Gender Differences in STEM Academic Career Paths

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To Boyd & Tommy Newton

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

Gender distributions vary across higher education positions, with higher portions of women being employed at less prestigious types of institutions (i.e., teaching-focused) as compared to more prestigious types of institutions (i.e., research-focused) (West & Curtis, 2006). Broad potential explanatory factors for these differential gender distributions across institution types are investigated, including personality traits and values, the joint ticking of the biological and tenure clocks, variations in the perceived family-friendliness of academic jobs, time commitments to work and to family, career path adjustments, and the different approaches men and women take to combining their work and family goals. Prior research on this and related issues has focused heavily on doctoral institutions to the exclusion of other institution types, and few studies have utilized samples containing academic faculty members from multiple institution types (Wolf-Wendel & Ward, 2006).

A proposed theoretical framework outlining family-specific individual constructs, demographics variables, personality traits, career and family-related time constraints, and family-related career strategies as predictors of initial job preferences, workload, and work-family conflict was tested with survey data from a sample of academic faculty members in STEM disciplines across four broad institution types (research extensive, research intensive, masters, and liberal arts). This multi-institution type sample allows for comparisons across institution types, providing insight into both similarities and differences in the academic faculty experience across types of institutions.

- Survey data were provided by 4,195 faculty members in the main data collection effort, and 712 of these respondents provided additional data in the follow-up data collection effort. Data for both surveys were collected online; the duration of these surveys was roughly 45 minutes for the main survey and 25 minutes for the follow-up survey.
- The full set of predictors in the binary logistic regression model explained 24% of the variance in initial job preference for Cohort 1 respondents (i.e., respondents earning their PhDs prior to 1995); significant predictors include family friendliness ratings of academic jobs at research-focused institutions and at teaching-focused institutions, and work centrality. Neither the full set of predictors nor the control variables tested alone accounted for significant variance in the dependent variable among Cohort 2 respondents (i.e., respondents earning their PhDs in 1995 or more recently).
- Significant gender differences with men scoring higher than women were observed on family friendliness ratings of academic jobs at research-focused institutions and on work centrality scores among Cohort1 respondents; because men score higher on these variables and heightened scores on these variables are associated with a decreased likelihood of preferring a job in a teaching-intensive environment, these variables may serve as explanatory factors for the differential gender representations at teaching-focused and research-focused institutions.
- The full set of predictors in the linear regression model explained 7% and 13% of the variance in workload, respectively, for Cohort 1 and Cohort 2 respondents; significant predictors include rank and the gender by presence of dependent children interaction,

such that having one or more dependent children is associated with reduced work hours for women but not for men.

- The full set of predictors in the linear regression model explained 11% and 12% of the variance in WFC, respectively, for Cohort 1 and Cohort 2 respondents; significant predictors include rank and workload.
- Respondents in this and other samples express the belief that academic jobs in teaching-focused institutions are more family friendly than those in research-focused institutions; the lack of robust differences in workload and WFC across respondents employed at research-focused and at teaching-focused institutions despite adequate power to detect them fails to support these beliefs.
- Importance ratings of various factors in one's initial and most recent job searches varied by gender and cohort, with male and female respondents in both cohort groups providing equivalent ratings to job-related factors while in Cohort 1, women rated most family-related factors as significantly more important than did men (d = 0.43 to 1.12), and in Cohort 2, men and women provided equivalent ratings to most family-related factors.
- Women are more likely than men to report having made various types of adjustments to their family plans in order to accommodate their career goals, and vice versa (d = 0.30 - 0.83; Φ = .12 - .25). Such gender differences were more frequently observed and tended to be of larger magnitude among Cohort 1 respondents as compared to Cohort 2 respondents.
- Men and women provided roughly equal reports of the time both they and their spouses/partners spend on household labor and childcare duties, with the exception of

Cohort 2 women reporting that they spend significantly more time on household labor than do Cohort 2 men (d = 0.31). Female respondents across cohorts reported higher commitments to specific types of childcare responsibilities than did men (d = 0.52 – 1.17).

It is expected that these results will provide researchers with useful insights into the experiences of STEM academic faculty members and the ways in which these experiences both vary and fail to vary across gender and institution type. Implications of these results for academic faculty members and decision makers within higher education institutions are discussed.

CHAPTER 1

INTRODUCTION

The need for research on the intersection of gender and employment issues has grown alongside the increasing proportion of paid workforce positions held by women, which has more than doubled over the course of the last century (English, Hartmann, & Hayes, 2010; Kay, 2000). The career aspirations of women in the early 1900s were limited, driven primarily by economic necessity, and typically ended promptly upon a woman's marriage (Kay, 2000). The prevalence of women in advanced degree programs (Ceci, Williams, & Barnett, 2009; West & Curtis, 2006) and their presence in over half of positions in the managerial/professional workforce (Bureau of Labor Statistics [BLS], 2010) indicate that many modern women take a drastically different approach to work than did their early 20th century counterparts. Throughout this transition and continuing today, gender and employment issues have been the focus of public interest and research efforts. Questions related to gender differences in attainment of high-status, prestigious jobs (McLaughlin, 2006; O'Brien, 2006; Seid, 2006), salaries (Bertrand & Hallock, 2001; Toutkoushian, Bellas & Moore, 2007), household and childcare responsibilities (Bianchi, Milkie, Sayer, & Robinson, 2000; Suitor, Mecom, & Feld, 2001), occupational interests (Lippa, 2005), and life goals and values (Cinamon & Rich, 2002; Hakim, 1998; 2000; 2002; 2006) have been studied extensively, both in a general sense and within specific occupational contexts.

Insight into the current status of gender differences in professional paid employment positions can be obtained through a review of 2010 national employment

data from the Bureau of Labor Statistics (BLS). These data show the gender breakdown of professional, management, and related jobs to be almost equally distributed between men and women, who comprise 48.6% and 51.4%, respectively, of the total labor force employed in this professional/managerial sector (BLS, 2010). But the gender distribution varies widely by specific job, with some jobs being filled by roughly equivalent numbers of men and women (e.g., veterinarian and financial manager) while others exhibit highly discrepant gender distributions (e.g., petroleum engineers with 5% women and preschool and kindergarten teachers with 3% men; BLS, 2010). Work behaviors, job characteristics, and individual preferences have been investigated as potential contributors to this variability. There are well-documented differences in average work hours and average salary, with men working more and earning more, on average, than women (Brett & Stroh, 2003; Hakim, 2006; Johnstone & Johnston, 2005; Maume, 2006; Parasuraman, Pruohit, Godshalk, & Beutell, 1996). Individual preferences for specific jobs (Lippa, 2005) and more general lifestyle choices (Hakim, 2006) are also potential contributors to the occupational variability in gender compositions.

The STEM (science, technology, education and math) areas represent one occupational sector in which gender issues have been investigated extensively. Factors contributing to a preferential focus on STEM fields in the investigation of gender and employment issues include the following: 1) women comprise a small percentage of job incumbents in these occupations, relative to non-STEM occupations (Shalala, Agogino, Bailyn, Birgeneau, Cauce, Deangeles, et al., 2007); 2) STEM jobs tend to be high in salary and prestige relative to non-STEM occupations (Correll, 2001); 3) achievement in STEM fields is cited by government and industry leaders as being central to a country's

success and competitive advantage in the global economy, and as such supporting a strong talent pool in STEM fields is an area of national concern in the U.S. (Varma & Frehill, 2010). A critically important subgroup of STEM employees are those employed in higher education, who hold the responsibility for training nearly all future STEM professionals. It has been suggested that researchers concerned with gender equity should "look to their own houses" (Monroe, Ozyurt, Wrigley, & Alexander, 2008, p. 215). When higher education positions within STEM fields are considered, women are under-represented, but to a widely varying extent depending on the type of position and institution under consideration (August & Waltman, 2004; Ceci et al., 2009; Monroe et al., 2008; West & Curtis, 2006; Williams & Ceci, 2012).

This project entails an investigation of several potential underlying factors related to gender distributions in STEM higher education positions. This paper first sets the context for the project through a discussion of relevant background literature on current gender distributions across higher education positions, differences in faculty experiences across types of higher education institutions, gender and family responsibilities as they relate to career path decisions, the joint operation of the biological and tenure clocks, the personality factors social potency and social closeness, and aspects of academic network utilization related to social support. A theoretical framework displaying the expected relationships among key study constructs as well as specific hypotheses will be presented alongside the relevant literature. Next, the methodology of the main and follow-up survey, including sample selection, survey administration, and survey items, will be presented, followed by a detailed description of the analyses undertaken and the results of these analyses, including testing of all hypotheses and some supplemental analyses. The

paper will conclude with a discussion of these results, several limitations of the research, and overall conclusions from the study.

1.1 Background on Gender Distributions within STEM Higher Education

Having an understanding of the current state of affairs is a critical first step in undertaking research on the status of and reasons behind the under-representation of women in STEM higher education. Gender distribution varies widely by job type (BLS, 2010), and several different job types are represented within positions at higher education institutions. The extent to which gender distributions vary across different types of higher education jobs was explored in a 2006 report from the American Association of University Professors (AAUP) using data from two national surveys. The total number of institutions providing data in this combined dataset is 1,453, comprised of 221 doctoral institutions, 438 master's institutions, 483 baccalaureate institutions, and 311 associate's institutions. These data show that gender disparities are most pronounced at the most prestigious types of institutions and among the "best" job available at such institutions, that of full professor (West & Curtis, 2006). Among full-time employees at associate's colleges, women comprise slightly over 50% of the workforce, nearly matching the percentage of females seen among all managerial/professional jobs. The percentage of full-time positions occupied by women decreases to around 42% in master's and baccalaureate institutions, and drops even further to 34% within the most prestigious institution type, doctoral institutions. These differences are more pronounced among the subset of full professors at these various types of institutions: women comprise 47% of full professors at associate's colleges, 29% at baccalaureate institutions, 28% at master's institutions, and a mere 19% at doctoral institutions (West & Curtis, 2006).

Women are employed as STEM tenured or tenure-track faculty, across all institution types, at a rate (28%) which is lower than the rate at which they earn STEM doctorates (40%) (Burrelli, 2008). The percentage of full professor positions filled by women in STEM fields is smaller than those seen for all tenured or tenure-track positions. But to assess whether there is under-representation of women in full professor positions relative to the proportion of female PhD awardees, the comparison should include only rates of PhD earning among those who have had enough time to be eligible for full professorships (approximately 12 to 14 years post-PhD receipt; Kirchmeyer, 2006). So to err on the side of allowing slightly more time, the proportion of women earning PhDs in 1993 can be compared to the proportion of full professor position filled by women in 2008. Across STEM fields, women earned nearly 1/3 of STEM PhDs in 1993, but held just under 20% of full professor positions as of 2008 (Burrelli, 2008). This is an imperfect analysis as not all PhD earners are eligible for full professorships due to variations in career path decisions. This analysis does illustrate the reality of women failing to reach the top-tier academic jobs in proportions relative to their representation among those who were at one point likely to be eligible for such jobs. These data clearly demonstrate that the majority of STEM degrees are still earned by men, and that men progress to tenured or tenure track positions, and eventually to full professorships, at rates higher than their representation in the initial pool of PhD recipients. Base rate data on the percentage of PhD recipients who reach full professor positions provide additional context for interpreting these data: of all employed science and engineering PhD holders, roughly 17% of men and 10% of women were employed as full professors at 4-year educational institutions (please see Table 1; National Science Foundation, 2009).

