrated generally good discriminant validity of the horizontal and vertical individualism and collectivism scale. Horizontal and vertical individualism emerged as discriminably different, but horizontal and vertical collectivism were not as discriminably different. In regards to reliability, Triandis and Gelfand's (1998) 4-factor model was found to provide a good fit to the data. Tang, Werner, and Karwowski (2016) reported a Cronbach's alpha coefficient of .24 for horizontal individualism, .34 for vertical individualism, .97 for horizontal collectivism, and .44 for vertical collectivism.

Work-Family Conflict

Participants' perceptions of work-family conflict were measured using the Work-Family Conflict Scale, which is a 5-item scale developed by Netemeyer et al. (1996). Participants were asked to respond to five statements based on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An example of a specific response item is ''Due to work-related duties, I have to make changes to my plans for family activities." See Appendix J for the full scale. In terms of validity, Netemeyer et al.

(1996) demonstrated concurrent validity given that their work-family conflict scale

correlated with variables such as job satisfaction, life satisfaction, and job tension in

expected directions. Additionally, Rupert, Stevanovic, and Hunley (2009) highlighted the

concurrent validity of Netemeyer et al.'s (1996) work-family conflict scale given that the

work-family conflict scale positively correlated with burnout among a sample of

psychologists. De Janasz, Behson, Jonsen, and Lankau (2013) also found Netemeyer et

al.'s (1996) work-family conflict scale to be negatively correlated with an organization's

work-family culture and job satisfaction, thus showing concurrent validity. In addition,

Frye and Breaugh (2004) demonstrated concurrent validity of Netemeyer et al.'s (1996)

work-family conflict scale because the work-family conflict scale negatively correlated

with supervisor support, job satisfaction, and family satisfaction. Netemeyer et al. (1996)

also demonstrated construct and discriminant validity of their work-family conflict scale

given that the work-family conflict scale was shown to be distinct from a family-work

conflict scale. Furthermore, their factor analysis provided evidence of a two-factor model

instead of a one-factor model for work-family conflict and family-work conflict. The

researchers responsible for creating the scale reported a Cronbach's alpha coefficient

ranging from .88 to .89 across three samples (Netemeyer et al., 1996). Rupert et al.

(2009) reported a Cronbach's alpha coefficient of .89 among a sample of practicing

psychologists.

Work-Family Balance Satisfaction

The 5-item Satisfaction with Work-Family Balance Scale created by Valcour

(2007) was used to measure postdoctoral scholars' satisfaction with work-family balance.

Participants are asked respond to 5 items on a 5-point Likert-type scale ranging from 1

(*very dissatisfied*) to 5 (*very satisfied*). Participants were first prompted with the anchor statement, "Indicate your level of satisfaction with the following items." Items followed and an example of a specific item is, "The way you divide your time between work and personal or family life." See Appendix K for the full scale. In terms of construct validity, Valcour (2007) conducted a confirmatory factor analysis of the satisfaction with work-family balance scale, which indicated good fit (goodness of fit index = .99; root-mean-square error of approximation = .03; comparative fit index = .99; relative fit index = .99). Valcour (2007) also demonstrated concurrent validity given that the satisfaction with work-family balance scale significantly correlated with variables such as neuroticism, commute time, work hours, and control over work time in expected directions. Much less in terms of the validity of the satisfaction with work-family balance scale has been reported given that some researchers (e.g., Abendroth & den Dulk) have used three items from the original five-item satisfaction with work-family balance scale. The researcher responsible for creating the scale reported a Cronbach's alpha coefficient of .93 (Valcour, 2007).

Procedure

The study was approved by the Human Subjects Review Committee of the university Institutional Review Board before data collection began. All data were collected through an online survey using purposeful and snowballing techniques. Participants were recruited via email through the NPA, a prominent postdoctoral organization, and through social media. A snowball sampling technique also encouraged participants who volunteered to be in the study to solicit eligible participants. After receiving approval from Purdue University's Institutional Review Board (IRB), a copy of

the recruitment email (Appendix A) was sent to the NPA for dispersal to their eligible

members. A condensed recruitment message (Appendix B) was posted on postdoctoral-

related social media pages (e.g., Facebook page for the Purdue Postdoctoral Association).

The recruitment email and condensed recruitment message contained a brief description

of the study that clearly indicated that the study focuses on the experience of work-family

balance of racially and ethnically URM postdoctoral scholars in the STEM fields.

Additionally, the recruitment email and condensed recruitment message included the

criteria for participation and a URL link to the information sheet (Appendix C).

The information sheet (Appendix C) provided further information about the study

such as the incentive, possible risks, and potential benefits. The first 200 participants who

completed the questionnaire were offered an incentive of a $10 gift card to Amazon.com.

Individuals who chose to participate in the study after reading the information sheet

selected "I agree" in agreement with participation in the study and were directed to the

portal to complete the questionnaire. Participants who did not elect to participate in the

study could select "I disagree" in disagreement with participation in the study or could

exit the questionnaire.

Upon selecting "I agree," participants were directed to a demographic information

sheet (Appendix D) and seven measures (Appendices E-K). The initial questions on the

demographic information sheet request participant information (e.g., day of the month

you were born) in order to create an ID code for sending out the gift card incentives.

After submitting responses to the questionnaire, participants were directed to a debriefing

page (Appendix L), which further explained the purpose of the study. Also, the debriefing

page offered participants an opportunity to enter their e-mail address in order to receive a

$10 gift card to Amazon.com. The database with the email addresses was not connected to survey responses or IP addresses. The researcher entered the first 200 email addresses of participants who met eligibility criteria and completed the survey into Amazon.com in order to provide the $10 incentives by using the participant ID code. The email database was deleted at the end of data collection and after incentives had been disseminated.

<div align="center">

Research Design and Data Analysis Plan

</div>

Preliminary Analyses

Once data were collected, preliminary analyses were conducted using Statistical Package for the Social Sciences (SPSS) to identify missing data, assess assumptions of normality, and perform descriptive and correlational analyses. First, as noted above, participants who did not meet the inclusion criteria for the study were deleted and participant data with non-random incomplete responses were omitted. Next, preliminary analyses were conducted to ensure that regression assumptions of linearity, homoscedasticity, and normality (e.g., skewness and kurtosis) were met. Then, descriptive analyses were performed to compute frequencies, means, and standard deviations for all demographic and substantive variables. Also, Pearson correlation analyses were conducted to evaluate the relationships among the variables. Internal consistency reliabilities were also calculated for all measures used in the study in order to compare to the previous literature and ensure good reliability in the current study. At the end of the survey, participants identified who they considered as family while completing the online survey. Results indicated that 78% included a romantic partner, 33% included children, 65% included parents, 20% included siblings, 7% included aunts and uncles, 9% included grandparents, and 4% included others (e.g., close friends, in-laws). Through

visual inspection of the data, it is clear that some participants identified family of origin, some identified family of creation, and some identified both as making up their family.

Primary Analyses

After the preliminary analyses, primary analyses were performed using M*plus* 7 (Muthén & Muthén, 1998-2016). For all primary analyses, the models were estimated for high communal endorsement, low communal endorsement, high agentic endorsement, and low agentic endorsement. The following hypotheses were tested first across all models: H1) women will report a stronger endorsement of communal goals compared to men and H2) men will report a stronger endorsement of agentic goals compared to women.

The hypotheses for the supportive moderated mediation model (Figure 2) are: H3) the indirect effect between work demand and work-family conflict will be moderately positive at low levels of an agentic goal endorsement, H3a) the indirect effect between work demand and work-family conflict will be nonsignificant at high levels of an agentic goal endorsement, H4) the indirect effect between work demand and work-family conflict will be positive and strongest at high levels of communal goal endorsement, and H4a) the indirect effect between work demands and work-family conflict will be positive but weakest at low levels of communal goal endorsement.

The hypotheses for the alternative hostile moderated mediation model (Figure 3) are: H5) the indirect effect between work demand and work-family conflict will be positive, but weakest at high levels of an agentic goal endorsement, H5a) the indirect effect between work demand and work-family conflict will be moderately positive at low levels of an agentic goal endorsement, H6) the indirect effect between work demand and

work-family conflict will be positive and strongest at high levels of communal goal endorsement, and H6a) the indirect effect between work demands and work-family conflict will be moderately positive at low levels of communal goal endorsement.

The hypotheses were analyzed using a three-step procedure in M*plus* 7. First, I tested the measurement models through confirmatory factor analyses on the constructs in order to determine how well the indicators represent the constructs. The latent variables were tested to ensure they load significantly onto the underlying factors. Work demand consisted of 5 indicator variables, social community at work consisted of 3 indicator variables, workplace and school microaggressions consisted of 5 indicator variables, work-family conflict consisted of 5 indicator variables, and satisfaction with work-family balance consisted of 5 indicator variables. Horizontal individualism, vertical individualism, horizontal collectivism, and vertical collectivism each consisted of 4 indicator variables. Given that the agentic and communal measures had several items or indicators associated with the latent variables, I created parcels to serve as indicators of the latent variables, thus creating a more parsimonious model.

Provided that the sample size is relatively small, parceling is preferred because fewer parameters are required to define constructs (Little, Cunningham, Shahar, & Widaman, 2002). Furthermore, parceling can improve model parsimony when the model becomes too large with various indicators of latent variables. For the agentic and communal goal endorsement measures, I followed Little et al.'s (2002) item-to-construct balance approach by combining the strongest factor loading with the weakest factor loading, which allows for the strong factor loading to compensate for the weak factor loading. Following are the parcels for the agentic goal endorsement measure: agparc1

(items 14 and 13), agparc2 (items 1 and 11), agparc3 (items 5 and 12), agparc4 (items 4

and 9), agparc5 (items 10 and 8), agparc6 (items 3 and 2), and agparc7 (items 6 and 7).

Following are the parcels created for the communal goal endorsement measure:

comparc1 (items 4 and 8), comparc2 (items 1 and 3), comparc3 (items 7 and 9) and

comparc4 (items 2, 5, and 6).

After constructing the two measurement models, they were then estimated using

maximum likelihood estimation. Following the estimation of the measurement models,

each model's goodness of fit were evaluated using the following five indices: (a)

Comparative Fit Index (CFI), (b) Tucker-Lewis Index (TLI), (c) Root Mean Square Error

of Approximation (RMSEA), (d) Standardized Root Mean Square Residual (SRMR), and

(e) model chi-square test. The CFI aids in taking into consideration sample size, where

above .90 indicates adequate fit and above .95 indicates good fit (Hu & Bentler, 1999).

Scores for the TLI range from 0 to 1 and scores closer to 1 indicate better fit. Above .90

indicates adequate fit and above .95 indicates good fit for the TLI (Hu & Bentler, 1999).

Values for the RMSEA range from 0 to 1 and lower scores indicate better fit. A fit of less

than .08 is considered reasonable and less than .05 is considered good (Browne &

Cudeck, 1993; MacCallum, Browne, & Sugawara, 1996). Scores for the SRMR range

from 0 to 1 and lower scores indicate a better fit. A fit of less than .08 is considered

reasonable and less than .05 is considered good (Hu & Bentler, 1999). All confirmatory

fit analyses ensured the validity of the measures in this study. Second, the simple

mediation models were examined in M*plus to* determine if there were significant indirect

effects for paths *ab* and *cd* (see Figures 2 and 3 for a depiction). The directions of these

associations were examined using SEM.

In order to assess mediation, product of coefficients and bootstrapping approaches were used. The product of coefficients approach, or Sobel (1986) test, involves multiplying path coefficients for the direct effects to produce the indirect effect coefficients. Next, the ratio of the indirect effect coefficient to its estimated standard error was computed (Preacher & Hayes, 2008). Then, I determined whether the indirect effects were significantly different from zero. Bootstrapping is a nonparametric resampling procedure, which offers an additional approach to assessing mediation (Preacher & Hayes, 2008). Bootstrapping is a nonparametric resampling procedure used to test mediation that does not assume normality of the sampling distribution and is fairly robust against violations of multivariate normality (Brown, 2006; Preacher & Hayes, 2008). Bootstrapping was used in the current study given that indirect effects are often not normally distributed. This technique involves generating additional data sets based on the original sample size, and estimates indirect effects in all resampled data sets. In alignment with Preacher and Hayes' (2008) recommended number of repetitions, 1,000 randomly generated samples from the original data set were used to build an empirical sampling distribution and calculate 95% confidence intervals to estimate total and specific indirect effects. The indirect effect is statistically significant if zero is not included in the 95% confidence interval, thus indicating successful mediation (Preacher & Hayes, 2008).

Third, the moderator(s) was added to the models to determine whether the indirect effect between work demand and work-family conflict (path *cd*) was significant at certain levels of communal and agentic goal endorsements for each model. This step consisted of testing the moderated mediation model in which communal or agentic goal endorsement

was predicted to moderate the indirect relationship between work demand and work-family conflict across both models (supportive and hostile). To estimate the moderated mediation model with goal endorsement (communal or agentic) as a moderator, I estimated perceived work environment (social community at work or workplace and school microaggressions) and goal endorsement (communal or agentic) as predictors of work-family conflict. I then computed the product of the latent perceived work environment x goal endorsement variables using numerical integration and estimated this interaction term as a predictor of work-family conflict. Perceived work environment (social community at work or workplace and school microaggressions), in turn, was estimated as a predictor of work-family conflict. The terms representing the mediated relationships were computed using the product of coefficients approach (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Two fit indices, the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), were used to evaluate the moderated mediation models and assist in the determination of whether the models fit an agentic goal endorsement (high/low) or communal goal endorsement (high/low) better given that standard fit indices are not produced with numerical integration.

In the hypothesized supportive moderated mediation model, the aim was to examine the function of role orientation (agentic or communal) as a possible moderator in the indirect relationship between work demand and work-family conflict, with social community at work as the mediator. When assessing communal goal orientation in the supportive moderated mediation model, the aim was to use collectivism as a control variable. Relatedly, when assessing agentic goal orientation in the model, the aim was to

use individualism as a control variable. A conceptual diagram of the hypothesized

supportive moderated mediation model is presented in Figure 2.

Figure 2. Path diagram of the hypothesized supportive moderated mediation of the current study. Expected valences of the main effect relationships are denoted by +/- signs. Letters in parentheses represent path labels.