Table 1.

Representation of Men and Women Across Science, Technology, Engineering, & Math (STEM) Career Paths

	Total	Male	Male (%)	Female	Female (%)
Employed doctoral scientists & engineers	621,630	438,900	70.6%	182,730	29.4%
Doctoral scientists & engineers employed in 4-year educational institutions	271,540	182,920	67.4%	88,620	32.6%
Doctoral scientists & engineers employed in 4-year educational institutions as full professors	90,530	73,239	80.9%	17,291	19.1%
Base rate for reaching full professor among employed doctoral scientists & engineers	14.6%		16.7%		9.5%

Source: NSF.gov, Characteristics of Doctoral Scientists and Engineers in the U.S.

The most prestigious job type in academia, full-time, tenured or tenure-track professor, represents a minority of positions in higher education. Nearly half of all faculty appointments are part-time, and women comprise a larger portion of part-time faculty (51%) than of full-time faculty (43%) (U.S. Department of Education [DoE], 2009). Of

all faculty and instructional staff, roughly 40% are on the tenure-track while the remaining 60% have non-tenure-track appointments, and male and female faculty members have different likelihoods of being on the tenure track: 45.9% of men and 32.6% of women are either tenured or on the tenure track (U.S. DoE, 2004). In general, female academics are more likely than male academics to hold part-time and non-tenure track positions (DoE, 2004; DoE, 2009). Women's representation on the tenure track is higher at less prestigious institution types as compared to more prestigious institution types: women fill nearly half of tenured positions at associates colleges, slightly over 1/3 of tenured positions at master's and baccalaureate institutions, and just over ¼ of tenured positions at doctoral institutions (West & Curtis, 2006). In conclusion, women are more likely, as compared to men, to hold the less prestigious types of higher education positions, that is part-time and non-tenure track positions.

1.2 Different institutions… "different worlds" (Clark, 1987)

Academic life researcher Clark (1987) noted that different institution types offer different worlds in terms of control over the scheduling of one's time, teaching load, ability level of students, faculty access to resources, etc. These differences necessitate consideration of institution type in any attempt to address the gender disparity in STEM higher education positions; the extent of this disparity itself has been shown to vary widely across institution types (West & Curtis, 2006). However, much of the academic life literature is based on research universities, limiting researchers' understanding of the full range of academic jobs and roles (Wolf-Wendel & Ward, 2006). An element of the proposed project representing a contribution to the literature on gender issues in STEM higher education is the inclusion of, and comparisons among, faculty from multiple

institution types. This focus on a variety of institution types is critical because the nature of the job has been shown to vary in many ways across institution types (Clark, 1987; Fairweather, 2005; Leslie, 2002; Milem, Berger, & Dey, 2000; Porter, Toutkoushian, & Moore, 2008; U.S. DoE, 2004; Volkwein & Sweitzer, 2006; Wolf-Wendel & Ward, 2006).

The Carnegie Foundation offers a formal classification scheme for higher education institution types (The Carnegie Foundation for the Advancement of Teaching, 2001). While these classifications have since been updated, the current study will use the 2000 Carnegie classifications (relevant categories for this project are Doctoral/Research Universities – Extensive, Doctoral/Research Universities - Intensive, Master's Colleges and Universities – I, Master's Colleges and Universities – II, and Baccalaureate Colleges – Liberal Arts) as a means of maintaining consistency with other research in the area (e.g., the 2000 classifications are the norm in NSF publications). For additional information on this formal classification scheme, please see The Carnegie Foundation for the Advancement of Teaching.

1.3 Theoretical Framework

Several factors hypothesized to relate to institutional type differences in faculty gender distributions will each be discussed in turn. Relevant background literature and specific hypotheses related to each of these factors will be presented. Figure 1 provides an organizational framework in which each of these factors and the previously reported and/or hypothesized relationships between them are displayed. It should be noted that not all factors outlined in Figure 1 will be directly addressed in the proposed project; some

factors are included in the organizational framework solely to acknowledge their role in the proposed relationships.

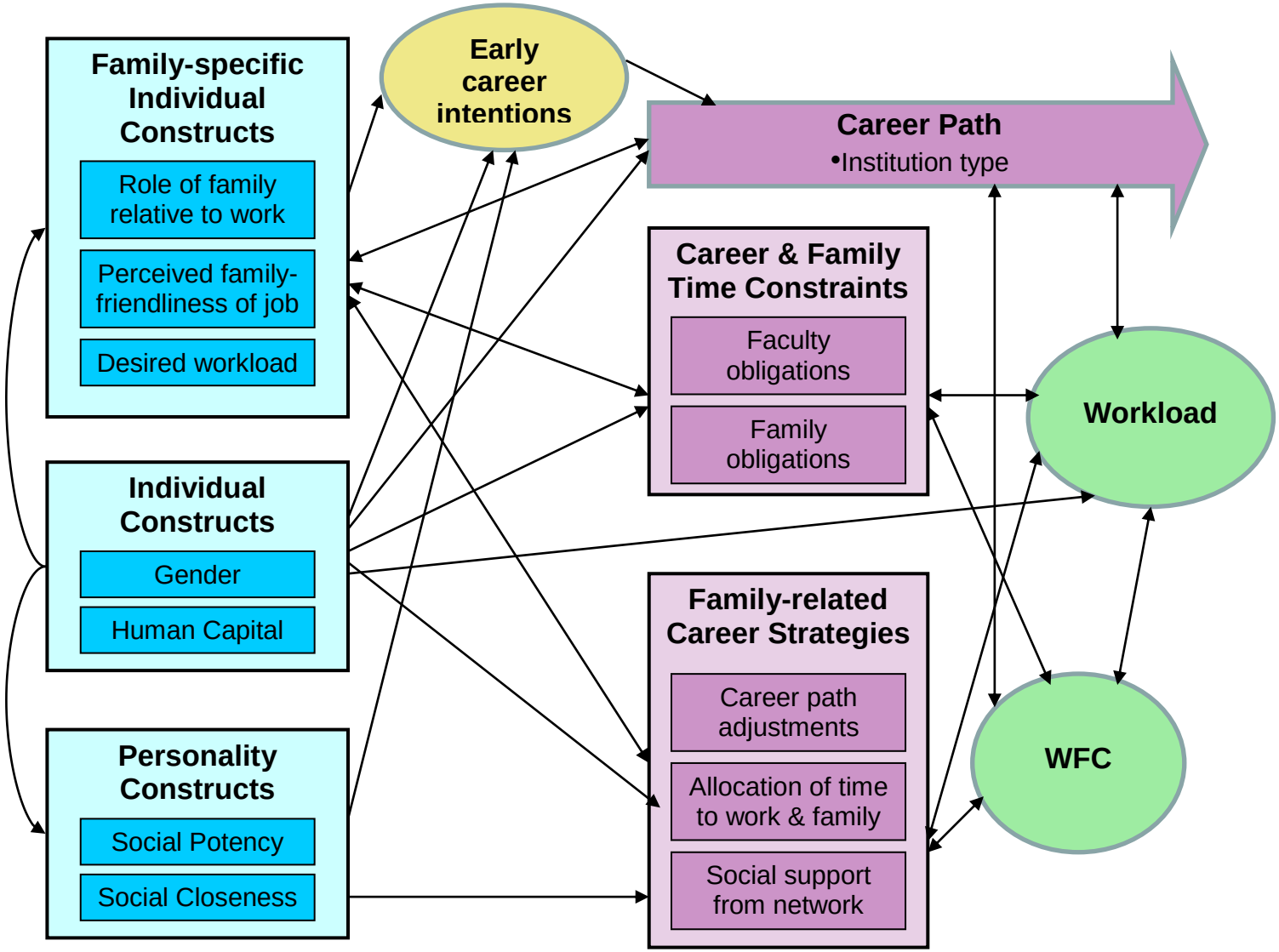

Figure 1. Theoretical framework; note: WFC = work-family conflict

1.4 Gender, Family, and Career Path Decisions

1.4.1 Incompatibility of Highly Demanding Jobs and Family Responsibilities.

There is ample evidence that the under-representation of women at the pinnacle of a professional field relative to their representation at lower ranks is not exclusive to STEM fields. While this is clearly a nuanced and multi-faceted phenomenon without a single explanation, the critical importance of time and how people choose to allocate it can be offered as a key explanatory factor underlying these observed occupational gender differences in top positions. Multiple empirical studies across a wide range of occupational sectors have pointed towards family-driven gender differences in time allocation, in the form of both weekly work hours and career interruptions, as correlates of gender gaps in earnings, prestige, and job performance (Abele & Spurk, 2011; Aisenbrey, Evertsson, & Grunow, 2009; Bertrand, Goldin, & Katz, 2010; Hewlett & Luce, 2005; Jacobs & Winslow, 2004; Sasser, 2005; Suitor et al., 2001), although some discrepant findings downplaying the influence of time-related factors on these outcomes have also been reported (Sax, Hagedorn, Arredondo, & Dicrisi, 2002; Stack, 2004). Please see Figure 2 for a schematic representation of this time-focused argument.

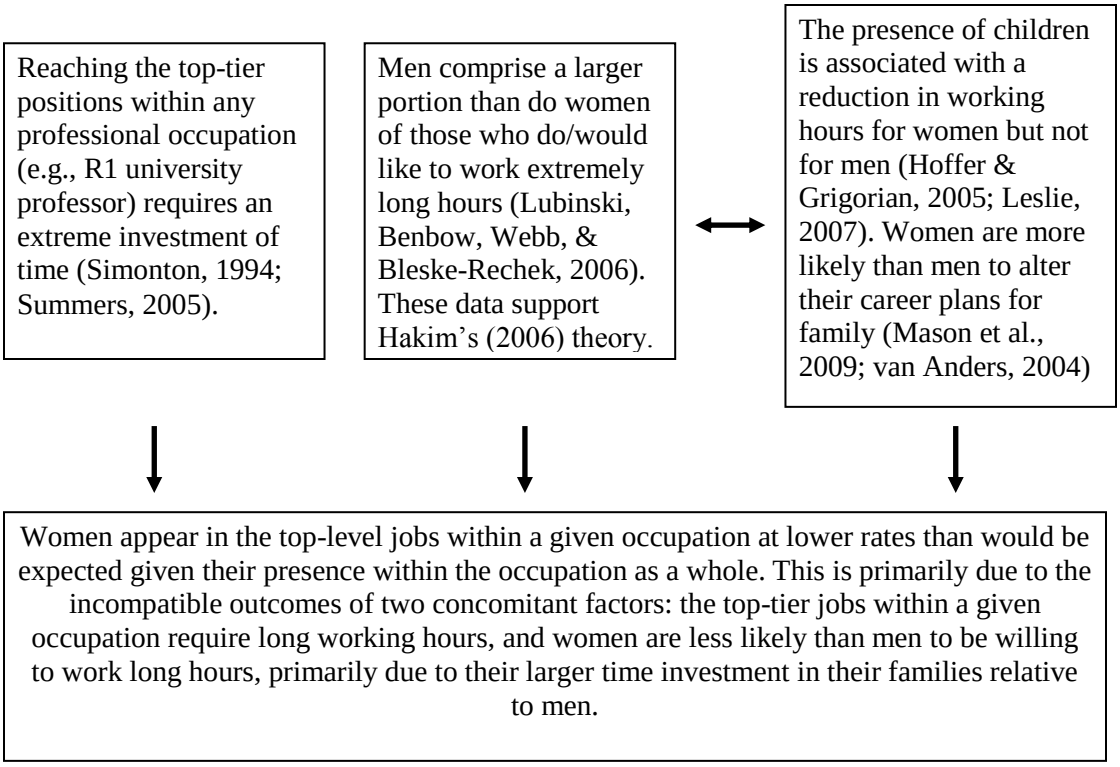

Figure 2: Time-focused explanation of underrepresentation of women in top-tier jobs

The position described in the middle box in the top row of Figure 2 (above) is essentially that taken by Hakim (1998; 2000), whose preference theory posits that people elect to pursue one of three general types of lifestyles located along a continuum between emphases on family/children and paid employment: home-centered (with a primary focus on family and child-related activities in the private sphere), work-centered (with a primary focus on competitive employment activities in the public arena), or adaptive (with a dual focus on both family and employment, without giving a strong priority to either). She noted that the majority of men fall into the work-centered category, while only approximately 20% of women do, and these are the types of workers "who are most likely to survive, and become high achievers, in greedy occupations" (Hakim, 2002; Hakim, 2006, p. 298). Greedy occupations, a category which would certainly include tenure-track positions at prestigious institutions, are defined by Hakim (2006) as those

with a heightened likelihood, relative to non-greedy jobs, of becoming all-consuming due to the tendency of these jobs to extend beyond regular working hours. Gender differences in alignment with Hakim's theory were predicted, such that female faculty members will report, on average, lower levels of work centrality as compared to male faculty members. An individual's standing on work centrality was also expected to relate to his/her initial career preference, with more work-centered individuals being more likely to prefer the most prestigious occupational path, as compared to less work-centered individuals.

Hypothesis 2d: Women will indicate significantly lower levels of work centrality as compared to men (expected effect size: d = 0.65; estimated by author).

Hypothesis 1d: Higher scores on work centrality will decrease the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

1.4.2 Factoring Family Into Early Career Plans.

Differential standings on work centrality and discrepant time allocation preferences among men and women are manifested in the preferences and decisions individuals exhibit along the academic career path. Male and female PhD students and recent PhD graduates report wanting to obtain different types of jobs upon entry into the workforce. Data from two unique graduate student samples suggest that male graduate students are more likely than female graduate students to report a desire to become professors in general, and professors with a research emphasis more specifically (36% of male graduate students and 27% of female students reported that their current career goal was "professor, research emphasis" [these figures were 28% and 20%, respectively, for male and female graduate students in the STEM fields], Mason, Goulden, & Frasch,

2009; $z = 2.54$, $p < .01$ for the increased likelihood of male graduate students relative to female graduate students reporting that they definitely or probably intended to be professors; van Anders, 2004). Conversely, female graduate students are more likely than male graduate students to report an intent to seek a faculty job with a teaching emphasis (19% of male graduate students and 27% of female graduate students reported that their current career goal was "professor, teaching emphasis", Mason et al., 2009). Family considerations play a key role in these preferences. Among University of California (UC) system doctoral students who reported having shifted their career goals away from a research-oriented professor position at some point since starting graduate school, women were more than twice as likely than men (46% of women vs. 21% of men) to cite "issues relating to children" as a contributing factor to their shift in career goals (Mason et al., 2009). Similarly, women in a separate PhD student sample provided significantly higher ratings as compared to men for the influence of issues of parenthood ($d = 0.25$) and mobility ($d = 0.19$) on their decision about whether to pursue an academic career (van Anders, 2004).

Interview data from two unique samples reflected faculty member beliefs that having children prior to earning tenure would be detrimental to their careers (all female sample; Armenti, 2004), and that a traditional faculty career and having a family were incompatible pursuits (Harper, Baldwin, Gansneder, & Chronister, 2001). Survey data confirm the trends seen in this interview data: among graduate students, women were significantly less likely than men to agree that "having children is compatible with pursuing an academic career" ($d = 0.31$) (van Anders, 2004). And this belief directly related to future plans: the level of agreement with a set of statements about the

incompatibility of family and academic careers was significantly related to one's desire to pursue an academic career for women (d = 0.55) but not for men (van Anders, 2004). Likewise, among a sample of graduate students from the top 20 PhD programs in astronomy, physics, and biology, 28.5% of women and 7.2% of men reported worrying that a science career would keep them from having a family (Ecklund & Lincoln, 2011). So male and female graduate students express different beliefs regarding the compatibility of family and an academic career, and these beliefs relate differentially to their career plans.

Hypothesis 1a: Gender (being female) will increase the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Hypothesis 1c: Gender (being female) will strengthen the relationship of a higher rating of perceived family friendliness of a position in a research-intensive environment decreasing the likelihood (and a higher rating of perceived family friendliness of a position in a teaching-intensive environment increasing the likelihood) of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment (expected odds ratio = 0.30 and 1.70).

1.4.3 Joint Operation of Biological and Tenure Clocks.

One explanation for the under-representation of women in high-status academic jobs within STEM fields focuses on the "simultaneous ticking" of the biological and tenure clocks (Ward & Wolf-Wendel, 2004, p. 234). The tenure clock refers to the typical 6-7 year period occurring at the start of one's academic career in which a tenure-track

faculty member is expected to demonstrate his/her qualifications for earning tenure, while the biological clock implies the limited time period in which a woman is physically able to reproduce. This time period, while not strictly defined, extends roughly from puberty to age 45, at which an estimated 54.6% of couples are unable to conceive; this figure increases to 91.9% by age 50 (Leridon, 2008). There are also socially imposed deadlines for childbearing, which tend to be more restrictive than actual biological constraints: the majority (57.2%) of respondents in a sample of over 20,000 Europeans provided a response of 40 years or younger when asked for the age at which they perceive a woman as being too old to consider having more children (Billari et al., 2010). While the concept of a biological clock can be applied to men, it is less pressing, as the reproductive capability of men declines more slowly with age than that of women (Sobotka, 2010). The joint operation of these two clocks creates a Catch-22 for female faculty members: having a child during the highly demanding pre-tenure years may jeopardize earning tenure (Armenti, 2004), as combining these two demanding roles is extremely challenging and often daunting to women (Williams & Ceci, 2012), but waiting to start having children until after earning tenure often puts women past the ideal child-bearing age (Wolfinger, Mason, & Goulden, 2009*)*.

The average age of PhD recipients is in the low to mid-30s; among a sample of tenure-track or tenured science and engineering faculty at research-extensive universities, the average age at PhD receipt was approximately 30 years (Su, 2011), and in a more general sample of faculty across disciplines and institution types, the average age at PhD receipt was 33.4 years for men and 35.5 years for women (Jacobs & Winslow, 2004). Considering both the likely option of a 2-3 year post-doctoral appointment (done by

nearly half of science and engineering PhD holders; NSF, 2008) and the roughly seven years it takes to earn tenure, a reasonable estimated average age of faculty members at tenure receipt is approximately 38-40 years. This estimate is on the low end relative to the actual average age for faculty members: among assistant professors in a sample of over 10,000 full-time faculty members, the average age was 42.4 years for men and 43.7 years for women (Jacobs & Winslow, 2004). These authors note that assistant professors spent an average of 4.8 years elsewhere before starting at their current institutions; possibilities for this time period include postdoctoral fellowships, other temporary positions, or time off from the labor market. The possibility that these individuals may have stopped their tenure clocks should also be noted. While postponing childbirth until post-tenure may be ideal for reasons related to career success, financial stability, and work-life balance, there are risk factors associated with advanced maternal age, such that rates of infertility increase considerably after age 35 and accelerate even more rapidly after age 40 (Sobotka, 2010).

Women are more likely than men to exhibit behavior indicative of a perceived need to choose between a demanding career and family life, demonstrating preferential focus on either the biological clock or the tenure clock. First, evidence for weighting the tenure clock more heavily than the biological clock will be presented. Among samples of tenured or tenure-track faculty, women exhibited higher rates of childlessness and/or delays in having children relative to their male counterparts (Fox, 2005; Jacobs & Winslow, 2004; Mason & Goulden, 2004). In a related set of findings, rates of being single and being childless were higher among ladder-rank (i.e., full-time, tenure-track) women as compared to those among ladder-rank men and second tier (i.e., those in part-

time or non-tenure track jobs, or not working) women (Mason & Goulden, 2004). Among a faculty group aged 40-60, 40% of women and 20% of men reported having fewer children than they would like to have (Mason & Goulden, 2004). Among faculty members from top PhD programs in astronomy, physics, and biology, 45% of women and 25% of men reported having fewer children than they wanted; among graduate students from this same set of PhD programs, 20% of men and 39% of women reported having fewer children than they wanted, and expressing this belief was associated with a 21% increased likelihood of planning to seek a career outside of science (Ecklund & Lincoln, 2011). Taken together, these data suggest that some women who pursue the tenure track are sacrificing or delaying having children, which represents a desire shared by most American graduate students (Mason et al., 2009; van Anders, 2004).

Conversely, some academic women show preference for the biological clock at the cost of the tenure clock. The presence of young children at the time of initial job search has been associated with decreased rates of earning tenure for women relative to men (Mason & Goulden, 2004), and also with significantly increased likelihood of taking adjunct professor positions, non-teaching academic jobs, or exiting the paid labor force, relative to taking a tenure track job, for women as compared to men (Wolfinger et al., 2009). The authors of this latter study concluded that when male PhD recipients have young children during their initial job search, they are inclined to pursue more lucrative and secure employment paths (e.g., tenure-track appointments). Female PhD recipients who have children are apt to pursue the more flexible, but less prestigious, adjunct professor positions, using this position as an imperfect solution to the problem of finding

an appropriate time to have children within the temporal confines of a traditional academic career, or exit the labor force altogether (Wolfinger et al., 2009).