In the alternative hostile moderated mediation model, the aim was to examine the

function of role orientation (agentic or communal) as a possible moderator of the

mediated relationship between work demand and work-family conflict, with workplace

and school microaggressions as the mediator. As noted above, the aim was to use

collectivism and individualism as control variables when assessing communal and

agentic goal orientations in the models, respectively. A conceptual diagram of the

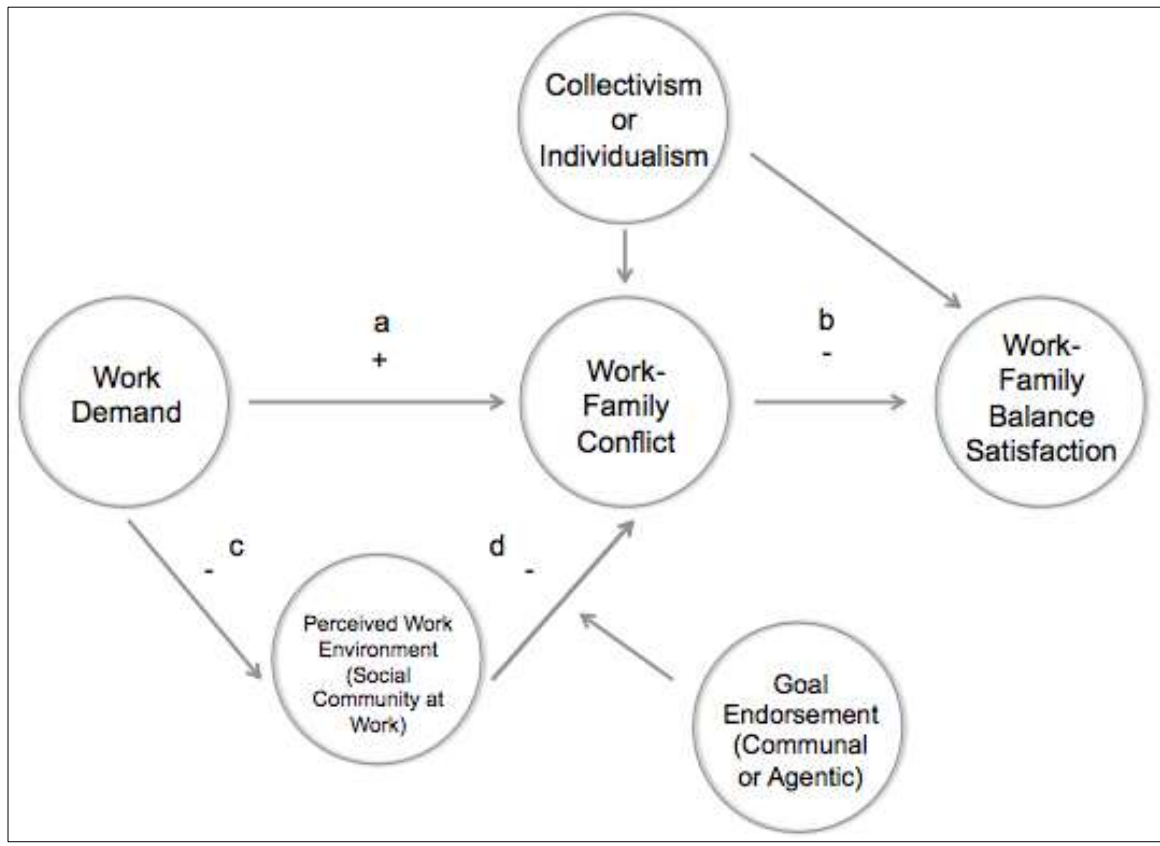alternative hostile moderated mediation model is presented in Figure 3.
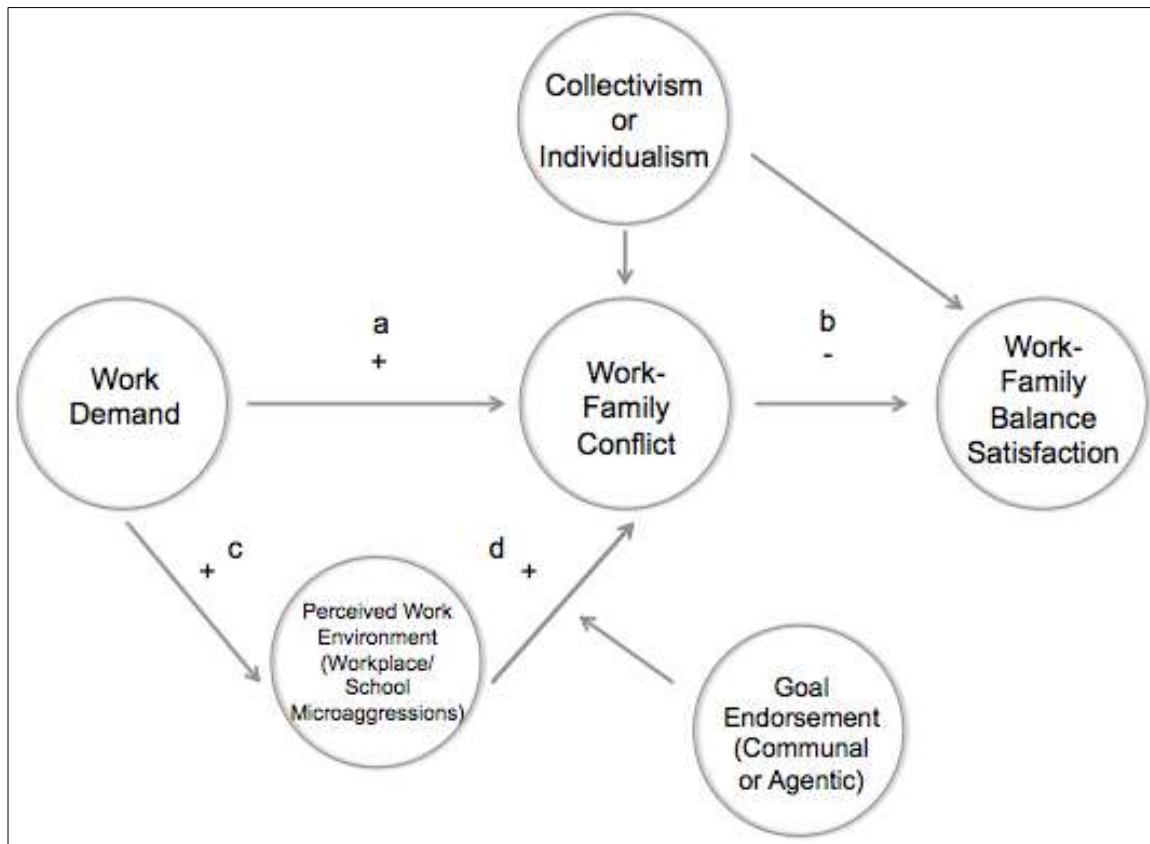
Figure 3. Path diagram of the alternative hostile moderated mediation model of the current study. Expected valences of the main effect relationships are denoted by +/- signs. Letters in parentheses represent path labels.

RESULTS

The following chapter presents the results of the data screening, preliminary analyses, and primary analyses for the study.

Data Screening

First, data were screened for alignment with the stipulations of the study. As reported in Chapter 3, 269 participants were removed for not self-identifying as Black/African American, Hispanic/Latino, and/or Native American, identifying as 25 years old or younger, and reporting a postdoctoral position that was not in the STEM fields. Additionally, 70 cases were removed because participants identified the social sciences as their postdoctoral field of study, which does not align with the United States Congress Joint Economic Committee (2012) definition of STEM.

Next, data were visually screened for missing data. Data were deemed to be not missing at random if values were completely missing on any given measure. Nine cases were eliminated using this standard. All remaining missing values were assumed to be missing at random, and were imputed using full information maximum likelihood estimation in M*plus*.

Univariate outliers were assessed next. Univariate outliers were examined by inspecting histograms. No univariate outliers emerged among the data after visual inspection. I assessed for multicollinearity by running a multiple regression to examine the variance inflation factor (VIF). The tolerance values were all higher than .10, ranging from .47 to .78 for all variables, suggesting no serious multicollinearity (Cohen, Cohen, West, & Aiken, 2003).

Normality within the data was also assessed. Skewness and kurtosis coefficients were within were within +/- 2.00, indicating normality. Visual inspection of Normal Q-Q Plots and histograms also indicated normal distribution of the data. Nonlinearity and heteroscedasticity were visually examined by generating bivariate scatter plots for all variable pairs in the model and fitting regression lines to the data for each relationship. Results from the visual inspection and curve estimation indicated that the relationships follow a linear pattern.

Preliminary Analyses

Prior to performing primary analyses, preliminary analyses were conducted to explore the basic descriptive information of the data. This section includes descriptions of the variables, the internal reliability of the measures, and the relationships between the variables. First, descriptive statistics were computed including means, standard deviations, and internal consistency coefficients of all the scale scores (see Table 2). Cronbach's alphas ranged from .75 to .96, demonstrating acceptable reliability.

Table 2
Descriptive Statistics and Reliability Coefficients of Scale Scores

Measure	Scale Range	*M*	*SD*	α
Perceived Work Demand	1-5	3.85	.69	.79
Goal Endorsement				
Agentic	1-7	5.21	.77	.84
Communal	1-7	5.46	.75	.75
Social Community at Work	1-5	3.79	.81	.77
Workplace and School Microaggressions	0-5	2.48	1.53	.96
Individualism	1-9	6.05	1.27	.78
Collectivism	1-9	6.80	1.07	.78
Work-Family Conflict	1-5	4.44	1.52	.93
Satisfaction with Work-Family Balance	1-5	3.40	.92	.90

Second, zero-order correlation coefficients were computed for all the study variables. Most of the relationships among the variables were in expected directions and ranged from -.47 to .60, with many being statistically significant. A correlation of .91 emerged between horizontal collectivism and vertical collectivism. Additionally, horizontal collectivism had a correlation of .72 with communal goals and vertical collectivism had a correlation of .80 with communal goals. A correlation of .41 emerged between horizontal individualism and vertical individualism. Additionally, horizontal individualism had a correlation of .46 with agentic goals and vertical individualism had a correlation of .84 with agentic goals. Given the high colinearity between horizontal and vertical collectivism, I combined the two to create a general collectivism scale. In order to remain consistent, I also combined horizontal and vertical individualism to create a general individualism scale.

Communal goal endorsement and agentic goal endorsement were positively correlated with one another, which contrasts Diekman et al.'s (2010) finding of no significant correlation between the two goal endorsements. However, this positive correlation aligns with the positive correlation Soto and Deemer (2018) found between the two goal endorsements when studying a sample of college students. Intercorrelations among the variables are depicted in Table 3.

Table 3
Bivariate Correlations Among Variables

Variable	1	2	3	4	5	6	7	8	9
1. Perceived Work Demand	--								
2. Agentic	.29**	--							
3. Communal	.30**	.48**	--						

Table 3 continued

4. Social Community at Work	.02	.17**	.21**	--					
5. Workplace and School Microaggressions	.11	.14*	.12	-.27**	--				
6. Individualism	.33**	.65**	.33**	.19**	.30**	--			
7. Collectivism	.18**	.25**	.54**	.46*	-.13*	-.003	--		
8. Work-Family Conflict	.42**	.19**	.10	-.26**	.43**	.30**	-.003	--	
9. Satisfaction with Work-Family Balance	-.06	.27**	.26**	.53**	-.02	.29**	.30**	-.47**	--

Note. N = 282
p <.05. **p* <.01.

Analysis of Group Differences

An independent samples *t*-test was performed to test the hypothesis that women would more strongly endorse communal goals compared to men (H1). Results of this test were nonsignificant, $t(268) = -.348$, $p = .728$. A second independent samples *t*-test was performed to test the hypothesis that men would more strongly endorse agentic goals compared to women (H2). Results of this test were also nonsignificant, $t(270) = .933$, $p = .352$.

For exploratory purposes, a one-way multivariate analysis of variance (MANOVA) was performed to examine whether any variables varied based on race/ethnicity. To test for significant mean differences across groups, race/ethnicity was used as the independent variable for the MANOVA and all of the other study variables as

dependent variables. Pillai's Trace statistic was used to assess multivariate effects, as it is robust to unequal sample sizes and violations of assumptions (Tabachnick & Fidell, 2013). Using race/ethnicity as the independent variable, results from the MANOVA test revealed no significant multivariate effect associated with race/ethnicity, Pillai's Trace V = .22, F (44, 920) = 1.21, p = .167, partial η^2 = .055.

Additionally, for exploratory purposes, a one-way multivariate analysis of variance (MANOVA) was performed to examine whether any variables varied based on gender. To test for significant mean differences across groups, gender was used as the independent variable for the MANOVA and all of the other study variables as dependent variables. Again, Pillai's Trace statistic was used to assess multivariate effects, as it is robust to unequal sample sizes and violations of assumptions (Tabachnick & Fidell, 2013). Using gender as the independent variable, results from the MANOVA test revealed a significant multivariate effect associated with gender, Pillai's Trace V = .17, F (22, 460) = 1.90, p < .05, partial η^2 = .083. I conducted follow-up univariate analyses of variance (ANOVAs), but no individual effects for each of the dependent variables emerged.

Analysis of Hypotheses

A SEM analysis was conducted to test the remaining hypotheses. As indicated in Chapters 2 and 3, there are six hypotheses. Hypotheses 1 and 2 were addressed in the 'Analysis of Group Differences' section above. The following hypotheses relate to the hypothesized supportive work environment model (Figure 2): H3) the indirect effect between work demand and work-family conflict will be moderately positive at low levels of an agentic goal endorsement, H3a) the indirect effect between work demand and work-

family conflict will be nonsignificant at high levels of an agentic goal endorsement, H4)

the indirect effect between work demand and work-family conflict will be positive and

strongest at high levels of communal goal endorsement, and H4a) the indirect effect

between work demand and work-family conflict will be positive but weakest at low

levels of communal goal endorsement. The following hypotheses relate to the alternative

hostile work environment model (Figure 3): H5) the indirect effect between work demand

and work-family conflict will be positive, but weakest at high levels of an agentic goal

endorsement, H5a) the indirect effect between work demand and work-family conflict

will be moderately positive at low levels of an agentic goal endorsement, H6) the indirect

effect between work demand and work-family conflict will be positive and strongest at

high levels of communal goal endorsement, and H6a) the indirect effect between work

demand and work-family conflict will be moderately positive at low levels of communal

goal endorsement.

As indicated in Chapter 3, a three-step approach using SEM was used to test the

hypotheses. First, I tested the measurement models to determine how well the indicators

represented the constructs. Second, I examined the simple mediation models to determine

if there were significant indirect effects among paths, particularly path *cd*. Third, I added

the moderator(s) to test whether the indirect effect between work demand and work-

family conflict was significant at certain levels of communal and agentic goal

endorsements for the supportive and hostile models.

Testing the Measurement Model

As the first step, the measurement models were tested, modifying them as

necessary to ensure the instruments were accurately measuring the constructs

hypothesized. The following measurement models were assessed by confirmatory factor

analyses using maximum likelihood estimation: a) hypothesized supportive model with

agentic goal endorsement, b) hypothesized supportive model with communal goal

endorsement, c) alternative hostile model with agentic goal endorsement, and d)

alternative hostile model with communal goal endorsement.

The goodness-of-fit indices for the hypothesized supportive measurement model

with agentic goal endorsement were: χ^2 (480, $N = 282$) = 1212.81, $p < .001$; CFI = .85;

SRMR = .07; TLI = .84; and RMSEA = .07 (90% CI: .068, .079). The SRMR, RMSEA,

and chi-square statistic indices indicated reasonable or good fit, whereas the CFI and TLI

indices were outside the conservative ranges of what constitutes good fit. With the

exception of three items on the individualism scale, factor loadings (standardized

regression weights) were above .4. Table 4 presents the standardized factor loadings for

the six measurement models tested. Results from the tested measurement model yielded

an AIC of 29819.328, a BIC of 30234.505, and a sample-size adjusted BIC of 29873.013.