Similarly, in predicting the likelihood of PhD recipients obtaining a tenure-track position, being female was a significant negative predictor ($\beta = -0.07$, $p < .05$) when the interactions of gender by family factors were not included; the very small size of this effect suggests that gender is a relatively unimportant predictor of whether an individual will obtain a tenure-track position, at least among this sample, when no attention is paid to marital and family status variables. When the interactions of female & being married, and female & having children under the age of six were included, each of these interactions was a negative predictor of obtaining a tenure-track position ($\beta = -0.28$, $\beta = -0.32$, respectively, $p < .001$ for both) while the effect of female on its own became a significant positive predictor of obtaining a tenure-track position ($\beta = 0.15$, $p < .01$) (Wolfinger, Mason, & Goulden, 2008). These findings suggest that the penalty for women in obtaining tenure-track jobs is less related to inherent gender differences and is more likely driven by family factors (Wolfinger et al., 2008).

Use of tenure clock stop/extension policies represents one way faculty members can attempt to ease the difficulties inherent in combining parenthood and earning tenure. This type of policy has been found to be the most commonly offered work-family policy offered by higher education institutions (Hollenshead, Sullivan, Smith, August, & Hamilton, 2005). Women are more likely than men to take advantage of work-family policies such as tenure clock extensions: in a faculty sample from a four year university with the Carnegie classification of research university – very high research activity, 23% of faculty members utilized the tenure-clock extension policy, and of these individuals,

64% were women (Pribbenow, Sheridan, Winchell, Benting, Handelsman, & Carnes, 2010). A similar pattern of utilization was reported among faculty hired at the rank of assistant professor from a doctoral/research university: 24% of faculty received tenure-clock extensions, and a larger percentage of women than men received tenure-clock extensions (32% of women vs. 18% of men, $p < .01$). Utilization rates varied by academic field, with the highest utilization rate (31%) occurring among faculty in the arts, humanities, and social sciences fields and the lowest utilization rate (14%) occurring among faculty in the STEM fields (Quinn, 2010). There is evidence, however, that some women are reluctant to use these and similar policies due to fear of disapproval from colleagues or difficulties in receiving tenure due to the clock extension (Drago, Colbeck, Stauffer, Pirretti, Burkum et al., 2006).

In conclusion, women are more likely than men to report concerns about the family friendliness of a job in their career plans (Mason et al., 2009; van Anders, 2004), and the presence of children exerts a larger impact on the career plans, usually in the form of following a less prestigious academic track, of women as compared to men (Mason & Goulden, 2004; Wolfinger et al., 2009). Within groups of individuals with similar faculty positions, females report higher rates of childlessness than their male counterparts (Fox, 2005; Jacobs & Winslow, 2004; Mason & Goulden, 2004), reflecting a sacrifice on the part of some women in the form of not having children or delaying childbirth, as the desire for children does not differ significantly between men and women (Mason et al., 2009; van Anders, 2004). Tenure clock extension policies are often available as a potential means to aid faculty members attempting to combine parenthood with seeking tenure (Hollenshead et al., 2005), and these policies are more frequently

used by women than by men (Pribbenow et al., 2010). Data from multiple sources collectively indicate that women, to a larger extent than men, behave in a manner reflecting their belief that they must choose between having a high status, demanding academic career and having children.

Hypothesis 1b: Gender (being female) will strengthen the relationship of the presence of children (at the time of the job search) increasing the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Hypothesis 2a: Women will be more likely than men to cite family considerations as a factor related to a job move (expected effect size: d = 0.25; estimated from published results).

Hypothesis 2b: When compared with U.S. national data on the average age at the birth of one's first child for individuals with a college degree (Amuedo-Dorantes & Kimmel, 2005; Martinez, Chandra, Abma, Jones, & Mosher, 2006), women in the faculty sample will report having their first child at a significantly later average age while men in the faculty sample will not (expected effect size: d = 0.50; estimated by author).

Hypothesis 2c: Women will be more likely than men to have extended or reset the tenure clock while at their current institution (expected effect size: d = 0 .65; estimated by author).

1.4.4 Gender, Personality, and Career Path Decisions.

While the hypotheses outlined above stem from the notion that much of the variability in the gender make-up of various jobs in STEM higher education is related to time allocation and family issues that are pervasive in most professional employment

sectors, there are some gender-related explanatory factors that are uniquely applicable to higher education. One such factor is personality as it relates to strength of preference for research vs. teaching. Higher education demographic data have demonstrated that women are represented at higher rates at teaching-focused as compared to research-focused schools (West & Curtis, 2006). The argument related to the competing time demands of work and children offered earlier may explain some of this, but the possibility also exists that these differences are driven by personal preferences. Gender differences in interests (Lippa, 1998, 2005) and self-efficacy (Correll, 2001) have been explored as potential contributors to the differential representation of men and women in various academic career paths. One possible explanatory feature that has yet to be sufficiently addressed is personality. More prestigious institution types are more heavily research-focused than teaching-focused (Ruscio, 1987), and men tend to demonstrate a preference for research-oriented jobs to a larger extent than do women (Mason et al., 2009). Perhaps there are personality variables on which men tend to differ from women, and which also lend themselves to differential preferences for research and teaching.

Social potency and social closeness were selected as candidate personality traits to investigate the possibility of gender differences in personality traits related to preferences for research and teaching. An individual scoring high on social potency "is forceful, decisive, and persuasive and enjoys leadership roles", while a high scorer on social closeness "is warm, affectionate, and sociable" (Schmidt, Lubinski, & Benbow, 1998). Social potency corresponds with the Big Five lower-order trait of Dominance while social closeness is conceptually similar to the lower-order trait of Sociability (Arvey, Rotundo, Johnson, Zhang, & McGue, 2006). Prior investigations of gender and

personality have supported an expectation of gender differences on these traits, with women scoring higher than men on Sociability and similar traits, and men scoring higher than women on Dominance and related traits (d = 0.33 for women scoring higher than men on the NEO-PI-R trait Warmth and d = 0.19 for men scoring higher than women on the NEO-PI-R trait Assertiveness; Costa, Terracciano, &McCrae, 2001; d = -0.26 for women scoring higher than men on the Jackson Six Factor Personality Questionnaire (SFPQ) trait Affiliation and d = 0.41 for men scoring higher than women on the Jackson SFPQ trait Dominance; Powell, Goffin, & Gellatley, 2011).

While these traits have not been directly investigated with respect to research and teaching interests, research on related traits and activities lends insight about the potential nature of such associations. Self-report survey and other-report ratings data from 52 Canadian university professors suggested that personality traits were differentially associated with research creativity (ambitious, r = .77; dominant, r = .61; authoritarian, r = .52; aggressive, r = .42; sociable, r = -.40; and supportive, r = -.30) and teaching effectiveness (sociable, r = .78; supportive, r = .62; authoritarian, r = -.41; ambitious, r = .34) (Rushton, Murray & Paunonen, 1983). Results from a study of 99 full professors (100% male) of chemistry, physics, and biology indicated that complexity of thought (i.e., "the ability to perceive & integrate more than one dimension at a time") regarding research was positively linked to being exploitative (r = .26, p < .05) and manipulative (r = .22, p < .05), while complexity of thought regarding teaching was positively associated with being warm (r = .24, p < .05) and charming (r = .22, p < .05) (Feist, 1994). Similarly, meta-analytic findings suggested that the confidence facet of extraversion (mean d = 0.20), the 16 PF Dominance factor (mean d = 0.38), the Extraversion factor

(assertive, dominant, surgent, active) (mean d = 0.33) and the Psychoticism factor (aggressive, cold, impersonal, antisocial) (d = 0.45) of the EPQ were each found to be significantly higher among scientists than among nonscientists, while the sociability facet of extraversion (mean d = -0.02) was not found to significantly differ between scientists and nonscientists (Feist, 1998).

Taken together, these studies provide support for a link between social closeness and teaching related variables and between social potency and research related variables. There is also evidence for gender differences on these two traits, with women tending to score higher on social closeness as compared to men, and men tending to score higher on social potency as compared to women. If these two traits a) differ between men and women, and b) exhibit differential relationships with teaching and research interests, there is reason to explore their potential as underlying causal factors for the differential representation of men and women at teaching-focused and research-focused higher education institution types.

Hypothesis 2e: Men will score significantly higher than women on social potency (expected effect size: d = 0.30; estimated from published results).

Hypothesis 2f: Women will score significantly higher than men on social closeness (expected effect size: d = 0.30; estimated from published results).

Hypothesis 1e: Higher scores on social potency will decrease the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Hypothesis 1f: Higher scores on social closeness will increase the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

1.5 Gender and Time Allocation to Work and Family

1.5.1. Institutional Type Differences in Workload.

Opinions on the family-friendliness of jobs at different institution types have been reported, with jobs at teaching-focused institutions being perceived as more family-friendly than those at research-focused institutions (46% of men and 29% of women rated tenure-track faculty positions in research-intensive universities as somewhat or very family friendly, while 82% of men and 73% of women expressed a belief that faculty careers at teaching-intensive colleges were the most family friendly career path among a variety of options; Mason et al., 2009). This perceived difference could be driven by a belief that the total workload for faculty members at research-focused institutions is higher than that at teaching-focused institutions. Higher education faculty members, on average, work well over 40 hours per week, and the longest workweeks are seen among tenure-track faculty and among faculty at the more prestigious institution types (U.S. DoE, 2004).

Hypothesis 3a: The prestige of one's current institution type will be a positive predictor of workload ($\beta = 0.33$; estimated from published results).

1.5.2 Impact of Gender and Family on Work Hours.

Working hours have been shown to differ by gender and family status. In samples of faculty members and holders of advanced STEM degrees, men have reported longer average workweeks, been represented at higher rates in the segment of employees

working long workweeks (defined as either 50 or more hours per week or 60 or more hours per week, depending on the study), and reported preferences for long workweeks at higher rates, relative to women (Jacobs & Winslow, 2004; Lubinski et al., 2006; van Emmerik, 2006; Winslow, 2010). There is evidence that the average workweek of male faculty members (49.1 hours/week) is longer than that of female faculty members (45.2 hours/week) (U.S. DoE, 2004). Discrepant findings of female faculty members working more hours than male faculty members have also been reported (Link, Swann, & Bozeman, 2008). Similar results with respect to these gender patterns in actual and preferred work hours have been reported in several non-faculty samples, including MBA graduates (Bertrand et al., 2010), business school graduates (Brett & Stroh, 2001), and German university graduates (Abele & Spurk, 2011).

Hypothesis 3b: Gender (being male) will be a positive predictor of workload ($\beta = 0.28$; estimated from published results).