Table 4
Standardized Factor Loadings for Six Measurement Models

Item	PWD	SCW	WSM	WFC	COMM	AGEN	INDV	COLLEC	SWFB
Item1	.63	.71	.91	.87	.57	.74	.37	.55	.80
Item2	.70	.78	.92	.87	.65	.68	.37	.61	.81
Item3	.64	.70	.92	.87	.58	.75	.44	.44	.81
Item4	.68	--	.89	.84	.71	.69	.17	.60	.80
Item5	.66	--	.87	.80	--	.76	.58	.62	.77
Item6	--	--	--	--	--	.66	.82	.50	--
Item7	--	--	--	--	--	.69	.81	.46	--
Item 8	--	--	--	--	--	--	.64	.66	--

The goodness-of-fit indices for the hypothesized supportive measurement model

with communal goal endorsement were: χ^2 (390, $N = 282$) = 878.81, $p < .001$; CFI = .88;

SRMR = .06; TLI = .86; and RMSEA = .07 (90% CI: .061, .073). The SRMR, RMSEA, and chi-square statistic indices indicated reasonable or good fit, whereas the CFI and TLI indices were outside the conservative ranges of what constitutes good fit. All factor loadings (standardized regression weights) were above .4. Results from the tested measurement model yielded an AIC of 26288.061, a BIC of 26670.461, and a sample-size adjusted BIC of 26337.508.

While testing the measurement models for the hypothesized supportive measurement model with agentic goal endorsement and the hypothesized supportive measurement model with communal goal endorsement, high correlations between variables became apparent. More specifically, agentic goal endorsement and individualism had a correlation of .75 and communal goal endorsement and collectivism had a correlation of .77. Given these high correlations, I decided to remove individualism and collectivism from the models as control variables; thus I re-tested the measurement models without individualism and collectivism.

The goodness-of-fit indices for the hypothesized supportive measurement model with agentic goal endorsement were: χ^2 (265, $N = 282$) = 537.33, $p < .001$; CFI = .93; SRMR = .05; TLI = .92; and RMSEA = .06 (90% CI: .053, .068). All fit indices indicated reasonable or good fit. All factor loadings (standardized regression weights) were above .4. Results from the tested measurement model yielded an AIC of 21001.556, a BIC of 21311.118, and a sample-size adjusted BIC of 21041.585.

The goodness-of-fit indices for the hypothesized supportive measurement model with communal goal endorsement were: χ^2 (199, $N = 282$) = 420.37, $p < .001$; CFI = .93; SRMR = .06; TLI = .92; and RMSEA = .06 (90% CI: .054, .071). All fit indices indicated

reasonable or good fit. All factor loadings (standardized regression weights) were above

.4. Results from the tested measurement model yielded an AIC of 18062.660, a BIC of

18339.445, and a sample-size adjusted BIC of 18098.450.

Given the above noted information, the alternative hostile measurement model

with agentic goal endorsement and the alternative hostile measurement model with

communal goal endorsement were also tested without individualism and collectivism.

The goodness-of-fit indices for the alternative hostile measurement model with agentic

goal endorsement were: χ^2 (314, $N = 282$) = 662.30, $p < .001$; CFI = .93; SRMR = .05;

TLI = .92; and RMSEA = .06 (90% CI: .056, .069). All fit indices indicated reasonable or

good fit. All factor loadings (standardized regression weights) were above .4. Results

from the tested measurement model yielded an AIC of 22679.033, a BIC of 23010.447,

and a sample-size adjusted BIC of 22721.887.

The goodness-of-fit indices for the alternative hostile measurement model with

communal goal endorsement were: χ^2 (242, $N = 282$) = 568.99, $p < .001$; CFI = .93;

SRMR = .06; TLI = .92; and RMSEA = .07 (90% CI: .062, .077). All fit indices indicated

reasonable or good fit. All factor loadings (standardized regression weights) were above

.4. Results from the tested measurement model yielded an AIC of 19741.163, a BIC of

20039.799, and a sample-size adjusted BIC of 19779.778.

The Mediation Model

After testing the measurement models, indirect effects within the models were

assessed using a product of coefficients approach and bootstrapping. As indicated in

Chapter 3, an iterative bootstrapping procedure was performed 1,000 times and bias-

corrected confidence intervals were used to adjust for over inflation of estimates and to

yield parameter estimates for both total and specific indirect effects of all the relationships within the models. To calculate individual indirect effects, the 95% bias-corrected confidence interval was used. If the 95% bias-corrected confidence interval for the parameter estimate does not contain zero, the indirect effect is considered statistically significant, which indicates successful mediation (Preacher & Hayes, 2008). Mediation was assessed in the following models: a) hypothesized supportive model with agentic goal endorsement, b) hypothesized supportive model with communal goal endorsement, c) alternative hostile model with agentic goal endorsement, and d) alternative hostile model with communal goal endorsement.

Hypothesized Supportive Model with Agentic Goal Endorsement

Results revealed significant direct effects from perceived work demand to work-family conflict ($\beta = .44$, $p < .001$), from social community at work to work-family conflict ($\beta = -.36$, $p < .001$), and from work-family conflict to satisfaction with work-family balance ($\beta = -.53$, $p < .001$). Results also revealed significant indirect effects from perceived work demand to satisfaction with work-family balance via work-family conflict (*estimate* = -.23, 95% CI [-0.331, -0.123]), and from social community at work to satisfaction with work-family balance via work-family conflict (*estimate* = .19, 95% CI [0.105, 0.282]). The indirect effect from perceived work demand to work-family conflict via social community at work was not significant (*estimate* = -.003, 95% CI [-0.102, 0.064]). The direct effects are depicted in Table 5 and the indirect effects are presented in Table 6. Results from the simple measurement model yielded an AIC of 21111.178, a BIC of 21409.814, and a sample-size adjusted BIC of 21149.793.

Table 5
Direct Effects of Hypothesized Supportive Model with Agentic Goal Endorsement

Direct Effect	*β*	*SE*	*p*
Perceived work demand→Social community at work	.009	.103	.931
Perceived work demand →Work-family conflict	.437	.094	.000
Social community at work → Work-family conflict	-.364	.072	.000
Agentic→ Work-family conflict	.112	.089	.209
Work-family conflict → Satisfaction with work-family balance	-.525	.057	.000

Table 6
Indirect Effects of Hypothesized Supportive Model with Agentic Goal Endorsement

Indirect Effect	estimate	*Lower 2.5%*	*Upper 2.5%*
Perceived work demand→Social community at work→Work-family conflict	-.003	-.102	.064

Table 6 continued

	estimate	Lower 2.5%	Upper 2.5%
Perceived work demand→Work-family conflict→Satisfaction with work-family balance	-.229*	-.331	-.123
Social community at work→Work-family conflict→Satisfaction with work-family balance	.191*	.105	.282

Note. *95% bias-corrected confidence interval for the parameter estimate does not contain zero.

Hypothesized Supportive Model with Communal Goal Endorsement

Results revealed significant direct effects from perceived work demand to work-family conflict (β = .49, *p* < .001), from social community at work to work-family conflict (β = -.33, *p* < .001), and from work-family conflict to satisfaction with work-family balance (β = -.53, *p* < .001). Results also revealed significant indirect effects from perceived work demand to satisfaction with work-family balance via work-family conflict (*estimate* = -.26, 95% CI [-0.359, -0.159]), and from social community at work to satisfaction with work-family balance via work-family conflict (*estimate* = .17, 95% CI [0.082, 0.262]). The indirect effect from perceived work demand to work-family conflict via social community at work was not significant (*estimate* = -.003, 95% CI [-0.096,

0.054]). The direct effects are depicted in Table 7 and the indirect effects are presented in

Table 8. Results from the simple measurement model yielded an AIC of 18151.591, a

BIC of 18417.450, and a sample-size adjusted BIC of 18185.968.

Table 7
Direct Effects of Hypothesized Supportive Model with Communal Goal Endorsement

Direct Effect	β	SE	p
Perceived work demand→Social community at work	.008	.103	.934
Perceived work demand →Work-family conflict	.492	.087	.000
Social community at work → Work-family conflict	-.327	.073	.000
Communal→ Work-family conflict	-.031	.078	.688
Work-family conflict → Satisfaction with work-family balance	-.529	.056	.000

Table 8
Indirect Effects of Hypothesized Supportive Model with Communal Goal Endorsement

Indirect Effect	estimate	Lower 2.5%	Upper 2.5%
Perceived work demand→Social community at work→Work-family conflict	-.003	-.096	.054
Perceived work demand→Work-family conflict→Satisfaction with work-family balance	-.260*	-.359	-.159
Social community at work→Work-family conflict→Satisfaction with work-family balance	.173*	.082	.262

Note. *95% bias-corrected confidence interval for the parameter estimate does not contain zero.

Alternative Hostile Model with Agentic Goal Endorsement

Results revealed significant direct effects from perceived work demand to

workplace/school microaggressions (β = .16, *p* < .05), from perceived work demand to

work-family conflict (β = .44, *p* < .001), from workplace/school microaggressions to

work-family conflict (β = .44, *p* < .001), and from work-family conflict to satisfaction

with work-family balance (β = -.51, *p* < .001). Results also revealed significant indirect

effects from perceived work demand to work-family conflict via workplace/school

microaggressions (*estimate* = .07, 95% CI [0.003, 0.122]), from perceived work demand

to satisfaction with work-family balance via work-family conflict (*estimate* = -.23, 95%

CI [-0.327, -0.125]), and from workplace/school microaggressions to satisfaction with

work-family balance via work-family conflict (*estimate* = -.22, 95% CI [-0.287, -0.151]).

The direct effects are depicted in Table 9 and the indirect effects are presented in Table

10. Results from the simple measurement model yielded an AIC of 22757.308, a BIC of

23077.796, and a sample-size adjusted BIC of 22798.749.

Table 9
Direct Effects of Alternative Hostile Model with Agentic Goal Endorsement

Direct Effect	β	SE	p
Perceived work demand→ Workplace/school microaggressions	.158	.072	.028
Perceived work demand →Work-family conflict	.444	.082	.000
Workplace/school microaggressions → Work-family conflict	.435	.050	.000
Agentic→ Work-family conflict	-.083	.075	.270
Work-family conflict → Satisfaction with work-family balance	-.507	.057	.000

Table 10
Indirect Effects of Alternative Hostile Model with Agentic Goal Endorsement

Indirect Effect	estimate	Lower 2.5%	Upper 2.5%
Perceived work demand→ Workplace/school microaggressions →Work-family conflict	.069*	.003	.122
Perceived work demand→Work-family conflict→Satisfaction with work-family balance	-.225*	-.327	-.125
Workplace/school microaggressions →Work-family conflict→Satisfaction with work-family balance	-.221*	-.287	-.151

Note. *95% bias-corrected confidence interval for the parameter estimate does not contain zero.

Alternative Hostile Model with Communal Goal Endorsement

Results revealed significant direct effects from perceived work demand to workplace/school microaggressions ($\beta = .16$, $p < .05$), from perceived work demand to work-family conflict ($\beta = .47$, $p < .001$), from workplace/school microaggressions to work-family conflict ($\beta = .44$, $p < .001$), from communal goal endorsement to work-family conflict ($\beta = -.18$, $p < .05$), and from work-family conflict to satisfaction with work-family balance ($\beta = -.51$, $p < .001$). Results also revealed significant indirect effects from perceived work demand to work-family conflict via workplace/school microaggressions (*estimate* = .07, 95% CI [0.008, 0.123]), from perceived work demand to satisfaction with work-family balance via work-family conflict (*estimate* = -.24, 95% CI [-0.333, -0.154]), and from workplace/school microaggressions to satisfaction with work-family balance via work-family conflict (*estimate* = -.22, 95% CI [-0.292, -0.159]). The direct effects are depicted in Table 11 and the indirect effects are presented in Table 12. Results from the simple measurement model yielded an AIC of 19795.746, a BIC of 20083.457, and a sample-size adjusted BIC of 19832.949.

Table 11
Direct Effects of Alternative Hostile Model with Communal Goal Endorsement

Direct Effect	β	SE	p
Perceived work demand→ Workplace/school microaggressions	.159	.072	.028
Perceived work demand →Work-family conflict	.474	.077	.000
Workplace/school microaggressions → Work-family conflict	.435	.051	.000
Communal→ Work-family conflict	-.176	.074	.018
Work-family conflict → Satisfaction with work-family balance	-.509	.056	.000

Table 12

Indirect Effects of Alternative Hostile Model with Communal Goal Endorsement

Indirect Effect	estimate	Lower 2.5%	Upper 2.5%
Perceived work demand→ Workplace/school microaggressions →Work-family conflict	.069*	.008	.123
Perceived work demand→Work-family conflict→Satisfaction with work-family balance	-.241*	-.333	-.154
Workplace/school microaggressions →Work-family conflict→Satisfaction with work-family balance	-.222*	-.292	-.159

Note. *95% bias-corrected confidence interval for the parameter estimate does not contain zero.

Testing the Moderated Mediation Models

Next, I reestimated the mediation model, but with goal endorsement (agentic or communal) moderating the indirect relationship between work demand and work-family conflict across both models (supportive and hostile).

The Hypothesized Supportive Model with Agentic Goal Endorsement

The mediated effect of perceived work demand on work-family conflict via social community at work was examined at high and low levels of an agentic goal endorsement. Results from the moderated mediation model yielded an AIC of 21125.292, a BIC of 21423.928, and a sample-size adjusted BIC of 21163.907. The interaction between social community at work and agentic goal endorsement in predicting work-family conflict was found to be nonsignificant ($\beta = -.05$, $p = .630$), suggesting that hypotheses 3 and 3a were not supported.

The Hypothesized Supportive Model with Communal Goal Endorsement

The mediated effect of perceived work demand on work-family conflict via social community at work was examined at high and low levels of a communal goal

endorsement. Results from the moderated mediation model yielded an AIC of 18165.440, a BIC of 18431.299, and a sample-size adjusted BIC of 18199.817. The interaction between social community at work and communal goal endorsement in predicting work-family conflict was found to be nonsignificant ($\beta = .03$, $p = .772$), suggesting that hypotheses 4 and 4a were not supported.

The Alternative Hostile Model with Agentic Goal Endorsement

The mediated effect of perceived work demand on work-family conflict via workplace/school microaggressions was examined at high and low levels of an agentic goal endorsement. Results from the moderated mediation model yielded an AIC of 22762.268, a BIC of 23082.756, and a sample-size adjusted BIC of 22803.709. The interaction between workplace/school microaggressions and agentic goal endorsement in predicting work-family conflict was found to be nonsignificant ($\beta = -.05$, $p = .138$), suggesting that hypotheses 5 and 5a were not supported.

The Alternative Hostile Model with Communal Goal Endorsement

The mediated effect of perceived work demand on work-family conflict via workplace/school microaggressions was examined at high and low levels of a communal goal endorsement. Results from the moderated mediation model yielded an AIC of 19791.141, a BIC of 20079.852, and a sample-size adjusted BIC of 19829.344. The interaction between workplace/school microaggressions and communal goal endorsement in predicting work-family conflict was found to be significant ($\beta = -.09$, $p = .03$). After determining that the interaction between workplace/school microaggressions and communal goal endorsement was significant, I went on to see at which levels of

communal goal endorsement the indirect effect of work demands on work-family conflict was significant. I estimated the indirect effect of work demands on work-family conflict at 1 *SD* above and below the mean of the latent communal goal variable. Standard deviations were computed by taking the square root of the variance of communal goal endorsement. Results indicated that the indirect effect was significant at low levels of a communal goal endorsement (estimate = .23, *p* = .03). The indirect effect of work demand on work-family conflict was also significant at high levels of communal goal endorsement, although it was weaker (estimate = .13, *p* = .04). Results did not entirely support hypotheses 6 and 6a. The indirect effects between work demand and work-family conflict at both levels of the moderator (i.e., high communal and low communal) were found to be positive and significant, but the findings did not align with the hypothesized strengths of these indirect effects. As Figure 4 indicates, the indirect effect is strongest at low levels of communal goal endorsement, but becomes weaker and eventually the confidence interval includes zero as communal goal endorsement scores increase.
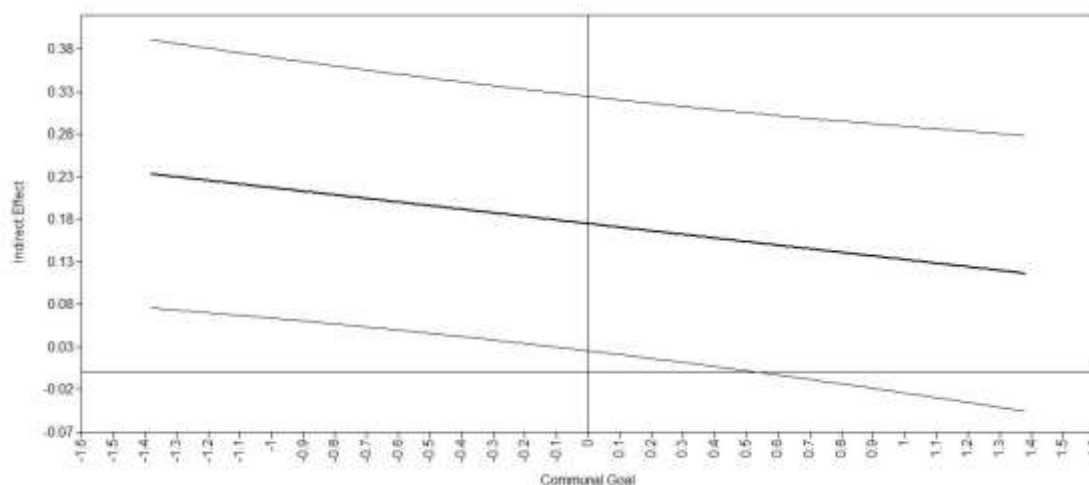

Figure 4. Plot of 95% confidence bands for the indirect effect of work demand on work-family conflict.

DISCUSSION

Broadly, the goal of the present study was to examine the work-family balance satisfaction experience of racially and ethnically URM postdoctoral scholars in the STEM fields. Specifically, I aimed to examine whether the indirect relationship between work demand and work-family conflict varied as a function of role orientation across two models. One model assessed supportive work environment, whereas the other model assessed hostile work environment as a mediating variable. In alignment with role congruity perspective, role orientation could be either agentic or communal (Diekman & Eagly, 2008). Researchers have identified the importance of a communal goal endorsement to academic and career development (e.g., Brown et al., 2015; Diekman et al., 2011) and ways academic environments interact with a communal goal endorsement (e.g., Soto & Deemer, 2018) among undergraduate students, but researchers have yet to examine role orientation among non-undergraduates and in the context of the work-family interface. A focus on the work-family interface contributes to the continued examination of role congruity with occupational roles, but also invites the addition of family roles. Additionally, the current study also viewed goal endorsement, particularly communal goal endorsement, as related to cultural values or roles that can contribute to role congruity or incongruity, which extends beyond the primary focus on gender roles in previous role congruity literature.

In conjunction with previous role congruity literature that identifies communal and agentic goal orientations as aligning with gender stereotypes, I hypothesized that women would report a stronger endorsement of communal goals compared to men (H1)

and that men would report a stronger endorsement of agentic goals compared to women (H2). Contrary to expectations, findings did not support these hypotheses. Diekman et al. (2011) found that undergraduate women endorsed communal goals more than men, but found no significant differences in agentic goal endorsement among men and women. Thus, the results from the current study partially align with recent past research. Finding no differences in the endorsement of communal and agentic goals may relate to an overall greater adoption of both goals by men and women. The adoption of both goals could be a result of increasing role equality (Diekman & Eagly, 2000) or increased comfort in openly endorsing both goals. Additionally, as Soto and Deemer (2018) discussed, different situations may call for the endorsement of different goals for men and women, yet the current study examined goal endorsement broadly instead of in a context-specific manner. Participants may have endorsed communal and agentic goals by considering various domains of life. For example, participants may have endorsed particular goals more strongly had they been asked to specifically consider their time at work, rather than their time at home. Furthermore, they may have endorsed communal and agentic goals differently had they been asked to consider completing various work tasks (e.g., working on a research project, presenting a lecture).

Interestingly, communal goal endorsement and agentic goal endorsement were positively correlated with one another, which aligns with results found by Soto and Deemer (2018), but contrasts with Diekman et al.'s (2010) findings of no significant correlation between communal and agentic goal endorsements. As Soto and Deemer (2018) discussed, results may indicate a movement away from the dichotomization of communal and agentic goals given that participants endorsed the adoption of both goals.

Instead of dichotomization, results warrant the consideration of communal and agentic

goals as existing on spectrums such that participants can endorse agentic, communal, or

both goals to varying degrees. Additionally, as noted above, items on the communal and

agentic subscales were broad, instead of context-specific. Participants may have

considered various life domains as they responded to the items and thus, endorsed both

goals. Participants may also endorse both goals to varying degrees even if presented with

a particular domain.

With the supportive work environment model, I hypothesized that the indirect

effect between work demand and work-family conflict would be moderately positive at

low levels of an agentic goal endorsement (H3) and that the indirect effect between work

demand and work-family conflict would be nonsignificant at high levels of an agentic

goal endorsement (H3a). Results from this study did not support these hypotheses. The

rationale for these hypotheses included the idea that racially and ethnically URM

postdoctoral scholars who were more agentically-oriented may have been less negatively

affected by a weak social community at work because such conditions would be

perceived as congruent with their goals. In other words, their reduced social community

at work may have afforded them the opportunity to be more independently productive or

follow additional agentic goals. The direct effect between work demand and social

community at work was not significant, and the indirect effect between work demand and

work-family conflict was not significant. It is possible that work demand triggers

increased social support at work for some individuals and reduced social support at work

for others, thus canceling one another out and leading to a path coefficient of zero

between work demand and social community at work.

Regarding a communal goal endorsement, I hypothesized that the indirect effect between work demand and work-family conflict would be positive and strongest at high levels of communal goal endorsement (H4) and that the indirect effect between work demand and work-family conflict would be positive, but weakest at low levels of communal goal endorsement (H4a). Results from this study did not support these hypotheses. The rationale for these hypotheses centered on the idea that racially and ethnically URM postdoctoral scholars who were more communally-oriented may have been more negatively impacted by a weak social community at work because such conditions would be perceived as incongruent with their goals. In other words, their reduced social community at work may not have aligned with their hope of maintaining a sense of connection with others. Similar to what is noted above, the direct effect between work demand and social community at work was not significant, and the indirect effect between work demand and work-family conflict was not significant.

Although the moderated mediation hypotheses related to the supportive work environment model were not supported, some mediation effects emerged. Social community at work did not emerge as a mediator in the relationship between work demand and work-family conflict, conflicting with Carlson and Perrewé's (1999) results; however, Carlson and Perrewé (1999) found the best fit for a model in which social support was an antecedent to stressors. Thus future research could examine this model. Work-family conflict emerged as a mediator of the relationship between social community at work and satisfaction with work-family balance. This finding indicates that increased social support at work may lead to reduced work-family conflict, subsequently resulting in increased satisfaction with work-family balance, which aligns with literature

that identifies a negative relationship between supportive work environments and work-family conflict (e.g., Hammer at al., 2004). In order to reduce postdoctoral scholars' work-family conflict and improve their satisfaction with work-family balance, efforts to enhance their perceived social support at work through supports such as mentorship or teambuilding within a research lab may be important considerations for postdoctoral programs. Additionally, URM-mentorship or increased numbers of racially and ethnically URMs within postdoctoral programs may be important considerations for contributing to a greater sense of social support at work among racially and ethnically URM postdoctoral scholars.

Work-family conflict also emerged as a mediator of the relationship between work demand and satisfaction with work-family balance, which coincides with literature that has found a positive relationship between work demand and work-family conflict (e.g., Duxbury & Higgens, 2005) and literature that has identified a negative relationship between work hours and satisfaction with work-family balance (e.g., Valcour, 2007). Findings from the current study indicate that increased work demand may lead to increased work-family conflict, subsequently resulting in decreased satisfaction with work-family balance. Finding ways to reduce racially and ethnically URM postdoctoral scholars' perceived sense of work demand may be critical in reducing their work-family conflict and improving their satisfaction with work-family balance. Stephan (2013) noted that postdoctoral scholars work approximately 53 hours per week, suggesting that postdoctoral scholars may be clocking long hours at work simply given their postdoctoral status. Postdoctoral scholars in the current study may also experience work demand because they may feel pressure to work harder given their racially and ethnically URM

identity, aligning with research on the minority experience of feeling as though one needs to "work twice as hard to be considered half as good" (Vasquez et al., 2006, p. 169). Additionally, racially and ethnically URM postdoctoral scholars may perceive high work demand because of pressure or messages from labmates, supervisors, or themselves. Results suggest that postdoctoral scholars may need to advocate for reduced hours and/or a reduced workload, and postdoctoral program faculty, staff, and administrators may need to adjust expectations or implement policies and procedures to enforce a reduced work schedule or workload.

With the hostile work environment model, I hypothesized that the indirect effect between work demand and work-family conflict would be positive, but weakest at high levels of an agentic goal endorsement (H5) and that the indirect effect between work demand and work-family conflict would be moderately positive at low levels of an agentic goal endorsement (H5a). The rationale for these hypotheses included the idea that racially and ethnically URM postdoctoral scholars who were more agentically-oriented may have been less negatively impacted by the experience of workplace and school microaggressions because their goals of independence and focusing on the self may help buffer the indirect effect of work demand on work-family conflict through workplace and school microaggressions. Results from this study did not support these hypotheses and instead, pointed to the possibility that agentic goals may not be salient when it comes to postdoctoral scholars interacting with others in their workplace environments. Given the individualistic nature of agentic goals, they may not impact the relationship between workplace and school microaggressions, a people-oriented variable, and work-family conflict. The results from the study may have emerged because the influence of work

environment may supercede the influence of agentic goals. Regardless of the degree to which postdoctoral scholars endorsed agentic goals, such an endorsement did not buffer or amplify the indirect relationship between work demand work-family conflict through workplace and school microaggressions. Given the individualistic nature of agentic goals, they may not be salient when considered in the context of the hostile work environment model because workplace and school microaggressions involve interactions with others. In other words, agentic goals may become subordinated to the influence of the work environment.

Although the moderated mediation hypotheses related to the hostile work environment model with agentic goal endorsement were not supported, mediation effects emerged. As in the support model reported above, work-family conflict emerged as a mediator of the relationship between work demand and satisfaction with work-family balance. Work-family conflict also emerged as a mediator of the relationship between workplace and school microaggressions and satisfaction with work-family balance. This finding indicates that increased microaggresions may lead to increased work-family conflict, subsequently resulting in decreased satisfaction with work-family balance, which coincides with literature tying racial bias in the workplace to work-family conflict (e.g., Cole & Secret, 2012). Through a qualitative study, Louis et al. (2016) found that experiencing microaggressions increased stress among Black faculty members, which led to avoidance of the office environment and interactions with colleagues. Such results lend support to the possibility that in the current study, the experience of microaggressions in the workplace likely contributed to demand and strain at work, which then amplified work-family conflict and reduced satisfaction with work-family balance. Results suggest

that university faculty, staff, and administrators responsible for postdoctoral programs should strive to create work atmospheres of greater inclusiveness and safety for racially and ethnically URM postdoctoral scholars. In alignment with what participants called for in a study conducted by Louis et al. (2016), creating URM postdoctoral organizations could help racially and ethnically URM postdoctoral scholars cope, commisertate, and create solutions to address and minimize the experience of microaggressions in their workplace. Professional development seminars on topics such Sue et al.'s (2019) microintervention strategies for disarming microaggressions, could also be instrumental in reducing the experience of microaggressions among racially and ethnically URM postdoctoral scholars in the workplace.

Microaggressions emerged as a mediator of the relationship between work demand and work-family conflict. This finding indicates that increased work demand contributes to increased perceptions of microaggressions, subsequently resulting in increased work-family conflict. As postdoctoral scholars face increased work demand, it is likely that colleagues also face increased work demand. Under the stress of increased work demand, colleagues may be more likely to commit microaggressions against racially and ethnically URM postdoctoral scholars, which then increases postdoctoral scholars' work-family conflict experience. Racially and ethnically URM postdoctoral scholars may also interact more with colleagues as they face increased work demand, therefore there are more opportunities for them to encounter colleagues committing microaggressions.

Regarding a communal goal endorsement, I hypothesized that the indirect effect between work demand and work-family conflict would be positive and strongest at high

levels of communal goal endorsement (H6) and that the indirect effect between work demands and work-family conflict would be moderately positive at low levels of communal goal endorsement (H6a). Results from this study did not entirely support hypotheses 6 and 6a given that the indirect effects between work demand and work-family conflict at both levels of the moderator (i.e., high communal and low communal) were found to be positive and significant, but the findings did not align with the hypothesized strengths of these indirect effects. Instead, the indirect effect between work demand and work-family conflict was significant and strongest at low levels of a communal goal endorsement and the indirect effect gradually became weaker until it was nonsignificant as racially and ethnically URM postdoctoral scholars' communal goal endorsement increased.

The positive, indirect effect between work demand and work-family conflict was strongest at low levels of a communal goal endorsement, which is negative and harmful for racially and ethnically URM postodoctoral scholars. For postdoctoral scholars endorsing low levels of a communal goal endorsement, the positive relationship between microaggressions and work-family conflict appears to be enhanced. In other words, the harmful indirect effects of work demand on work-family conflict through microaggressions are strongest when postdoctoral scholars endorse low communal goals, which aligns with research that has highlighted a positive relationship between racial bias and work-family conflict (e.g., Cole & Secret, 2012). In contrast, the harmful indirect effects of work demand on work-family conflict through microaggressions are reduced and then eliminated as postdoctoral scholars increasingly endorse high communal goals.

An endorsement of high communal goals may buffer the positive relationship between microaggressions and work-family conflict because racially and ethnically URM postdoctoral scholars may find that their work affords them opportunities to make connections with colleagues at work, and the literature indicates that support from co-workers relates to reduced work-family conflict (e.g., Hammer et al., 2004). Furthermore, seeking support from colleagues is one coping mechanism that can be used to address the experience of microaggressions in academia (Constantine, Smith, Redington, & Owens, 2008). Postdoctoral scholars highly valuing communion may still find affiliation and connection with colleagues in spite of also facing microaggressions. At the university level, microaggresions are commonplace for faculty of color (Louis et al., 2016), therefore it can be argued that racially and ethnically URM postdoctoral scholars working at universities likely have similar experiences. Postdoctoral scholars' familiarity with the daily experience of facing microaggressions may mean they have learned to foster strong connections with others by finding ways to cope (e.g., avoidance, self-care) with the experience of microaggressions. Communion protects racially and ethnically URM postdoctoral scholars from the negative effects of work demand and workplace/school microaggressions on work-family conflict, subsequently improving their satisfaction with work-family balance. In alignment with this explanation, individuals endorsing low communal goals likely place less emphasis on working with others or connecting with others at work, thus they likely have less strong relationships with others. Without strong relationships at work to turn to in the face of microaggresions, postdoctoral scholars endorsing low communal goals may be more impacted by the experience of

microaggressions at work, which exacerbates work-family conflict and reduces their satisfaction with work-family balance.