Women obviously carry the physical burden of pregnancy and childbirth, and they also tend to take on a larger portion of the work associated with raising children than do men (Bianchi et al., 2000, Suitor et al., 2001), and have their work affected by children to a larger extent than do men (Gustafson, 2006). The presence of children has been found to exert differential effects on the hours worked by men and women, such that an increase in the number of children is associated with a decrease in the working hours of women but not men, and the size of the difference in work hours between men and women increases with an increasing number of children; these effects have been reported in both faculty (Hoffer & Grigorian, 2005; Leslie, 2007) and non-faculty samples (Abele &

Spurk, 2011; Bertrand et al., 2010). In competitive jobs with extreme time demands, differences in work hours can impact performance (Lubinski & Benbow, 2007).

One factor potentially influencing the reduced working hours of women with children relative to men and their childless female counterparts is the increase in time they devote to household duties and childcare (Mason & Goulden, 2004; Suitor et al., 2001). Data from two unique faculty samples suggest the following gender differences in time allocation: 1) female faculty members with children spend significantly fewer hours working in their paid employment positions in general (an average of 5 hours less per week), and working specifically on research (an average of 3.3 hours less per week), relative to male faculty members with children; 2) when hours of paid work, childcare, and housework are considered together, female faculty members with children spend significantly more total hours working (averages of 14 and 18 more hours per week reported in the two samples), relative to male faculty members with children (Mason & Goulden, 2004; Suitor et al., 2001). A recent meta-analysis on work hours suggested a small, negative relationship between household labor and work hours (r = -.09, p < .05; Ng & Feldman, 2008). These data suggest that women who choose to pursue both motherhood and a highly demanding academic job simultaneously are likely to face a situation of competing time demands and insufficient time to address them (Acker & Armenti, 2004; Monroe et al., 2008).

Hypothesis 3c: Gender will moderate the expected negative relationship between the presence of dependent children and workload, such that the relationship will be stronger for women than for men (β = -0.78 for women; β =0 .03 for men; estimated from published results).

Hypothesis 3d: Hours of household labor will be a negative predictor of workload (β = -0.09; estimated from published results).

Hypothesis 4a: Both male and female respondents who are married with dependent children in the home will report that the female carries a larger amount of the household labor and childcare duties (expected effect size: d = 1.1; estimated from published results).

Hypothesis 4b: Women will report that their children exert a larger impact on the quantity and quality of work they are able to get done, relative to men (expected effect size: d = 0.77; estimated from published results).

1.5.3 Work Centrality, Institution Type, and Workload.

Hakim's theory posits that work-centered individuals are both more likely to be men than women, and are more likely to succeed in "greedy" occupations than non-work-centered individuals. Accordingly, it is expected that work centrality will vary with institutional prestige, with individuals employed in more prestigious institution types reporting higher work centrality relative to those employed in less prestigious institution types. Multiple studies have indicated the presence of a small to medium sized, positive relationship between work centrality and work hours ($r = .19$, $p < .01$, Boyar, Maertz, Jr., Mosley, Jr., & Carr, 2008; $\beta = 0.11$, $p < .05$, Major, Klein, & Ehrhart, 2002; $r = .25$, $p < .05$, Ng & Feldman, 2008), suggesting a congruence between values and behavior; it was expected that work centrality will be a positive predictor of workload among this faculty sample.

Hypothesis 3e: Work centrality will be a positive predictor of workload (β = 0.18; estimated from published results).

Hypothesis 4c: Work centrality will increase with increasing institutional type prestige (expected effect size: d = 0.65; estimated by author).

1.6 Gender, Family, Career, and Work-Family Conflict

1.6.1 Institutional Type Differences in Perceived Family Friendliness.

Women express heightened concern, relative to men, about the family-friendliness of jobs in formulating their career plans (Mason et al., 2009; van Anders, 2004), and research-focused institutions are thought to be less family friendly than teaching-focused institutions (Berheide & Anderson-Haley, 2012; Mason et al., 2009). Such differences may help partially explain the discrepant gender distributions at different institution types (West & Curtis, 2006). Interview data suggest that many women with children are strategic in their selection of an institution type they believe will allow them to successfully manage both the faculty and mother roles (Wolf-Wendel & Ward, 2006). For the most part, female faculty members' family size was smaller with increasing institutional prestige (Wolf-Wendel & Ward, 2006), suggesting either varying beliefs by institution type about appropriate family size, or that women who already had children adjusted their career plans accordingly. These studies illustrate differences in perceived family-friendliness of jobs across institution types, with less prestigious institution types generally faring better. As women are typically more concerned with the family-friendliness of a job than are men, they are more likely to act on these perceptions and move towards a job they perceive as family friendly. Such institutional type differences in perceived family friendliness both highlight the need to include multiple institution types in an investigation of STEM higher education gender differences, and also serve as potential driving forces behind career path decisions. An assessment of

whether these beliefs match up with actual work-family conflict values reported by faculty members at various institution types permits inferences about the validity of such beliefs.

Hypothesis 5a: Prestige of one's current institution type will be a positive predictor of work-family conflict (β = 0.20; estimated by author).

1.6.2 Role of Work and Family Demands.

Work-family conflict is defined as "a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect" (Greenhaus & Beutell, 1985). This definition indicates that demands from either work or family can serve to contribute to experienced levels of WFC. One metric of each type of demand, work hours for work demands and number of dependent children for family demands, will be assessed as predictors of work-family conflict; it is expected that each of these will be a positive predictor. Each of these relationships is well-supported by the literature: there is a medium-sized, positive relationship between work hours and WFC (r = .33 across multiple studies, average size of relationship calculated in author's prelims paper), and reported values for the size of the relationship between the number of dependent children and WFC range from small to medium (β = 0.25, $p < .05$, Clark, 2001; $r = .21$, $p < .05$, Netemeyer, Boles, & McMurrian, 1996; β = 0.28, $p < .05$ for men and β = 0.17, $p < .01$ for women, Ulla & Mauno, 1998; β = 0.08, $p < .001$, Voydanoff, 2005).

Hypothesis 5b: Workload will be a positive predictor of work-family conflict (β = 0.33; estimated from published results).

Hypothesis 5c: The number of dependent children will be a positive predictor of work-family conflict (β = 0.20; estimated from published results).

1.6.3 Gender, Personality, Network Utilization, and WFC.

STEM research in particular, due its reliance on high-cost equipment and propensity to cross traditional disciplinary lines, is often more readily and successfully accomplished through a collaborative, multi-disciplinary approach (Smylka & Zippel, 2010). The role of collaborative networks in higher education involves provision of both research support and social support (Melkers & Welch, 2008; Rothstein & Davey, 1995). Professional networks have been theorized to offer the following benefits to university faculty: 1) socialization via knowledge transmission from senior colleagues; 2) workplace solidarity; 3) opportunities for peer evaluation and reputation building; 4) sharing of new developments in a given field; 5) provision of informal advice and job-related information (Xu & Martin, 2011). Here, two specific aspects of advice networks will be explored with a focus on potential gender differences: presence of close ties within one's advice network, and utilization of one's network for advice on work/family balance issues.

A newly developed construct titled propensity to connect with others (PCO), defined as "an individual's orientation towards making connections with other people that is not specific to context and that incorporates three related but distinct components: making friendships, making acquaintances, and joining others" (Totterdell, Holman, & Hukin, 2008, p. 284), was found to correlate positively to the size of one's friendship network ($r = .25$, $p < .01$ and $r = .20$, $p < .01$ in student and employee samples, respectively). Social closeness is expected to relate in a similar way to network variables

indicative of close network ties: count of network members considered close friends, and count of network members with whom the respondent socializes outside of work. Such close, friendly relationships seem likely to set the stage for discussions on such personal topics as work-family balance; these behaviors are expected to relate positively to the number of one's network members from whom advice on work-family balance is sought.

Women express higher levels of concern about combining work and family as compared to men (53% of female PhD students and 35% of male PhD students reported being "very concerned" about the family friendliness of possible career paths, Mason et al., 2009; d = 0.19 - 0.25 for women reporting that family-related factors were more influential on their decisions regarding pursuing academic careers, as compared to men, van Anders, 2004). Women have also been found to derive similar levels of career support, but higher levels of social support, from their networks as compared to men (Rothstein & Davey, 1995). It was expected that women would discuss work/family balance issues with a larger number of individuals within their networks than will men. Propensity to connect with others was found to relate positively to level of emotional support received (r = .17, p < .05, measured in student sample only) and two types of affective well-being (r = .21, p < .01 - r = .27, p < .01; the effect was nonsignificant for one type of affective well-being in the employee sample only) (Totterdell et al., 2008). As an extension of these findings, it was expected that utilization of one's network for seeking advice about work/family balance would be associated with reductions in WFC levels. Social closeness, on which women were expected to score higher than men, was proposed as a potential mechanism by which female faculty members might alleviate some of their work-family conflict, via advice sought on this issue from members of their

collaborative academic networks, particularly those whom they consider close friends and/or with whom they socialize outside of work.

Hypothesis 5d: The count of network members from whom one seeks advice about work/family balance will be a negative predictor of work-family conflict (β = 0.20; estimated from published results).

Hypothesis 6a: Women will report seeking advice related to work-family balance from a larger count of their network members than will men (expected effect size: d = 0.46; estimated from published results).

Hypothesis 7: The personality variable social closeness will relate negatively to WFC levels through its association with close network ties and subsequent utilization of one's network for advice on work-family issues.

1.6.4 Work Centrality and WFC.

The value an individual places on work relative to family and the manner in which this relative evaluation relates to WFC have been the subject of limited empirical investigation (Carlson & Kacmar, 2000; Carr, Boyar, & Gregory, 2008; Matthews & Barnes-Farrell, 2010), and the relationship between these two variables is somewhat unclear. It was expected that work centrality will be positively associated with WFC, because an individual who holds work as a central value relative to family is likely to be unable to adequately fulfill the family role due to his/her extensive work obligations. However, the heightened value placed on work relative to family may allow for reduced feelings of conflict, as the individual is less concerned about the impact of work on his/her family due to his/her relative evaluation of the two domains. These conflicting predictions are supported by the mixed results seen in the literature, which include a

small, significant positive relationship (r = .15, p < .05; Carlson & Kacmar, 2000) and two non-significant relationships (r = -.16, NS, Carr et al., 2008; r = .08, NS, Matthews & Barnes-Farrell, 2010). A small, positive relationship between these two variables was expected in this sample.

Hypothesis 5e: Work centrality will be a positive predictor of work-family conflict (β = 0.10; estimated from published results).

CHAPTER 2

OVERVIEW OF THE STUDY

Many studies aiming to unpack the gender disparity in STEM faculties have focused on a single institution type, most often the highly prestigious, doctoral-granting research institutions (Melkers & Welch, 2008; Suitor et al., 2001; Todd, Madill, Shaw, & Bown, 2008). While there are good reasons for adopting such designs (e.g., reducing variability caused by large differences across institution types), research focusing on a single institution type ignores the large variance that exists in the extent of faculty gender disparity by institution type. For this reason, the design of this study involved sampling from several different types of higher education institutions, allowing for analyses to be conducted both within and across institution types. This study addresses a major gap in the academic life literature, which has primarily focused on research universities to the exclusion of work on faculty members at other types of institutions (Wolf-Wendel & Ward, 2006).

The goal of this investigation was to explore the potential sources of the discrepant gender distributions between various institution types.

> *General Research Question:* Why is gender equity achieved at less prestigious institution types while women are under-represented at more prestigious institution types?

More specifically, the primary focus was on both the career decisions and the motivations behind those decisions of individuals who earn doctorates in STEM fields, and why the percentages of women earning doctorates do not map onto the percentages of women

earning tenure-track academic jobs and being promoted to full professor, even when time lags between degree earning and job stages are accounted for (Ceci et al., 2009; Marschke, Laursen, Nielsen, & Rankin, 2007; West & Curtis, 2006).

Specific Research Question 1: What career paths do individuals earning doctorates in STEM fields pursue and why?

Specific Research Question 2: What contributes to the time commitments they make to the jobs they choose?

Specific Research Question 3: Do the answers to these questions differ by gender and family status, and if so, how and why?

In order to address these questions, data were collected in a two-part approach: 1) survey data were collected from a national U.S. sample of faculty members (N = 4, 195) from a subset of STEM disciplines (civil engineering, biology, biochemistry, and math) at a variety of institution types (doctoral/research university – extensive; doctoral/research university – intensive; master's college or university; liberal arts institution;), and 2) a follow-up survey was conducted with a subsample (N = 712) of the main survey respondents. Investigating the sources and outcomes of such large variability in gender distribution among a somewhat homogeneous set of jobs provides a useful lens through which to explore occupationally-based gender differences. The outcomes of such an investigation will help to inform the search for answers to the question of why the extent of female under-representation is most exaggerated in the best jobs at the most prestigious higher education institutions.

CHAPTER 3

METHOD

The study is comprised of two separate data collection efforts: 1) an online survey with a sample of faculty members from a variety of higher education institution types (*N* = 4,195; referred to as "main survey" throughout this paper), followed by 2) a follow-up online survey with a subsample of the larger faculty sample (*N* = 712; referred to as "follow-up survey" throughout this paper). The methods of each survey effort are detailed below.

3.1 Main Survey Methodology

A portion of the data used in this study was collected through a national, NSF-funded survey effort. This NSF project, titled NETWISE II, is broadly focused on the role of the professional networks of academic scientists in determining various career outcomes, with special attention paid to women and members of underrepresented minority groups (NETWISE, 2011). The current study overlaps with the goals of the broader NSF project in its aim to explore gender differences in higher education career paths and its inclusion of some specific aspects of professional network functioning. The current study represents a unique contribution to the larger NSF project via the addition of measures of WFC, time allocation to work and family activities, various aspects of job search decisions, and personality variables.

3.1.1 Main Survey Sample Selection.

A population frame of 25,928 individuals was constructed, representing tenured and tenure-track faculty in the general disciplines of biology, biochemistry, civil

engineering, and mathematics. These disciplines were selected to represent high, high, medium, and low production of female PhD graduates, respectively, as National Science Foundation (NSF) data from 2006 indicate that women comprise 31.2%, 17.2%, and 8.7% of PhD level biochemists, mathematicians, and civil engineers, respectively (NSF, 2009). It was necessary to focus on a subset of STEM disciplines given the large number of institutions to be included in the sampling design, and the desire to include all tenured and tenure track faculty members at the selected institutions in the population frame.

The population frame included a) all assistant, associate, and full professors at Carnegie research extensive and research intensive institutions, Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Women's Colleges that offer degrees in the selected disciplines listed above, and the Oberlin 50 baccalaureate institutions, and b) all assistant, associate, and full professors at 15% of Carnegie Masters I/II institutions, due to the larger number of institutions in this category relative to all others. This population frame was then divided into 112 cells based on a combination of gender (male vs. female), race (potentially non-white vs. not potentially non-white, per a rater evaluation of the individual's name and photo when available on the internet), discipline (listed above), and institution type (listed above). In 83 of these cells, all respondents were included in the sample, while in the remaining 29 cells, 200 respondents were selected from each cell. During survey administration, efforts were made to increase the number of minority respondents such that some minority network members identified by survey respondents who had not already been invited to participate were invited to participate. These efforts resulted in nearly 600 additional minority

invitees. Implications of this nonrandom sampling strategy for analysis will be discussed in section 3.3.1.

3.1.2 Main Survey Administration.

The main survey was administered from June, 2011 to October, 2011. Participants were invited via e-mail and regular mail to take an online survey approximately 45 minutes in length. The survey was administered online using Sawtooth Software. Periodic reminder e-mails were sent to those who had not yet responded. A total of 10,499 individuals were invited to participate in the survey and a total of 4,195 usable responses were received. The response rate for the main survey is 40.4%.

3.1.3 Main Survey Items.

Relevant survey items/measures for the present study include:

Demographics: Relevant demographic variables include gender, year of birth, and marital status.

Presence and Age(s) of Child(ren): Respondents were asked to list the current ages of each of their dependent children. The age respondents were when they had each of their dependent children was also determined, as participants were asked to provide their year of birth.

Personality - Social Potency & Social Closeness: These two personality constructs were each measured with a 10-item scale ($\alpha = .85$ for both; alpha estimate from IPIP) from the International Personality Item Pool (IPIP). These versions are based on the measures of these items in Tellegen's Multidimensional Personality Questionnaire (MPQ) (Tellegen & Waller, 2008).

Preference for initial job: A single-item measure asked respondents for their preferred career choice as they were completing their PhD. Response options included tenure track faculty position in a research intensive environment; tenure track faculty position in a teaching intensive environment; position in industry; position in government; non-tenure track academic position; other (with a text box to state the preferred position).

Current & Previous Jobs: Respondents' current job information (i.e., place of employment, rank, tenure status, discipline) was present in the sampling data and/or was collected in the survey. Information on respondents' job history is available only for those respondents who submitted CVs (approximately 45% of the sample), which were requested at the end of the main survey.

Role of various factors in job change: Respondents who reported that they were currently in an academic position that differed from their initial position were asked to respond Y/N as to whether each of a list of factors affected their decision to leave their most recent academic job. Relevant factors for this project are: workload was too high; spouse job change; family considerations.

Tenure Clock: Respondents were asked a single item related to their tenure clock: "Since you have been a faculty member at your institution, have you extended or reset your tenure clock?"

Collaborative Academic Network: Participants were asked to provide a wide range of information about their collaborative academic networks, including the names of network members, demographic data on those members, and specifics about the nature of their relationship with each of those members. A subset of these items was used to

investigate one specific aspect of these networks: social support. For each network member, the respondent was asked to indicate (Y/N) a) if they consider the network member to be a "close friend", b) if the network member is someone with whom they socialize outside of work, and c) if the network member is someone from whom they seek advice about work/family balance. Respondents were also asked parallel items about whether they sought various other types of advice (e.g., grant-getting, publishing, departmental politics) from each network member; these will be compared with the rate of seeking work/family balance advice in order to provide context for how frequently this type of advice is sought relative to other types of advice.

Workload: The single-item measure of workload asked respondents "On average, how many hours do you work in a typical week?"

Work-Family Conflict: The five-item measure of work-family conflict (α = .88 - .89; alpha estimate from literature) from Netemeyer et al. (1996) was used. A sample item from this scale is "The amount of time my job takes up makes it difficult to fulfill family responsibilities."

3.2 Follow-up Survey Methodology

3.2.1 Follow-up Survey Sample Selection.

There is a nested relationship between the samples used for the main survey and the follow-up survey, meaning that the sample members chosen for one phase of the study represent a subsample of participants from the other phase of the study (Onwuegbuzie & Collins, 2007). The sampling scheme used to select these follow-up participants was non-random, and combined elements of the critical case, theory-based, and convenience sampling schemes (Onwuegbuzie & Collins, 2007). Critical case

sampling means that the individual is selected because his/her inclusion provides "compelling insight" about the phenomenon being investigated (p. 285). In this study, the critical cases are men and women at each focal institution type (research extensive, research intensive, masters, and liberal arts) from the following marital/family status combinations: A) married/in a marriage-like relationship, with dependent children; B) married/in a marriage-like relationship, without dependent children; C) not married/in a marriage-like relationship, with dependent children; D) not married/in a marriage-like relationship, without dependent children.

The largest portion of the follow-up survey sample was drawn from group A, as this is the focal group for some hypotheses and analyses. The original plan was to pull the remaining follow-up survey sample equally from groups B, C, and D, but this was not possible as the number of available participants eligible to be invited to the follow-up from groups C and D was quite small. Men and women and the four focal institution types were sampled equally. Please see the top third of Table 2 for the number of invitees in each gender by institution type by marital/family status category. This sampling scheme also included elements of theory-based sampling, as the inclusion of these individuals was aimed toward hypothesis testing and potentially theory development, and convenience sampling, as only those main survey respondents who indicated their willingness to participate in a follow-up (n = 1,998) were considered for inclusion in the follow-up survey sample.

Table 2.

Counts of Invitees and Respondents, and Response Rates for Each Cell, Follow-up Survey.

Invited - counts by cell								
	married with dependent kids		married without dependent kids		unmarried with dependent kids		unmarried without dependent kids	
	Male	Female	Male	Female	Male	Female	Male	Female
Research Extensive	83	83	50	50	1	15	17	38
Research Intensive	83	81	50	46	5	6	15	28
Masters	83	83	50	48	5	2	20	33
Liberal Arts	83	79	50	50	5	1	6	20

Responded - counts by cell								
	married with dependent kids		married without dependent kids		unmarried with dependent kids		unmarried without dependent kids	
	Male	Female	Male	Female	Male	Female	Male	Female
Research Extensive	40	53	31	30	1	8	9	22
Research Intensive	43	51	18	28	2	4	14	13
Masters	42	53	35	19	2	1	8	18
Liberal Arts	47	50	25	28	2	0	4	11

Table 2 continued.