Another possibility for why high communal goals may buffer the positive relationship between microaggressions and work-family conflict is that postdoctoral scholars who highly value communion may have strong relationships and connections with co-workers such that they feel comfortable addressing microaggressions in the workplace, which then buffers the indirect impact they have on their experience of work-family conflict. Constantine et al. (2008) found that Black faculty members made decisions about when to confront racial microaggressions as a coping strategy, which could support the possibility that racially and ethnically URM postdoctoral scholars valuing high communal goals in the current study may decide to confront microaggressions in the context of close relationships with colleagues. Conversely, postdoctoral scholars who endorsed low communal goals may have less strong connections with co-workers, making it more challenging to directly communicate their reactions to microaggressions in the workplace, which indirectly worsens work-family conflict and then reduces satisfaction with work-family balance.

It is also possible that a high communal endorsement buffers the positive relationship between microaggressions and work-family conflict because postdoctoral scholars may find that their high communal values are supported by fewer, but more important colleagues at work such as mentors, supervisors, or other colleagues in their research labs. Although postdoctoral scholars may face microaggressions at work, particular people in their workspace may offer critical support and connection to cope with racial microaggressions (Holder, Jackson, & Ponterotto, 2015), which aligns with

their high communal values. These particular people may also be people who do not

engage in microaggressions toward the racially and ethnically URM postdoctoral scholars

given that individuals can experience differing levels of racial/ethnic bullying from

particular people in the workplace (Fox & Stallworth, 2005). Relatedly, racially and

ethnically URM postdoctoral scholars with high communal goals may have communal

role models in STEM. Fuesting and Diekman (2017) found that individuals' communal

orientation predicted their value of communal behavior in their role models,

demonstrating goal congruity patterns. Racially and ethnically URM postdoctoral

scholars with high communal goals in the current study may experience goal congruity

(having role models who demonstrate communal goals), which may buffer the impact

microaggressions have on their experience of work-family conflict.

Another possibility includes the chance that postdoctoral scholars' high

communal goal pursuit is being met through connections outside of work, such as at

home with family, through volunteer experiences, or with other connections. The prompt

for the goal endorsement scale in this study did not specifically direct participants to rate

each of the goals in the context of their work environment or relationships with

colleagues and instead, was broad. Similarly, Constantine et al. (2008) identified seeking

support from friends and family as a coping strategy used by Black faculty when facing

microaggressions.

Postdoctoral scholars who endorsed high communal goals may also find that their

postdoctoral work (e.g., research, teaching), instead of the people at their place of work,

affords them opportunities to have their high communal goals met, thus buffering the

positive relationship between microaggressions and work-family conflict. Brown et al.

(2015) identified positives, such as positivity toward research and enhanced STEM

motivation, that emerged when participants endorsed a stronger communal orientation or

perceived science as affording communal goals, which points to the idea that STEM and

communal goals can co-exist in a beneficial way. Postdoctoral scholars in the current

study may view their work as affording them opportunities to serve humanity, give back

to their community, and help others, aligning with a communal goal orientation. The

importance of carrying out meaningful work that is congruent with their high communal

goals could be strong enough to buffer the impact of interacting with individuals in their

workplace who commit microaggressions. Although Diekman et al. (2010) found that

STEM careers were perceived as inhibitory of communal goals, high communal goals

buffer some of the harmful impact that microaggressions indirectly have on the

experience of work-family conflict and satisfaction with work-family balance among

racially and ethnically URM postdoctoral scholars in the current study. Clark, Fuesting,

and Diekman (2016) found that communally-oriented individuals perceive STEM fields

as affording communal goals when role models cue or convey that their work involves

communal activities (e.g., science involves working with others, science involves helping

others), which supports the idea that highly communal racially and ethnically URM

postdoctoral scholars may perceive their work as affording them communal goals given

their role models. Such role congruity may buffer the impact microaggresions have on

their experience of work-family conflict.

At the end of the survey, participants identified who they considered as family

while completing the online survey. The qualitative results point to a more diverse

conceptualization of family, which can include family of origin and family of creation.

Past research has tended to focus on narrow definitions of family (Casper et al., 2007), but the consideration of a more broad definition of family is necessary (Casper et al., 2007; Parasuraman & Greenhaus, 2002), and better aligns with the experiences of racial and ethnic minorities (McGoldrick, Giordano, & Garcia-Preto, 2006). For example, Latinos, African Americans, and Native Americans often include extended family members and community in definitions of family (Hernandez, 2002; McGoldrick et al., 2006).

Limitations

Several limitations to this study should be noted. First, postdoctoral scholars represent a specific and narrowed sample, thus results cannot be generalized to other groups of students or professionals. Second, the heterogeneity of racial and ethnic minority participants must be considered given that there are a variety of subgroups within this specified group. African American, Latino, and Native American individuals were considered as one group of racially and ethnically URMs, yet more specific racial and ethnic identities can be held (e.g., Mexican American, Puerto Rican, Jamaican, Cherokee) within the three broader racial and ethnic categories. Third, the heterogeneity of postdoctoral disciplines warrants consideration. Postdoctoral scholars recruited for this study worked in a wide variety of disciplines due to the National Science Foundation's (2014) inclusive definition of STEM. Fourth, selection bias represents an additional limitation. Because participants were not randomly selected for this study, individuals who were interested in the presented topic likely participated, which contributes to selection bias. Fifth, the social community at work measure is subscale, which had less available research citing the reliability and validity of the subscale. Scales measuring a

"chilly" work environment or general perceived support in a work environment proved difficult to find. Consideration must be given to these limitations.

Implications for Research and Practice

Areas for Future Research

Researchers may wish to further examine a communal goal orientation, paying particular attention to examining the protective nature of high communal values. For racially and ethnically URM postdoctoral scholars who highly value communal goals, in which ways do they see their work as affording them their communal values? Are there particular people they are connecting with at work that aligns with their communal goals? Do they view their research, teaching, and other areas of work in alignment with their communal goals? A mixed-methods approach could be helpful in unpacking these questions. Additionally, given that highlighting communal opportunities in STEM can increase interest and motivation among URMS because this affords communal goal congruity (Bloucher et al., 2017), it would be important for future research to assess whether working in a STEM career affords racially and ethnically URM postdoctoral scholars the opportunity to satisfy their communal goals. Incorporating a measure of goal congruity in addition to a measure of goal affordances would be important in determining whether racially and ethnically URM postdoctoral scholars experience communal goal congruity in the context of their STEM work environments. In this study, measures of social support at work and microaggressions were separated in two different models, but further exploring a model that incorporates a measure of support in the workplace and a measure of hostility in the workplace could be useful.

Future research could examine work-family balance satisfaction from a narrowed lens by recruited from a highly specific sub-group of racially and ethnically URMs or examine within group differences for various racially and ethnically URM groups given that some researchers have found within group differences in various constructs. For example, Nadal, Mazzula, Rivera, and Fujii-Doe (2014) found within group differences in the experience of microaggressions. Additionally, differences between the three broader racial and ethnic identities are not examined in this study, thus future studies could examine differences in work-family balance satisfaction among various racially and ethnically URM groups. Similarly, although no gender differences emerged in terms of the dependent variables, future research could also examine gender-based microaggressions racially and ethnically URM postdoctoral women may face in addition to microaggressions based on race/ethnicity. Such research would be important in examining whether racially and ethnically URM women's intersecting marginalized identities and the various microaggressions they likely face because of these identities impact their work-family conflict and satisfaction with work-family balance in unique ways. Also, because this study defined STEM broadly, future research could examine differences between STEM disciplines or more closely examine fewer STEM disciplines.

Clinical Implications

Results from this study generally highlight that postdoctoral scholars face a variety of struggles that reduce their satisfaction with work-family balance, which could be reasons for seeking counseling, particularly career counseling. Career counseling in particular would allow postdoctoral scholars to address and explore their experience of work demand, social support, microaggressions, other unsupportive aspects of their

workplace, and work-family conflict. Given that postdoctoral scholars are neither students nor faculty, they may not have access to university counseling center services and instead, may need to seek counseling off-campus. It may be important for university counseling centers to consider offering individual counseling services to postdoctoral scholars, or at least, providing quality referrals to off-campus counseling services. Furthermore, given that group counseling is an effective treatment modality (Burlingame, Fuhriman, & Mosier, 2003), offering a support group for URM postdoctoral scholars, or at least postdoctoral scholars, could be helpful for postdoctoral scholars to discuss the challenges they face and also receive peer support.

In terms of career intervention, the study results also point to the importance of high communal goals for reduced work-family conflict and improved satisfaction with work-family balance. Counselors may wish to capitalize on the malleability of goal affordances or ability to activate goal affordances (Diekman et al., 2011) by encouraging their clients to strengthen connections to colleagues, other postdoctoral scholars, and other campus social supports such as cultural centers. In addition, counselors may encourage their clients to find ways to infuse their high communal goals into their postdoctoral work in order to continue fostering their high value of communion. Counselors working in university counseling centers may also provide psychoeducation and outreach programming centered on topics such as reducing microaggressions in the workplace, self-care, and balancing work and family to programs and departments who employ postdoctoral scholars.

Conclusion

In conclusion, findings from the current study demonstrated that racially and ethnically URM postdoctoral scholars endorsing high communal goals experienced a reduction in the harmful indirect effects of work demand on work-family conflict through microaggressions, subsequently increasing their satisfaction with work-family balance. In the face of microaggressions in the workplace, racially and ethnically URM postdoctoral scholars' high value of communion serves as a protective factor, which reduces the indirect effect of work demand on work-family conflict. Commual goals may help racially and ethnically URM postdoctoral scholars cope with workplace stressors such as excessive workloads and racial/ethnic bias by facilitating support-seeking behaviors. Underrepresented minority postdoctoral scholars in STEM are situated in a transitional time period in their career in which they navigate demanding and "chilly" work environments, but reducing their work-family conflict experiences may reduce premature exits from the STEM fields. Furthermore, enhancing racially and ethnically URM postdoctoral scholars' satisfaction with work-family balance could be beneficial for their overall well-being and productivity. Efforts to support and enhance high communal goals could be critical in aiding the career development of racially and ethnically URM postdoctoral scholars in the STEM fields.

REFERENCES

Abendroth, A., & den Dulk, L. (2011). Support for the work-life balance in Europe: the impact of state, workplace and family support on work-life balance satisfaction. *Work, Employment & Society, 25*(2), 234-256.

Adams, G. A., King, L. A., & King, D. W. (1996). Relationships of job and family involvement, family social support, and work-family conflict with job and life satisfaction. *Journal of Applied Psychology, 81*(4), 411-420.

Allen, T. D. (2001). Family-supportive work environments: The role of organizational perceptions. *Journal of Vocational Behavior, 58,* 414-435. doi: 10.1006/jvbe.2000.1774

Allen, T. D., Herst, D. E. L., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278-308.

Bailyn, L. (2003). Academic careers and gender equity: Lessons learned from MIT. *Gender, Work, and Organization, 10*(2), 137-153.

Bakan, D. (1966). *The duality of human existence: An essay on psychology and religion.* Chicago: Rand McNally.

Barnett, R., Gareis, K., & Brennan, B. (1999) Fit as a mediator of the relationship between work hours and burnout. *Journal of Occupational Health Psychology, 4,* 307-317.

Beham, B., & Drobnič, S. (2010). Satisfaction with work-family balance among German office workers. *Journal of Managerial Psychology, 25*(6), 669-689. doi: 10.1108/02683941011056987

Bellavia, D. M., & Frone, M. R. (2005). Work-family conflict. In J. Barling, E. K. Kelloway, & M. F. Frone (Eds.), *Handbook of work stress* (pp. 113-148). Thousand Oaks, CA: Sage.

Bernas, K. H., & Major, D. A. (2000). Contributors to stress resistance: Testing a model of women's work-family conflict. *Psychology of Women Quarterly, 24,* 170-178.

Beutel, A. M., & Marini, M. M. (1995). Gender and values. *American Sociological Review, 60*(3), 436-448.

Blustein, D. L. (2001). Extending the reach of vocational psychology: Toward an inclusive and integrated psychology of working. *Journal of Vocational Behavior, 59*, 171-182. doi: 10.1006/jvbe.2001.1823

Boucher, K. L., Fuesting, M. A., Diekman, A. B., & Murphy, M. C. (2017). Can I work with and help others in this field? How communal goals influence interest and participation in STEM fields. *Frontiers in Psychology, 8,* 1-12.

Boyar, S. L., Carr, J. C., Mosley, D. C., Jr., & Carson, C. M. (2007). The development and validation of scores on perceived work and family demand scales. *Educational and Psychological Measurement, 67*(1), 100-115. doi: 10.1177/0013164406288173

Bozzon, R., Murgia, A., Poggio, B., & Rapetti, E. (2017). Work-life interferences in the early stages of academic careers: The case of precarious researchers in Italy. *European Educational Research Journal, 16*(2-3), 332-351.

Brewer, L. (2001). Gender socialization and the cultural construction of elder caregivers. *Journal of Aging Studies, 15,* 217-235.

Brown, T. A. (2006). *Confirmatory factor analysis for applied research.* New York: Guilford Press.

Brown, E. R., Thoman, D. B., Smith, J. L., & Diekman, A. B. (2015). Closing the communal gap: The importance of communal affordances in science career motivation. *Journal of Applied Social Psychology, 45*(12)*,* 662-673.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.

Bureau of Labor Statistics. (2016). *American time use survey.* Retrieved from https://www.bls.gov/tus/charts/household.htm

Burger, J. M., & Solano, C. H. (1994). Changes in desire for control over time: Gender differences in a ten-year longitudinal study. *Sex Roles, 31*(7/8), 465-472.

Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review, 106,* 676-713.

Butler, A. B., Grzywacz, J. G., Bass, B. L., & Linney, K. D. (2005). Extending the demands-control model: A daily diary study of job characteristics, work-family conflict and work-family facilitation. *Journal of Occupational and Organizational Psychology, 78,* 155-169. doi: 10.1348/096317905X40097

Burlingame, G. M., Fuhriman, A., & Mosier, J. (2003). The differential effectiveness of group psychotherapy: A meta-analytic perspective. *Group Dynamics: Theory, Research, and Practice, 7*(1), 3-12.

Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior, 67,* 169-198. doi: 10.1016/j.jvb.2004.08.009

Carlson, D. S., & Kacmar, K. M. (2000). Work-family conflict in the organization: Do life role values make a difference? *Journal of Management, 26*(5), 1031-1054.

Carlson, D. S., & Perrewé, P. L. (1999). The role of social support in the stressor-strain relationship: An examination of work-family conflict. *Journal of Management, 25*(4), 513-540.

Carson, L. R. (2009). "I am because we are:" Collectivism as a foundational characteristic of African American college student identity and academic achievement. *Social Psychology of Education: An International Journal, 12*(3), 327-344. doi: 10.1007/s11218-009-9090-6

Casper, W. J., Eby, L. T., Bordeaux, C., Lockwood, A., & Lambert, D. (2007). A review of research methods in IO/OB work-family research. *Journal of Applied Psychology, 92*(1), 28-43.