Response rates by cell								
	married with dependent kids		married without dependent kids		unmarried with dependent kids		unmarried without dependent kids	
	Male	Female	Male	Female	Male	Female	Male	Female
Research Extensive	48.19	63.86	62.00	60.00	100.00	53.33	52.94	57.89
Research Intensive	51.81	62.96	36.00	60.87	40.00	66.67	93.33	46.43
Masters	50.60	63.86	70.00	39.58	40.00	50.00	40.00	54.55
Liberal Arts	56.63	63.29	50.00	56.00	40.00	0.00	66.67	55.00

3.2.2 Follow-up Survey Administration.

The follow-up survey was administered online with the Sawtooth Software survey platform from early October, 2012 through mid-November, 2012. Faculty members in the sample selected from the main survey respondent set (n = 1,269) were sent an initial invitation letter through the postal system in early October. The same initial invitation information was sent via e-mail one week later. This and subsequent reminder e-mails were sent using the GLock e-mail system. A total of three reminder e-mails were sent at roughly two-week intervals to all sampled respondents who had not yet completed the survey by the date of the given reminder e-mail. The survey closing date was announced in the final reminder e-mail; the survey was left open for four days after the announced closing date to allow for late respondents. A total of 733 responses were received during the 6-week period that the survey was open. This constitutes a 57.8% overall response rate.

3.2.3 Treatment of Data From Incomplete Respondents.

Of the total 733 respondents, 31 respondents did not finish the survey (i.e., they did not click on the "Submit" button at the end of the survey). In order to determine which of these respondents to include in the final sample for analysis, the final item each respondent completed was recorded and the approximate percentage completed was calculated. Twenty-one respondents completed 20% or less of the survey and these respondents were not included in the final sample for analysis. Their data were not used in any analysis. Six respondents completed approximately 40% of the survey. These respondents completed the job search sections and also provided demographic data (e.g., marital and parental status), so they have sufficient data to be included in some analyses.

These respondents were included in the final sample for analysis, and their data was included in analyses for which they have provided sufficient data. Four respondents completed 80% or more of the survey and these respondents are included in the final sample for analysis. After this treatment of incomplete cases, a total of 712 cases remain for analysis out of the 1,269 invitees, resulting in a usable response rate of 56.1%. Please see Table 2 for detailed response rate information for each cell; cells represent groups created by combining gender, institution type, and marital/family status group. In general, women responded at slightly higher rates than did men (gender-specific response rate is roughly 53% for men and 59% for women), and in the focal group of respondents who are married/in a marriage-like relationship with one or more dependent children, response rates were roughly equivalent across institution types within each gender group.

3.2.4 Follow-up Survey Items.

Skip logic was used throughout the survey so that only respondents who reported being married or in marriage-like relationships were asked questions about one's spouse/partner, and only respondents who reporting having one or more dependent children in the home were asked most questions about children; some more general questions about the impact of children on one's academic career were presented to all respondents with children, regardless of the children's ages. Items and measures included in the follow-up survey are as follows:

Workload: Participants were asked to provide their average weekly work hours during the main academic year and during the summer, for both their main academic appointment and any additional paid work.

Job Attractiveness: Participants were asked to rate the attractiveness of a variety of academic job types at the time of their initial job search and most recent job search, if applicable.

Role of factors in job search: Participants were asked to rate the level of impact a variety of family-related factors (e.g., spouse/partner's career plans, availability of schools for children, overall perceived family-friendliness of the job) and a set of other factors (e.g., benefits, geographic location, academic reputation) had on the decisions they made during their initial job search and most recent job search, if applicable.

Demographics: Participants were asked a series of demographic questions about their marital and family status, as well as a series of demographic questions about their spouse/partner.

Career Decisions: Participants were asked a single item about whose career (the respondent's or his/her spouse's) has primarily driven the family's career-related decisions.

Household labor & childcare: Participants were asked a series of questions about household labor & childcare, including:

- the hours/week spent on a variety of tasks (list of tasks modified from Blair & Johnson, 1992) by themselves and their spouse/partner
- whether they receive paid or unpaid help with these tasks
- their perceived fairness of the division of these tasks between themselves and their spouse/partner
- their satisfaction with the division of these tasks between themselves and their spouse/partner

Sharing of children's events and children's interruptions of work: Participants were asked a series of questions about the frequency with which each spouse/partner attends children's events, deals with occasions when children interrupt work, and deals with occasions when children are home sick.

Impact of children on work activities: Participants were asked to rate the impact of their dependent children on several work-related activities (e.g., the quantity and quality of academic work they are able to accomplish, their travel schedule, their teaching load, their attendance at work obligations).

Career Adjustment: Participants were asked a single item about adjustments they would have made to their career if they had not had children.

Family-work conflict: Participants were given a 5-item measure of family-work conflict (from Netemeyer et al., 1996).

Work centrality: Participants were given a 12-item measure of work centrality (from Paulley et al., 1994) as well as a locally developed series of items about one's ideal time investment, emotional investment, and cognitive investment to work and family/personal life.

Satisfaction with overall time allocation: Participants were given a single item on their satisfaction with their overall allocation to work and to personal/family life throughout their careers.

Perceived family-friendliness of academic jobs: Participants were asked to rate their current beliefs about the family-friendliness of a variety of academic jobs.

Interplay of work and family goals: Participants were asked a series of questions about whether and how they adjusted family goals in service of career goals, and vice versa.

Additional Caregiving: Participants were asked a series of items about caregiving for anyone other than dependent children. These items addressed whether the respondent engages in this type of caregiving, and if so, how much time is spent providing this care, demographics on the individuals to whom this care is provided, and the impact of this caregiving on the respondent's work.

3.3 Approach to Methodological Issues in Preparation for Analyses

3.3.1 Computation and Use of Sampling Weights.

Analyses were performed in SPSS Version 20 and Stata Version 12. Stata was used in addition to SPSS because SPSS is not well-equipped to handle the population weights associated with these data (UCLA Institute for Digital Research and Education, http://www.ats.ucla.edu/stat/spss/faq/weights.htm, accessed 3/7/13), so analyses employing the population weights were conducted in Stata. Weighted analyses account for the fact that a non-random sampling technique was used to select the main survey sample from the population; this selection was done on the basis of race, gender, discipline, and institution type. Weighting the analyses adjusts for the fact that some respondents (e.g., minorities and women from certain institution types) were selected at a rate of 100% (i.e., everyone within a given cell of the sampling frame was selected into the sample) while others respondents (e.g., non-minorities and men from certain institution types) were selected at a rate of less than 100% (i.e., a certain percent of people within a given cell of the sampling frame was selected into the sample).

Applying the sampling weights to the analysis makes the results generalizable to the population by increasing the impact of data from respondents who were selected at a rate of less than 100%, relative to the impact of data from respondents who were selected at a rate of 100%. Sampling weights are equal to 1/likelihood of being selected within a given cell. For example, minority females from biology departments at research extensive institutions were selected at a rate of 1.0 (164 were identified and 164 were sampled), meaning that all individuals identified in that cell were included in the sample, so their sampling weight is 1/1.0, or 1.0. Among nonminority females from biology departments, the rate of selection was .174 (1152 were identified and 200 were sampled), so their sampling weight is 1/.174, or 5.76.

A subset of participants was not selected via the original sampling procedure, but was invited to participate in the survey during the survey process in order to further increase the number of underrepresented minority respondents. These participants were identified via other respondents' inclusion of them in their academic networks and specification of them as minorities. Some of these participants had been included in the original sampling frame but had not yet been sampled, while others had not been included in the original sampling frame, and as such could not be assigned the sampling weights that participants included in the original sampling frame were assigned. In order to prevent their exclusion from weighted analyses per their missing values in the sampling weight variable, they were manually assigned sampling weights of 1.0. In order to determine whether this procedure altered results, all analyses were conducted with and without these originally unweighted participants (n = 209 for the main survey and n = 30 for the follow-up survey). Cases where the exclusion of these participants was associated

with meaningful changes to the results will be specified; if these participants are not mentioned, then their exclusion from a given analysis was not associated with a meaningful change in the corresponding results and the reported results include these participants with sampling weights set to equal 1.0.

Weighted analyses are required for descriptive statistics such as mean comparisons (Winship & Radbill, 1994), so throughout the results section these types of results are always from the weighted version of the given analysis. The use of weights in regression analyses is less clear-cut (Winship & Radbill, 1994). Winship & Radbill (1994) suggest a procedure to indicate, for a given regression model, whether the weighted and unweighted estimates are significantly different from each other. This procedure entails the creation of an interaction term for each of the predictors in the original model by the weight variable. Then a model is tested with the original set of predictors, the weight variable itself, and interaction terms for each predictor by the weight variable. The total variance in the dependent variable explained by this model is then compared to that explained by original model. This allows for an assessment of whether the addition of the weight variable and its interaction with each of the original set of predictors explains additional variance in the dependent variable beyond that explained by the set of original predictors.

If this comparison results in a nonsignificant *F* value (indicating that the weighted and unweighted estimates do not differ significantly from each other), Winship & Radbill (1994) recommend using the unweighted regression estimates due to their typically lower standard error terms. If this comparison results in a significant *F* value (indicating that the weighted and unweighted estimates do differ significantly from each other), it is

recommended that either a) the model be respecified to create independence between the weights and the dependent variable, or if this cannot be accomplished, b) the weighted regression estimates be used. For each regression model, this procedure was conducted, and the results are reported along with the subsequent decision to report and interpret the weighted or the unweighted regression estimates for each model.

3.3.2 Treatment of Outliers.

A wide range of ages was present in the original main data set, with respondents' ages ranging from 28 to 86. Given the changing life and work circumstances individuals typically encounter as they approach average retirement age, it was necessary to consider removing outliers on the upper end of this age range. An analysis of data from 16,000 faculty members from 104 U.S. colleges and universities revealed that, across institution types, approximately 10% of 60-year old faculty members were expected to still be working until age 73 (Ashenfelter & Card, 2001). Given the relatively low percentage of faculty members expected to still be working at age 73, age 75 serves as a logical cutoff for age-based outliers in the current sample; respondents aged 76 or older (n = 11 and n = 2 for the main and follow-up samples, respectively) were excluded from all analyses.

In a similar vein, outliers were also assessed on respondents' age at PhD receipt. A respondent earning his/her PhD later in life is likely to be dealing with very different life and family circumstances when considering job search and career path decisions when compared to someone earning his/her PhD at age 30. For this reason, respondents earning their PhD later than age 50 (n = 16 and n = 3 for the main and follow-up samples, respectively) were removed from the sample and excluded from all analyses. Additionally, four cases were removed from the follow-up survey sample for all analyses

as they did not meet the criteria of being faculty members at the rank of assistant, associate, or full professors. These four cases were comprised of respondents in either emeritus/retired or non-faculty (e.g., staff, adjunct) positions.

Cases representing outliers on age and age at PhD receipt were removed from the sample and excluded from all analyses because they fall outside the population of interest due to their advanced age or heightened age at PhD, relative to the remaining respondents. A different set of variables was also assessed and outliers were removed, but on these variables only the outlying response on the given variable, rather than the entire case, was deleted. These variables were handled this way because these respondents still fall within the population of interest, but provided responses which fall outside the acceptable range on a given variable. On the first of these, age at birth of one's first child, respondents who were either very young (under age 18) or very old (over age 59) when their first child was born had their responses removed on this variable (n = 13 and n = 11 for the main and follow-up surveys, respectively). The cutoff age selected for the low end corresponds to reaching adulthood while the cutoff age selected for the high end represented a clear break in the data. In the follow-up sample, age at birth of one's first biological child was also assessed for outliers using these same cutoffs (data to distinguish biological children from non-biological children are available for the follow-up sample only); one outlier was present and this data point was deleted on this variable.