Cejka, M. A., & Eagly, A. H. (1999). Gender-stereotypic images of occupations correspond to the sex segregation of employment. *Society for Personality and Social Psychology, 25*(4), 413-423.

Cinamon, R. G. (2006). Preparing minority adolescents to blend work and family roles: Increasing work-family conflict management self efficacy. *International Journal for the Advancement of Counselling, 28*(1), 79-94.

Cinamon, R. G., & Rich, Y. (2002). Gender differences in the importance of work and family roles: implications for work-family conflict. *Sex Roles, 47*(11/12), 531-541.

Cinamon, R. G., & Rich, Y. (2010). Work family relations: Antecedents and outcomes. *Journal of Career Assessment, 18*(1)*,* 59-70. doi: 10.1177/1069072709340661

Clark, S. C. (2002). Employees' sense of community, sense of control, and work/family conflict in Native American organizations. *Journal of Vocational Behavior, 61,* 92-108.

Clark, E. K., Fuesting, M. A., & Diekman, A. B. (2016). Enhancing interest in science: exemplars as cues to communal affordances of science. *Journal of Applied Social Psychology, 46,* 641-654.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple correlation/regression analysis for the behavioral sciences*. Mahwah, NJ: Lawrence Erlbaum Associates.

Cole, P. L., & Secret, M. C. (2012). Factors associated with work-family conflict stress among African American women. *Social Work in Public Health, 27,* 307-329.

Constantine, M. G., Smith, L., Redington, R. M., & Owens, D. (2008). Racial microaggressions against Black counseling and counseling psychology faculty: A central challenge in the multicultural counseling movement. *Journal of Counseling & Development, 86*, 348-355.

Coyle, E. F., Van Leer, E., Schroeder, K., & Fulcher, M. (2015). Planning to have it all: Emerging adults' expectations of future work-family conflict. *Sex Roles, 71*(11), 547-557. doi:10.1007/s11199-015-0492-y

Dabney, K. P., & Tai, R. H. (2013). Female physicist doctoral experiences. *Physical Review Special Topics-Physics Education Research, 9*(1), 010115-1-010115-10.

Davis, G. (2005). Doctors without orders: Highlights of the Sigma Xi postdoc survey. *American Scientist, 93*(3), 1-13.

Delgado, E. A., & Canabal, M. E. (2006). Factors associated with negative spillover from job to home among Latinos in the United States. *Journal of Family and Economic Issues, 27*(1), 92-112. doi: 10.1007/s10834-005-9001-8

Delgado, E. A., Canabal, M. E., & Serrano, E. (2004). Work and family balance among Latinos in the U.S.: Barriers and facilitators. *Journal of Family and Consumer Sciences, 96*(3), 26-34.

Delgado-Romero, E. A., Lau, M. Y., & Shullman, S. L. (2012). The Society of Counseling Psychology: Historical values, themes, and patterns viewed from the American Psychological Association presidential podium. In N. A. Fouad (Ed.), *APA Handbook of Counseling Psychology* (pp. 3-29). Washington, DC: American Psychological Association.

De Janasz, S., Behson, S. J., Jonsen, K., Lankau, M. J. (2013). Dual sources of support for dual roles: How mentoring and work-family culture influence work-family conflict and job attitudes. *The International Journal of Human Resource Management, 24*(7), 1435-1453.

De Luca, S. M., & Escoto, E. R. (2012). The recruitment and support of Latino faculty for tenure and promotion. *Journal of Hispanic Higher Education, 11*(1), 29-40.

Demerouti, E., Bakker, A. B., & Schaufeli, W. B. (2005). Spillover and crossover of exhaustion and life satisfaction among dual-earner parents. *Journal of Vocational Behavior, 67*, 266-289. doi: 10.1016/j.jvb.2004.07.001

Diekman, A. B., Brown, E. R., Johnston, A. M., & Clark, E. K. (2010). Seeking congruity between goals and roles: A new look at why women opt out of science, technology, engineering, and mathematics careers. *Psychological Science, 21*(8), 1051-1057. doi: 10.1177/0956797610377342

Diekman, A. B., Clark, E. K., Johnston, A. M., Brown, E. R., & Steinberg, M. (2011). Malleability in communal goals and beliefs influences attraction to STEM careers: Evidence for a goal congruity perspective. *Journal of Personality and Social Psychology, 101*(5), 902-918.

Diekman, A. B., & Eagly, A. H. (2000). Stereotypes as dynamic constructs: Women and men of the past, present, and future. *Personality and Social Psychology Bulletin, 26*(10), 1171-1188.

Diekman, A. B., & Eagly, A. H. (2008). Of men, women, and motivation. A role congruity account. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science* (pp. 434-447). New York: Guilford.

Dikkers, J. S. E., Geurts, S. A. E., Kompier, M. A. J., Taris, T. W., Houtman, I. L. D., & van den Heuvel, F. (2007). Does workload cause work-home interference or is it the other way around? *Stress and Health, 23,* 303-314. doi: 10.1002/smi.1151

Duxbury, L., & Higgins, C. (2005). *Report four: Who is at risk? Predictors of work-life conflict.* Ottawa, Ontario, Canada: Public Health Agency of Canada. Retrieved from http://publications.gc.ca/collections/Collection/HP20-1-2005E.pdf

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

Eagly, A. H., & Diekman, A. B. (2005). What is the problem? Prejudice as an attitude-in-context. In J. F. Dovidio, P. Glick, & L. A. Rudman (Eds.), *On the nature of prejudice: Fifty years after Allport* (pp. 19-35). Malden, MA: Blackwell.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109*(3), 573-598.

Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology, 46*(4), 735-754.

Eagly, A. H., & Wood, W. (1991). Explaining sex differences in social behavior: A meta-analytic perspective. *Personality and Social Psychology Bulletin, 17*(3), 306-315.

Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispositions versus social roles. *American Psychologist, 54*(6), 408-423.

Eagly, A. H., & Wood, W. (2012). Social role theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (Vol. 2, pp. 458-476). London: SAGE Publications Ltd. doi: 10.4135/9781446249222.n49

Eagly, A. H., Wood, W., & Diekman, A. B. (2000). Social role theory of sex differences and similarities: A current appraisal. In T. Eckes & H. M. Trautner (Eds.), *The developmental social psychology of gender* (pp. 123-174). Mahwah, NJ: Erlbaum.

Eby, L. T., Casper, W. J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005). Work and family research in IO/OB: Content analysis and review of the literature (1980-2002). *Journal of Vocational Behavior, 66,* 124-197.

Eby, L. T., Maher, C. P., & Butts, M. M. (2010). The intersection of work and family life: the role of affect. *Annual Review of Psychology, 61,* 599-622. doi: 10.1146/annurev.psych.093008.100422

Edwards, J. R., & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *The Academy of Management Review, 25,* 178-199. doi: 10.2307/259269

England, P., Budig, M., & Folbre, N. (2002). Wages of virtue: The relative pay of care work. *Social Problems, 49*(4), 455-473.

Eskilson, A., & Wiley, M. G. (1999). Solving for the X: Aspirations and expectations of college students. *Journal of Youth and Adolescence, 28*(1), 51-70.

Evans, C. D., & Diekman, A. B. (2009). On motivated role selection: Gender beliefs, distant goals, and career interest. *Psychology of Women Quarterly, 33,* 235-249.

Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin, 116*(3), 429-456.

Ferguson, K., Huang, B., Beckman, L., & Sinche, M. (2014). *National Postdoctoral Association institutional policy report 2014: Supporting and developing postdoctoral scholars*. Retrieved from http://www.nationalpostdoc.org/?page=policy_report_databa

Ferrini-Mundy, J. (2013). Driven by diversity. *Science, 340,* 278.

Fiksenbaum, L. M. (2014). Supportive work-family environments: implications for work-family conflict and well-being. *The International Journal of Human Resource Management, 25*(5), 653-672.

Flam, F. (1991). Still a "chilly climate" for women? *Science, 252,* 1604–1606. doi:10.1126/science.252.5013.1604

Flores, L. Y., Robitschek, C., Celebi, E., Andersen, C., & Hoang, U. (2010). Social cognitive influences on Mexican Americans' career choices across Holland themes. *Journal of Vocational Behavior, 76,* 198-210. doi: 10.1016/j.jvb.2009.11.002

Ford, M. T., Heinen, B. A., & Langkamer, K. L. (2007). Work and family satisfaction and conflict: A meta-analysis of cross-domain relations. *Journal of Applied Psychology, 92*(1), 57-80.

Fox, M. F., Fonseca, C., & Bao, J. (2011). Work and family conflict in academic science: Patterns and predictors among women and men in research universities. *Social Studies of Science, 41*(5), 715-735.

Fox, M. L., & Dwyer, D. J. (1999). An investigation of the effects of time and
involvement in the relationship between stressors and work-family conflict.
Journal of Occupational Health Psychology, 4(2), 164-174.

Fox, S., & Stallworth, L. E. (2005). Racial/ethnic bullying: Exploring links between
bullying and racism in the US workplace. *Journal of Vocational Behavior, 66,*
438-456.

Frone, M. R. (2000). Work-family conflict and employee psychiatric disorders: The
national comorbidity survey. *Journal of Applied Psychology, 85*(6), 888-895.

Frone, M. R. (2003). Work-family balance. In J. C. Quick & L. E. Tetric (Eds.),
Handbook of occupational health psychology (pp. 143-162). Washington, DC:
American Psychological Association. doi: 10.1037/10474-007

Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-
family conflict: Testing a model of the work-family interface. *Journal of Applied
Psychology, 77*(1), 65-78.

Frone, M. R., Yardley, J. K., & Markle, K. S. (1997). Developing and testing an
integrative model of the work-family interface. *Journal of Vocational Behavior,
50,* 145-167. doi: 10.1006/jvbe.1996.1577

Frye, N. K., & Breaugh, J. A. (2004). Family-friendly policies, supervisor support, work-
family conflict, family-work conflict, and satisfaction: A test of a conceptual
model. *Journal of Business and Psychology, 19*(2), 197-220.

Fu, C. K., & Shaffer, M. A. (2001). The tug of work and family: Direct and indirect
domain-specific determinants of work-family conflict. *Personnel Review, 30*(5/6),
502-522.

Fuesting, M. A., & Diekman, A. B. (2017). Not by success alone: Role models provide
pathways to communal opportunities in STEM. *Personality and Social
Psychology Bulletin, 43*(2), 163-176.

Fuhrmann, C. N., Halme, D. G., O'Sullivan, P. S., & Lindstaedt, B. (2011). Improving
graduate education to support a branching career pipeline: Recommendations
based on a survey of doctoral students in the basic biomedical sciences. *CBE-Life
Sciences Education, 10*(3), 239-249.

Gaines, Jr., S. O., Marelich, W. D., Bledsoe, K. L., Steers, W. N., Henderson, M. C., Granrose, C. S., et al. (1997). Links between race/ethnicity and cultural values as mediated by race/ethnicity and moderated by gender. *Journal of Personality and Social Psychology, 72*, 1460-1476.

Geis, F. L. (1993). Self-fulfilling prophecies: A social psychological view of gender. In A. E. Beall & R. J. Sternberg (Eds.), *The psychology of gender* (pp. 9-54). New York: Guilford Press.

Gelso, C., & Fretz, B. (2001). *Counseling psychology.* Fort Worth, TX: Harcourt College Publishers.

Gibbs, K. D., McGready, J., & Griffin, K. (2015). Career development among American biomedical postdocs. *CBE-Life Sciences Education, 14*(4)*,* 1-12.

Grzywacz, J. G., & Marks, N. F. (2000). Reconceptualizing the work-family inferface: An ecological perspective on the correlates of positive and negative spillover between work and family. *Journal of Occupational Health, 5*(1), 111-126.

Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *The Academy of Management Review, 10*, 76-88. doi: 10.2307/258214

Guerts, S., & Demerouti, E. (2003). Work/non-work interface: A review of the theories and findings. In M. Schabracq, J. Winnubst, & C. Copper (Eds.), *The Handbook of Work and Health Psychology* (pp. 297-312). Chichester, England: John Wiley and Sons.

Gutek, B. A., Searle, S., & Klepa, L. (1991). Rational versus gender role expectations for work-family conflict. *Journal of Applied Psychology, 76*(4), 560-568.

Hammer, T. H., Saksvik, P. O., Nytrø, K., Torvatn, H., & Bayazit, M. (2004). Expanding the psychosocial work environment: Workplace norms and work-family conflict as correlates of stress and health. *Journal of Occupational Health Psychology, 9*(1), 83-97.

Hernandez, J. C. (2002). A qualitative exploration of the first-year experience of Latino college students, *Journal of Student Affairs Research and Practice*, 40(1), 69-84.

Higgins, C., Duxbury, L., & Johnson, K. L. (2000). Part-time work for women: Does it really help balance work and family? *Human Resource Management, 39*(1), 17-32.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values.* Beverly Hills, CA: Sage.

Hofstede, G. (1997). *Cultures and organizations: Software of the mind.* New York: McGraw-Hill.

Holder, A. M. B., Jackson, M. A., & Ponterotto, J. G. (2015). Racial microaggression experiences and coping strategies of Black women in corporate leadership. *Qualitative Psychology, 2*(2), 164-180.

Holder, J. C., & Vaux, A. (1998). African American professionals: Coping with occupational stress in predominantly White work environments. *Journal of Vocational Behavior, 53,* 315-333.

Hossain, Z., Skurky, T., Joe, J., & Hunt, T. (2011). The sense of collectivism and individualism among husbands and wives in traditional and bi-cultural Navajo families on the Navajo Reservation. *Journal of Comparative Family Studies, 42*(4), 543-562.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1-55. doi: 10.1080/10705519909540118

Hughes, D. L., & Galinsky, E. (1994). Gender, job and family conditions, and psychological symptoms. *Psychology of Women Quarterly, 18*, 251-270.

Ilies, R., Schwind, K. M., Wagner, D. T., Johnson, M. D., DeRue, D. S., & Ilgen, D. R. (2007). When can employees have a family life? The effects of daily workload and affect on work-family conflict and social behaviors at home. *Journal of Applied Psychology, 92*(5), 1368-1379.

Jayakumar, U. M., Howard, T. C., Allen, W. R., & Han, J. C. (2009). Racial privilege in the professoriate: An exploration of campus climate, retention, and satisfaction. *The Journal of Higher Education, 80*(5), 538-563.

Kameny, R. R., DeRosier, M. E., Taylor, L. C., McMillen, J. S., Knowles, M. M., & Pifer, K. (2014). Barriers to career success for minority researchers in the behavioral sciences. *Journal of Career Development, 41*(1), 43-61.

Konrad, A. M., Ritchie, J. E. J., Lieb, P., & Corrigall, E. (2000). Sex differences and similarities in job attribute preferences: A meta-analysis. *Psychological Bulletin, 126*(4), 593-641.

La Roche, M. J., & Maxie, A. (2003). Ten coniderations in addressing cultural differences in psychotherapy. *Professional Psychology: Research and Practice, 34*(2), 180-186. doi: 10.1037/0735-7028.34.2.180

Lewis, S., & Dyer, J. (2002). Toward a culture for work-life integration. In C. Cooper, & R. Burke (Eds.), *The New World of Work* (pp. 302-15). London: Blackwell.

Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling, 9*(2), 151-173.

Louis, D. A., Rawls, G. J., Jackson-Smith, D., Chambers, G. A., Phillips, L. L., & Louis, S. L. (2016). Listening to our voices: Experiences of Black faculty at predominantly White research universities with microaggression. *Journal of Black Studies, 47*(5), 454-474.

Lytton, H., & Romney, D. M. (1991). Parents' differential socialization of boys and girls: A meta-analysis. *Psychological Bulletin, 109,* 267-296.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1,* 130–149. doi: 10.1037/1082-989X.1.2.130

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7,* 83–104.

Malone, K. R., & Barabino, G. (2009). Narrations of race in STEM research settings: Identity formation and its discontents. *Science Education, 93*(3), 485-510. doi: 10.1002/sce.20307

Marín, G., & Marín, B. (1991). *Research with Hispanic Populations, Applied Social Research Methods Series* (Vol. 23). Newbury Park, CA: Sage.

Martinez, E. D., Botos, J., Dohoney, K. M., Geiman, T. M., Kolla, S. S., Olivera, A., Qiu, Y., Rayasam, G. V., Stavreva, D. A., & Cohen-Fix, O. (2007). Falling off the academic bandwagon: Women are more likely to quit at the postdoc to principal investigator transition. *EMBO Reports, 8*(11), 977-981.

McGoldrick, M., Giordano, J., & Garcia-Preto, N. (2006). *Overview: Ethnicity and family therapy*. New York, NY: Guilford Press.

McLoyd, V. C., Toyokawa, T., & Kaplan, R. (2008). Work demands, work-family conflict, and child adjustment in African American families: The mediating role of family routines. *Journal of Family Issues, 29*(10), 1247-1267.

McNamara, T. K., Pitt-Catsouphes, M., Matz-Costa, C., Brown, M., & Valcour, M. (2013). Across the continuum of satisfaction with work-family balance: Work hours, flexibility-fit, and work-family culture. *Social Science Research, 42,* 283-298.

Md-Sidin, S., Sambasivan, M., & Ismail, I. (2010). Relationship between work-family conflict and quality of life: An investigation into the role of social support. *Journal of Managerial Psychology, 25*(1), 58-81.

Mendez, L. M. R., & Crawford, K. M. (2002). Gender-role stereotyping and career aspirations: A comparison of gifted early adolescent boys and girls. *The Journal of Secondary Gifted Education, 13*(3), 96-107.

Michel, J. S., Mitchelson, J. K., Kotrba, L. M., LeBreton, J. M., & Baltes, B. B. (2009). A comparative test of work-family conflict models and critical examination of work-family linkages. *Journal of Vocational Behavior, 74,* 199-218.

Michel, J. S., Mitchelson, J. K., Pichler, S., & Cullen, K. L. (2010). Clarifying relationships among work and family social support, stressors, and work-family conflict. *Journal of Vocational Behavior, 76,* 91-104.

Monroe, K., Ozyurt, S., Wrigley, T., & Alexander, A. (2008). Gender equality in academia: Bad news from the trenches, and some possible solutions. *Perspectives on Politics, 6*(2), 215-233.

Moore, J. L., III, & Constantine, M. G. (2005). Development and initial validation of the collectivistic coping styles measure with African, Asian, and Latin American international students. *Journal of Mental Health Counseling, 27*(4), 329-347.

Moors, A. C., Malley, J. E., & Stewart, A. J. (2014). My family matters: gender and perceived support for family commitments and satisfaction in academia among postdocs and faculty in STEMM and non-STEMM fields. *Psychology of Women Quarterly, 38*(4), 460-474.

Morgan, C. S. (1992). College students' perceptions of barriers to women in science and engineering. *Youth & Society, 24*(2), 228-236.

Muthén, L. K., & Muthén, B. O. (1998-2016). M*plus* user's guide (7th ed.). Los Angeles, CA: Muthén & Muthén.

Nadal, K. L. (2011). The racial and ethnic microaggressions scale (REMS): Construction, reliability, and validity. *Journal of Counseling Psychology, 58*(4), 470-480.

Nadal, K. L., Mazzula, S. L., Rivera, D. P., & Fujii-Doe, W. (2014). Microaggressions and Latina/o Americans: An analysis of nativitiy, gender, and ethnicity. *Journal of Latino/a Psychology, 2*(2), 67-78.

National Academy of Sciences. (2014). *The Postdoctoral Experience Revisited*. Washington, DC: National Academies Press.

National Action Council for Minorities in Engineering. (2013). *Underrepresented minorities in STEM.* Retrieved from http://www.nacme.org/underrepresented-minorities

National Institute of General Medical Sciences. (2017). *Enhancing diversity in training programs.* Retrieved from https://www.nigms.nih.gov/Training/Diversity/Pages/Approaches.aspx

National Postdoctoral Association. (n.d.a). *An emerging model for providing psychological services for postdoctoral research fellows.* Retrieved from http://www.nationalpostdoc.org/?page=EmergingModel

National Postdoctoral Association. (n.d.b). *Characteristics of a postdoctoral appointment.* Retrieved from http://www.nationalpostdoc.org/?page=Postdoc_appointment

National Postdoctoral Association. (2007). *What is a postdoc?* Retrieved from http://www.nationalpostdoc.org/default.asp?page=What_is_a_postdoc

National Science Board. 2016. *Science and Engineering Indicators 2016.* Arlington, VA: National Science Foundation (NSB-2016-1).

National Science Foundation. (2014). *NSF approved STEM fields.* Retrieved from https://www.btaa.org/docs/default-source/diversity/nsf-approved-fields-of-study.pdf?sfvrsn=2

National Science Foundation. (2015). *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2016.* Special Report NSF 15-311. Arlington, VA. Available at http://www.nsf.gov/statistics/wmpd/.

National Science and Technology Council. (2000). *Ensuring a strong U.S. scientific, technical, and engineering workforce in the 21st century.* Retrieved from https://www.whitehouse.gov/sites/default/files/microsites/ostp/workforcerpt.pdf

National Science Foundation, National Center for Science and Engineering Statistics (NSF/NCSES). 2017. Survey of Graduate Students and Postdoctorates in Science and Engineering, Fall 2015, Data Tables. Available at https://ncsesdata.nsf.gov/datatables/gradpostdoc/2015/

Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology, 81*(4), 400-410.

Nielson, T. R., Carlson, D. S., & Lankau, M. J. (2001). The supportive mentor as a means of reducing work-family conflict. *Journal of Vocational Behavior, 59,* 364-381.

Nobles, W. (1991). African philosophy: Foundations of Black psychology. In R. Jones (Ed.), *Black psychology* (pp 47-63). Berkeley, CA: Cobb and Henry Publishers.

Nohe, C., & Sonntag, K. (2014). Work-family conflict, social support, and turnover intentions: A longitudinal study. *Journal of Vocational Behavior, 85,* 1-12.

O'Driscoll, M. P., Ilgen, D. R., & Hildreth, K. (1992). Time devoted to job and off-job activities, interrole conflict, and affective experiences. *Journal of Applied Psychology, 77*(3), 272-279.

O'Driscoll, M. P., Poelmans, S., Spector, P. E., Kalliath, T., Allen, T. D., Cooper, C. L., & Sanchez, J. I. (2003). Family-resonsive interventions, perceived organizational and supervisor support, work-family conflict, and psychological strain. *International Journal of Stress Management, 10*(4), 326-344. doi: 10.1037/1072-5245.10.4.326

Paniagua, F. A. (2005). *Assessing and treating culturally diverse clients: A practical guide* (3rd ed.). Thousand Oaks, CA: Sage.

Parasuraman, S., & Greenhaus, J. H. (2002). Toward reducing some critical gaps in work-family research. *Human Resource Management Review, 12,* 299-312.

Pejtersen, J. H., Søndergård, K., Borg, V., & Bjorner, J. B. (2010). The second version of the Copenhagen psychosocial questionnaire. *Scandinavian Journal of Public Health, 38*(3), 8-24. doi: 10.1177/1403494809349858

Post, C., DiTomaso, N., Farris, G. F., & Cordero, R. (2009). Work-family conflict and turnover intentions among scientists and engineers working in R&D. *Journal of Business and Psychology, 24,* 19-32.

Powell, G. N., & Greenhaus, J. H. (2010). Sex, gender, and the work-to-family interface: exploring negative and positive interdependencies. *Academy of Management Journal, 53*(3), 513-534.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891.

Puljak, L., & Sharif, W. D. (2009). Postdocs' perceptions of work environment and career prospects at a US academic institution. *Research Evaluation, 18*(5), 411-415.

Rantanen, J., Kinnunen, U., Feldt, T., & Pulkkinen, L. (2008). Work-family conflict and psychological well-being: stability and cross-lagged relations within one- and six-year follow-ups. *Journal of Vocational Behavior, 73*, 37-51.

Ridgeway, C. L., & Correll, S. J. (2004). Unpacking the gender system: A theoretical perspective on gender beliefs and social relations. *Gender and Society, 18*(4), 510-531.

Roehling, P. V., Jarvis, L. H., & Swope, H. (2005). Variations in negative work-family spillover among White, Black, and Hispanic American men and women: Does ethnicity matter? *Journal of Family Issues, 26*(6), 840-865.

Rupert, P. A., Stevanovic, P., & Hunley, H. A. (2009). Work-family conflict and burnout among practicing psychologists. *Professional Psychology: Research and Practice, 40*(1), 54-61.

Rybarczyk, B. J., Lerea, L., Whittington, D., & Dykstra, L. (2016). Analysis of postdoctoral training outcomes that broaden participation in science careers. *CBE-Life Sciences Education, 15*(3), 1-11.

Salmela-Aro, K., Nurmi, J-E., Saisto, T., & Halmesmäki. (2000). Women's and men's personal goals during the transition to parenthood. *Journal of Family Psychology, 14*(2), 171-186.

Santrock, J. W. (2014). *Essentials of lifespan development* (3rd ed.). NY: McGraw-Hill.

Schieman, S., Glavin, P., & Milkie, M. A. (2009). When work interferes with life: Work-nonwork inteference and the influence of work-related demands and resources. *American Sociological Review, 74*(6), 966-988.

Schultheiss, D. E. P. (2006). The interface of work and family life. *Professional Psychology: Research and Practice, 37,* 334-341. doi: 10.1037/0735-7028.37.4.334

Shelton, L. M., Danes, S. M., & Eisenman, M. (2008). Role demands, difficulty in managing work-family conflict, and minority entrepreneurs. *Journal of Developmental Entrepreneurship, 13*(3), 315-342.

Simon, R. M., Wagner, A., & Killion, B. (2017). Gender and choosing a STEM major in college: Femininity, masculinity, chilly climate, and occupation values. *Journal of Research in Science Teaching, 54*(3), 299-323.

Smith, J. L., Cech, E., Metz, A., Huntoon, M., & Moyer, C. (2014). Giving back or giving up: Native American student experiences in science and engineering. *Cultural Diversity and Ethnic Minority Psychology, 20*, 413-429.

Sobel, M. E. (1986). Some new results on indirect effects and their standard errors in covariance structure models. In N. B. Tuma (Ed.), *Sociological methodology* (pp. 159-186). San Francisco: Jossey-Bass.

Soto, C., & Deemer, E. D. (2018). Communal goals, campus climate perceptions, and cultural differences in perceived academic satisfaction. *The Career Development Quarterly, 66,* 35-48.

Spector, P. E., Cooper, C. L., Poelmans, S., Allen, T. D., O'Driscoll, M., Sanchez, J. I., Siu, O. L., Dewe, P., Hart, P., & Lu, L. (2004). A cross-national comparative study of work-family stressors, working hours, and well-being: China and Latin America versus the Anglo world. *Personnel Psychology, 57,* 119-142.

Stephan, P. (2013). How to exploit postdocs. *BioScience, 63*(4), 245-246.

Strayhorn, T. L. (2010, October). *Work in progress-Social barriers and supports to underrepresented minorities' success in STEM fields.* Paper presented at the meeting of the Frontiers in Education Conference, Washington, D.C.

Sue, D. W. (2001). Multidimensional facets of cultural competence. *The Counseling Psychologist, 29*(6), 790-821. doi: 10.1177/0011000001296002

Sue, D. W., Alsaidi, S., Awad, M. N., Glaeser, E., Calle, C. Z., & Mendez, N. (2019). Disarming racial microaggressions: Microintervention strategies for targets, White allies, and bystanders. *American Psychologist, 74*(1), 128-142.

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Boston, MA: Pearson.

Tang, M., Werner, C., & Karwowski, M. (2016). Differences in creative mindset between Germany and Poland: The mediating effect of individualism and collectivism. *Thinking Skills and Creativity, 21,* 31-40.

Teyber, E., & McClure, F. H. (2011). *Interpersonal process in therapy: An integrative model*. Belmont, CA: Brooks/Cole.

Thompson, C. A., Beauvais, L. L., & Lyness, K. S. (1999). When work-family benefits are not enough: The influence of work-family culture on benefit utilization, organizational attachment, and work-family conflict. *Journal of Vocational Behavior, 54,* 392-415.

Tine, M., & Gotlieb, R. (2013). Gender-, race-, and income-based stereotype threat: The effects of multiple stigmatized aspects of identity on math performance and working memory function. *Social Psychology of Education, 16,* 353-376. doi: 10.1007/s11218-013-9224-8

Triandis, H. C. (1995). *Individualism and collectivism.* Boulder, CO: Westview Press.

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*(1), 118-128.

Turner, C. S. V. (2002). Women of color in academe: Living with multiple marginality. *The Journal of Higher Education, 73*(1), 74-93.

Twenge, J. M. (1997). Changes in masculine and feminine traits over time: A meta-analysis. *Sex Roles, 36*(5/6), 305-325.

Twenge, J. M. (2001). Changes in women's assertiveness in response to status and roles: A cross-temporal meta-analysis, 1931-1993. *Journal of Personality and Social Psychology, 81*(1), 133-145.

U.S. Congress Joint Economic Committee. (2012). *STEM education: Preparing for the jobs of the future*. Washington, DC: Author.

United States Department of Labor. (n.d.). *Women in the labor force.* Retrieved from https://www.dol.gov/wb/stats/stats_data.htm#facts

Valcour, M. (2007). Work-based resources as moderators of the relationships between work hours and satisfaction with work-family balance. *Journal of Applied Psychology, 92*(6), 1512-1523. doi: 10.1037/0021-9010.92.6.1512

van Daalen, G., Willemsen, T. M., & Sanders, K. (2006). Reducing work-family conflict through different sources of social support. *Journal of Vocational Behavior, 69,* 462-476.

Van Der Hulst, M., & Geurts, S. (2001). Associations between overtime and psychological health in high and low reward jobs. *Work & Stress, 15*(3), 227-240.

Voydanoff, P. (2004). The effects of work demands and resources on work-to-family conflict and facilitation. *Journal of Marriage and the Family, 66,* 398-412.

Vasquez, M. J. T., Lott, B., García-Vázquez, E., Grant, S. K., Iwamasa, G. Y., Molina, L. E., Ragsdale, B. L., & Vestal-Dowdy. (2006). Personal reflections: Barriers and strategies in increasing diversity in psychology. *American Psychologist, 61*(2), 157-172.

Walton, G. M., Logel, C., Peach, J. M., Spencer, S. J., & Zanna, M. P. (2015). Two brief interventions to mitigate a "chilly climate" transform women's experience, relationships, and achievement in engineering. *Journal of Educational Psychology, 107,* 468-485. Doi: 10.1037/a0037461

Wang, X., Xu, S., Peng, L., Wang, Z., Wang, C., Zhang, C., Wang, X. (2012). Exploring scientists' working timetable: Do scientists often work overtime? *Journal of Infometrics, 6,* 655-660.

Ward, K., & Wolf-Wendel, L. (2004). Academic motherhood: Managing complex roles in research universities. *The Review of Higher Education, 27*(2), 233-257.

Weisgram, E. C., Dinella, L. M., & Fulcher, M. (2011). The role of masculinity/femininity, values, and occupation value affordances in shaping young men's and women's occupational choices. *Sex Roles, 65,* 243-258.

Whiston, S. C., Campbell, W. L., Maffini, C. S. (2012). Work-Family Balance: A counseling psychology perspective. In Fouad, N. A., Carter, J. A., Subich, L. M. (Eds), APA handbook of counseling psychology, vol. 1: Theories, research, and methods. APA handbooks in psychology., (pp. 75-102). Washington, DC, US: American Psychological Association. doi: 10.1037/13754-003

White, J. M. (1999). Work-family stage and satisfaction with work-family balance. *Journal of Comparative Family Studies, 30*(2), 163-174.

Winefield, H. R., Boyd, C., Winefield, A. H. (2014). Work-family conflict and well-being in university employees. *Journal of Psychology, 148*(6), 683-697. doi: 10.1080.00223980.2013.822343

Wood, W., & Eagly, A. H. (2002). A cross-cultural analysis of the behavior of women and men: implications for the origins of sex differences. *Psychological Bulletin, 128*(5), 699-727. doi: 10.1037//0033-2909.128.5.699

Wood, W., & Eagly, A. H. (2010). Gender. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (5th ed., Vol. 1, pp. 629-667). New York, NY: Wiley.

APPENDIX A: EMAIL RECRUITMENT

Hello, my name is Cristina Soto and I am a graduate student in the Department of Educational Studies at Purdue University. You are invited to participate in a research study that could benefit the understanding of the work-family balance experience of underrepresented minority postdocs in the STEM fields.

We would like to give you a Qualtrics survey, which can be completed online. Upon completing the Qualtrics survey, you will be asked to voluntarily submit your email address for a $10 Amazon gift card. The first 200 participants who meet inclusion criteria and complete the survey will receive a $10 Amazon gift card.

Your participation in this study is completely voluntary. Complete inclusion criteria includes: (a) be 18 years or older; (b) identify as an URM (African American, Latino/a, and/or Native American); (c) be enrolled in a postdoctoral position at a university; and (d) conduct postdoctoral research in the STEM fields (e.g., math, psychology, engineering, social sciences, chemistry), as delineated by the National Science Foundation. Only the researchers will have access to the data and all the data collected will be kept confidential.

If you are interested in participating and helping add to the research in this area, please use the link below to complete the Qualtrics survey:

https://purdue.ca1.qualtrics.com/jfe/form/SV_3ZYh7iziUBG5IFL

Sincerely,
Cristina Soto
sotoc@purdue.edu

APPENDIX B: SOCIAL MEDIA RECRUITMENT

Requesting participation in a research study! Complete inclusion criteria includes: (a) be 18 years or older; (b) identify as an African American, Latino/a, and/or Native American; (c) be enrolled in a postdoctoral position at a university; and (d) conduct postdoctoral research in the STEM fields (e.g., math, psychology, engineering, social sciences, chemistry), as delineated by the National Science Foundation. If you meet the criteria and would like to participate, please follow the link to the Qualtrics survey:

https://purdue.ca1.qualtrics.com/jfe/form/SV_3ZYh7iziUBG5IFL

The first 200 participants who meet inclusion criteria and complete the survey will receive a $10 Amazon gift card.

Please share this post, particularly with anyone you may know who meets the inclusion criteria!

APPENDIX C: RESEARCH PARTICIPANT INFORMATION SHEET

What is the purpose of this study? The purpose of this study is to gain a clearer understanding the work-family balance experience of underrepresented minority postdocs in the STEM fields.

What will I do if I choose to be in this study? If you agree to participate, you will be asked to complete one online survey, which will take approximately 20 minutes to complete.

Will I receive payment or other incentive? The first 200 participants who meet inclusion criteria and complete the survey will receive a $10 Amazon gift card by reporting an email address to receive the gift card electronically. It is possible to complete the Qualtrics survey without entering an email address to receive a gift card.

What are the possible risks or discomforts? Participation in this research involves minimal risk. There is no expectation of discomfort expected from participation in this research. The risks involved in participation are no more than would be encountered in everyday life or during the performance of routine psychological exams or tests.

Are there any potential benefits? By participating in this study you may contribute to the scientific body of knowledge regarding underrepresented minority postdocs' work-family balance experience.

Will information about me and my participation be kept confidential? Purdue University Institutional Review Board or its designees may inspect the project's research records to ensure that participants' rights are being protected. Only the researchers will have access to the data. All the data collected will be kept confidential. All information provided in the survey will remain confidential. Only the researchers will have access to the data, which will be downloaded from a secure Internet server (qualtrics.com) and stored on the researchers' password-protected computers. Data will be deleted from their computers after it has been analyzed. Data gathered from this research may be presented in scientific outlets, but this data will be based on *average* responses, not individual responses.

What are my rights if I take part in this study? Your participation in this study is voluntary. You may choose not to participate or, if you agree to participate, you can

withdraw your participation at any time without penalty or loss of benefits to which you are otherwise entitled.

Whom to contact if you have questions about the study: If you currently have questions that may aid in your decision to participate in this research or if you have any general questions or concerns, please contact Cristina Soto (sotoc@purdue.edu), Department of Educational Studies, Purdue University. If you have concerns about the treatment of research participants, you can contact the Institutional Review Board at Purdue University. Contact information for the Purdue University IRB is 1032 Ernest C. Young Hall, 155 S. Grant Street, West Lafayette, IN 47907-2114. The phone number for the Board is (765) 494-5942. The email address is irb@purdue.edu.

We suggest you print this page for your records.

Clicking "I agree" in the lower right portion of your screen indicates that you have read and understand the information provided above, that you willingly agree to participate, that you are aware that you may withdraw your consent at any time and discontinue participation without penalty. If you choose not to participate, simply close your web browser and the study will be terminated.

APPENDIX D: DEMOGRAPHIC QUESTIONS

Please enter the day of the month you were born (e.g., 2/27/60 would be 27).
_____

Please enter the year you graduated high school (e.g., 2009).
_____

Please enter the first initial of your last name (e.g., S).
_____

What is your age? _____

What is your gender?
Man
Woman
Transgender
Other (please explain): _____

What is your race/ethnicity?
Black/African American
Hispanic/Latino/a
Native American
Biracial (please elaborate) _____
Multiracial (please elaborate) _____
Other (please explain): _____

Are you an international student? If so, please specify your country of origin.
Yes_____
No

What is your generational status? Please select the generation that best applies to you.
First generation = You were born in another county
Second generation = You were born in the U.S. and either parent was born in another country
Third generation and higher = You and both your parents were born in the U.S.

What is your sexual orientation?
Lesbian
Gay
Bisexual
Queer
Questioning
Heterosexual
Other

What is your current romantic relationship status?
Single, not dating
Dating casually
Dating exclusively
Engaged to be married
Married or married-like
Separated or divorced
Widowed
Other (please elaborate) _____

Are you a parent? If so, how many children do you have?
Yes; Number of children:_____
No

What is one of your guardian's highest level of education?
Some grade school
Completed grade school
Some high school
High school degree
Some college
Associate degree
Bachelor's degree
Master's degree
Doctoral degree
Don't know
This question does not apply to me

This guardian is my (e.g., father, grandfather, mother)...
_____

What is your second guardian's highest level of education?
Some grade school
Completed grade school
Some high school
High school degree
Some college
Associate degree
Bachelor's degree
Master's degree
Doctoral degree
Don't know
This question does not apply to me

This guardian is my (e.g., father, grandfather, mother)...
_____

What was your field of doctoral study?
Chemistry (please specify) _____
Computer and Information Science and Engineering (please specify) _____
Engineering (please specify) _____
Geosciences (please specify) _____
Life Sciences (please specify) _____
Materials Research (please specify) _____
Mathematical Sciences (please specify) _____
Physics and Astronomy (please specify) _____
Psychology (please specify) _____
Social Sciences (please specify) _____
STEM Education and Learning Research (please specify) _____
Other (please specify) _____

What is your field of postdoctoral study?
Chemistry (please specify) _____
Computer and Information Science and Engineering (please specify) _____
Engineering (please specify) _____
Geosciences (please specify) _____
Life Sciences (please specify) _____
Materials Research (please specify) _____
Mathematical Sciences (please specify) _____
Physics and Astronomy (please specify) _____
Psychology (please specify) _____
Social Sciences (please specify) _____
STEM Education and Learning Research (please specify) _____
Other (please specify) _____

What is the location of your current postdoctoral university location?
Northeast
Southeast
Midwest
Southwest
West

How did you find out about this survey?
National Postdoc Association
Social Media (please elaborate (e.g., Facebook)): _____
Other (please explain): _____

What is the gender ratio in your work setting (the total % should add up to 100)?
% Male: _____
% Female: _____

What is the racial/ethnic minority ratio in your work setting (the total % should add up to 100)?
% Racial/ethnic minorities: _____
% Non-racial/ethnic minorities: _____

At the end of the survey:
Who did you primarily consider to be family while completing the questionnaire (check all that apply):
Romantic partner
Child(ren)
Parent(s)
Sibling(s)
Aunt(s)/Uncle(s)
Grandparent(s)
Other family members (please elaborate) _____

APPENDIX E: PERCEIVED WORK DEMAND (PWD) SCALE

Please respond to the following statements using the scale provided.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1	2	3	4	5

1. My job requires all of my attention.
2. I feel like I have a lot of work demand.
3. I feel like I have a lot to do at work.
4. My work requires a lot from me.
5. I am given a lot of work to do.

APPENDIX F: GOAL ENDORSEMENT SCALE

Please rate how important each of the following kinds of goals is to you personally, using the scale below.

Not at all important						Extremely important
1	2	3	4	5	6	7

1. Power
2. Serving the community
3. Achievement
4. Caring for others
5. Status
6. Financial rewards
7. Connection with others
8. Helping others
9. Self-promotion
10. Attending to others' needs
11. Recognition
12. Serving humanity
13. Mastery
14. Working with people
15. Independence
16. Individualism
17. Focus on the self
18. Intimacy
19. Success
20. Spiritual rewards
21. Self-direction
22. Demonstrating skill or competence
23. Competition

APPENDIX F: PERCEIVED WORK ENVIRONMENT/SOCIAL COMMUNITY AT WORK (SCW) SUBSCALE OF THE SECOND VERSION OF THE COPENHAGEN PSYCHOSOCIAL QUESTIONNAIRE

Please respond to the following questions using the scale provided.

Never/hardly ever	Seldom	Sometimes	Often	Always
1	2	3	4	5

1. Is there a good atmosphere between you and your colleagues?
2. Is there good cooperation between colleagues at work?
3. Do you feel part of a community at your place of work?

APPENDIX H: PERCEIVED WORK ENVIORNMENT/WORKPLACE AND SCHOOL MICROAGGRESSIONS (WSM) SUBSCALE OF THE RACIAL AND ETHNIC MICROAGGRESSIONS

Please indicate the number of times that a microaggressions occurred in the past six months:

I did not experience this event in the past six months	I experienced this event 1 time in the past six months	I experienced this event 2 times in the past six months	I experienced this event 3 times in the past six months	I experienced this event 4 times in the past six months	I experienced this event 5 or more times in the past six months
0	1	2	3	4	5

1. An employer or co-worker was unfriendly or unwelcoming toward me because of my race.
2. My opinion was overlooked in a group discussion because of my race.
3. I was ignored at school or at work because of my race.
4. Someone assumed that my work would be inferior to people of other racial groups.
5. An employer or co-worker treated me differently than White co-workers.

APPENDIX I: HORIZONTAL AND VERTICAL INDIVIDUALISM AND COLLECTIVISM SCALE

Please respond to the following items...

Never or definitely no								Always or definitely yes
1	2	3	4	5	6	7	8	9

1. I'd rather depend on myself than others.
2. I rely on myself most of the time; I rarely rely on others.
3. I often do "my own thing."
4. My personal identity, independent of others, is very important to me.
5. It is important that I do my job better than others.
6. Winning is everything.
7. Competition is the law of nature.
8. When another person does better than I do, I get tense and aroused.
9. If a coworker gets a prize, I would feel proud.
10. The well-being of my coworkers is important to me.
11. To me, pleasure is spending time with others.
12. I feel good when I cooperate with others.
13. Parents and children must stay together as much as possible.
14. It is my duty to take care of my family, even when I have to sacrifice what I want.
15. Family members should stick together, no matter what sacrifices are required.
16. It is important to me that I respect the decisions made by my groups.

APPENDIX J: WORK-FAMILY CONFLICT (WFC) SCALE

Please respond to the following statements using the scale provided.

Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
1	2	3	4	5

1. The demands of my work interfere with my home and family life.
2. The amount of time my job takes up makes it difficult to fulfill family responsibilities.
3. Things I want to do at home do not get done because of the demands my job puts on me.
4. My job produces strain that makes it difficult to fulfill family duties.
5. Due to work-related duties, I have to make changes to my plans for family activities.

APPENDIX K: SATISFACTION WITH WORK-FAMILY BALANCE (SWFB) SCALE

Indicate your level of satisfaction with...

Very dissatisfied				Very satisfied
1	2	3	4	5

1. the way you divide your time between work and personal or family life.
2. the way you divide your attention between work and home.
3. how well your work life and your personal or family life fit together.
4. your ability to balance the needs of your job with those of your personal or family life.
5. the opportunity you have to perform your job well and yet be able to perform home-related activities adequately.

APPENDIX L: DEBRIEFING INFORMATION

The purpose of this study is to gain a clearer understanding of the work-family balance experience of underrepresented minorities in the STEM fields. In particular, we are interested the understanding of role that a communal or agentic orientation may play in work-family balance satisfaction.

Contact Information:

If you currently have questions that may aid in your decision to participate in this research or if you have any general questions or concerns, please contact Cristina Soto (sotoc@purdue.edu), Department of Educational Studies, Purdue University. If you have concerns about the treatment of research participants, you can contact the Institutional Review Board at Purdue University. Contact information for the Purdue University IRB is 1032 Ernest C. Young Hall, 155 S. Grant Street, West Lafayette, IN 47907-2114. The phone number for the Board is (765) 494-5942. The email address is irb@purdue.edu.

If you wish to enter your email for a $10 Amazon.com gift card, please provide your email address below. As a reminder, gift cards will be given to the first 200 participants who meet eligibility requirements and complete the survey.

_____

Please enter the day of the month you were born (e.g., 2/27/60 would be 27).

_____

Please enter the year you graduated high school (e.g., 2009).

_____

Please enter the first initial of your last name (e.g., S).

_____