Respondents' self-reports of the total weekly hours they spend on childcare and on a variety of household tasks, and their reports of the total weekly hours their spouses/partners spend on the same tasks, were also assessed for outliers. A reasonableness-based cutoff of up to 60 hours/week each on total household labor and

childcare hours was applied to determine outliers on these four variables; values greater than 60 were deleted on these four variables. These variables are present in the follow-up sample only. There are 3, 8, 6, and 11 outlying data points, respectively, for the respondents' reports of their household labor, their childcare, their spouse/partner's household labor, and their spouse/partner's childcare, respectively.

3.3.3 Approach to Cohort Issue.

The main survey sample includes respondents from a several decades-wide range of both ages and cohorts defined by year of PhD receipt. The ages of main survey respondents range from 28 to 75 years (after the removal of outliers on age), and anywhere from 0 to 55 years have elapsed since they earned their PhDs. Academic life research has shown that shifts in both the nature of faculty experiences and the academic job market have taken place across recent decades (Bland, Center, Finstad, Risbey, & Staples, 2006; Milem et al., 2000; Sonnert, Fox, & Adkins, 2007). As a result of such temporally grounded changes, the job search and academic career path experiences of a faculty member who earned his/her PhD in the 1980s might be quite different from those of a faculty member who earned his/her PhD last year. These expected differences necessitate attention to cohort effects in analyses of academic career path decisions.

The representation of women in science & engineering fields has also shown marked shifts across cohorts based on year of PhD receipt, as demonstrated by an analysis of National Science Foundation (NSF) data on science and engineering doctoral recipients and their employment status at universities and 4-year colleges (http://www.nsf.gov/statistics/wmpd/2013/sex.cfm, accessed 4/4/13). Cohorts of PhD holders who earned their PhDs more recently are comprised of a larger portion of women

than are cohorts of less recent PhD earners, and this pattern holds across faculty ranks and within each specific faculty rank (please see Table 3). These changing gender distributions across cohorts further stress the importance of the variable of year of PhD receipt in understanding the experiences of male and female PhD holders, and the ways in which these experiences both match up and differ, as they embark and progress along their career paths.

Table 3.

National Science Foundation (NSF) Data on Science & Engineering (S&E) PhD Holders Employed at Universities and 4-year Colleges, by Faculty Rank and Years Since PhD receipt

	S&E occupations - all		S&E occupations – Professor		S&E occupations – Associate Professor		S&E occupations – Assistant Professor		S&E occupations – Other faculty	
	% male	% female	% male	% female	% male	% female	% male	% female	% male	% female
Total	68	32	81	19	66	34	59	41	56	44
< 10 years since PhD	57	43	63	38	58	42	59	41	48	52
10-19 years since PhD	65	35	73	27	66	34	61	39	49	51
20-29 years since PhD	74	26	78	22	67	33	57	43	64	36
30 + years since PhD	86	14	88	12	81	19	100	n/a	80	20

Note: S&E stands for Science & Engineering

Thus there is reason to expect that the approaches PhD holders take to their initial job searches and career path decisions may vary by the time period in which they earned their PhD. This issue was broadly examined by testing relevant hypotheses simultaneously for respondents who earned their PhDs before 1995 (Cohort 1) and respondents who earned their PhDs in 1995 or more recently (Cohort 2). This cutoff point of 1995 aligns with evidence that family-focused public policy efforts at a societal level, and specific work-family policies at universities, were beginning to garner increased attention during the mid-1990s; the Family Medical Leave Act of 1993 and heightened workforce participation of mothers of both infants and school-aged children each served as an impetus for this increased attention (Anderson, Morgan, & Wilson, 2002; Bhattacharjee, 2004; Bogenschneider, 2000; Boxer, 1996; Friedman, Rimsky, & Johnson, 1996; Hammer & Nguyen, 1995; Thompson & Kline, 2000). In a more practical vein, this cutoff point also allows for maintenance of sufficient power for testing most hypotheses when the sample is split. The relationship between years since PhD and age was investigated to gain an understanding of how these two variables are related in the main and follow-up samples. A high degree of correlation between these two variables indicates that preferentially relying on one of these variables for purposes of splitting the sample for analysis is a reasonable decision, as they should function similarly if they are highly correlated. Such a high degree of correlation was seen in both samples, with r = .92, $p < .001$ for the main sample and r = .91, $p < .001$ for the follow-up sample.

3.3.4 Operationalization of Institution Type Prestige Variable.

Prestige of higher education institutions is a difficult factor to operationalize (Morrison, Rudd, Picciano, & Nerad, 2011), and there are two distinct ways to

conceptualize this variable: prestige of broad institution types and prestige of individual institutions. A simple teaching-focused vs. research-focused dichotomy of institution types is one option (Fairweather & Rhoads, 1995); in general, research-focused institutions (e.g., research extensive and research intensive institutions) are considered more prestigious than teaching-focused institutions (e.g., masters and liberal arts institutions) (Federkeil, van Vught, & Westerheijden, 2012; Ruscio, 1987). However, there is much variability in prestige at the institutional level: a given liberal arts institution (within the broad category of teaching-focused institutions), may itself be considered more prestigious than a given research-intensive institution (within the broad category of research-focused institutions). The teaching vs. research institution type dichotomy, while useful, fails to capture the variability that exists in the prestige of specific institutions within each of these two broad categories.

There is a well-established link between institutional prestige or overall perceived institutional quality and the selectivity of the institution with respect to its undergraduate students (Morrison et al., 2011; O'Meara, 2007; Pascarella et al., 2006); undergraduate selectivity of each institution was used as a measure of individual institutional prestige. The Carnegie Foundation for Education tracks and records a wide variety of information about higher education institutions, and a variable from their database was selected to capture this institutional variance in selectivity: undergraduate classification profile. This variable is comprised of three qualities of the undergraduate student body: 1) primarily full-time vs. part-time enrollment, 2) scores on entrance exams, and 3) amount of transfer students These variables were collapsed over undergraduate selectivity (scores on entrance exams) to create a three-level variable for undergraduate selectivity: inclusive

(entrance exam data are either not reported, or are indicative of serving students of a wide range of ability levels), selective (students' entrance exam data place institutions within the middle two-fifths of baccalaureate institutions), and more selective (students' entrance exam data place institutions within the top one-fifth of baccalaureate institutions) (Carnegie Foundation Website, accessed 3/2/13: http://classifications.carnegiefoundation.org/descriptions/undergraduate_profile.php). Table 4 shows how the institutions within each broad institution type are distributed across the undergraduate selectivity variable. Within both samples, the majority of research extensive and liberal arts institutions fall into the "most selective" prestige category, while the majority of research intensive and masters institutions fall into the "selective" category. The sets of research intensive and masters institutions include institutions from all three selectivity categories, while the sets of research extensive and liberal arts institutions include institutions only from the "selective" and "most selective" categories.

Table 4.

Count and Percent of Institutions in Each Institution Type by Carnegie Undergraduate Profile Classification, Unweighted Counts

Main Survey Sample	Research Extensive		Research Intensive		Masters		Liberal Arts	
Undergraduate Selectivity Measure	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Inclusive	0	0.0	5	6.0	11	11.7	0	0.0
Selective	47	33.3	50	60.2	65	69.2	4	8.5
More Selective	94	66.7	28	33.7	18	19.2	43	91.5

Follow-up Survey Sample	Research Extensive		Research Intensive		Masters		Liberal Arts	
Undergraduate Selectivity Measure	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Inclusive	0	0.0	5	7.4	9	13.4	0	0.0
Selective	28	29.5	38	55.9	41	61.2	2	5.1
More Selective	67	70.5	25	36.8	17	25.4	37	94.9

To test both of these conceptualizations of prestige as predictors of the dependent variables of interest, institutional prestige was operationalized in two ways for each hypothesis involving this predictor: 1) the dichotomization of institution types into the broad categories of research-focused (including research intensive and research extensive institutions) and teaching-focused (including masters and liberal arts institutions), and 2) the selectivity of each institution's undergraduate student body, per classification data from the Carnegie Foundation. Because it represents the original conceptualization of this variable, the research vs. teaching-focused variable was used in the overall regression results. For hypotheses related to institutional prestige, versions of the relevant analyses using each conceptualization of this predictor will be presented and discussed.

3.3.5 Interpretation of Effect Sizes.

Throughout the results section, effect size estimates (e.g., *d, Φ*) are provided to aide in evaluation and interpretation of results of various statistical analyses. These effect sizes are interpreted with respect to Cohen's (1988) guidelines for small, medium, and large effects. These guidelines are provided in Table 5.

Table 5.

Effect Size Cutoffs for Small, Medium, and Large Effects, per Cohen (1988).

Effect size	Cutoff for small effect	Cutoff for medium effect	Cutoff for large effect
d	.20	.50	.80
Φ	.10	.30	.50

CHAPTER 4

RESULTS

The results are divided into four broad sections. In the first section, the main and follow-up survey samples will be described. The composition of each sample with respect to gender, institution type, and marital/family status will be provided. Summary statistics on key variables for each sample will also be presented in this section. The second, third, and fourth sections will include the results of hypothesis testing. In each of these sections, the hypotheses will be stated, and each hypothesis will be followed by a presentation of the statistical analysis designed to test it and the corresponding results. The second section will address a set of hypotheses on the impact of gender and family status on career path decisions at various time points along the academic career path. The third section will include hypotheses on gender and family status differences in time allocation to work and to family. Lastly, the fourth section will cover hypotheses on gender, personality, and academic network utilization as they relate to experienced levels of work-family conflict.

4.1 Description of Samples

4.1.1 Main Survey Sample.

The main survey dataset includes 486 unique institutions, with between 1 and 41 respondents at each institution. The weighted and unweighted counts for the sample composition with respect to the focal variables of gender, institution type, and family status are displayed in Table 6. Summary statistics including range, mean, *SD* and alpha (when applicable) on key survey variables are provided in Table 7. Given that most

analyses were performed on the sample split into two cohorts, the information in Tables 6 and 7 is provided for the full sample and for each cohort.

Table 6.

Composition of Main Survey Sample With Respect to Gender, Institution Type, and Family Status (Weighted and Unweighted Counts)

	Full sample (N = 4168)				Cohort 1 (n = 1910)				Cohort 2 (n = 2066)			
	unweighted		weighted		unweighted		weighted		unweighted		weighted	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Gender:												
Male	2369	56.8	6993	71.7	1229	64.3	4165	79.0	1033	50.0	2531	62.1
Female	1799	43.2	2765	28.3	681	35.7	1108	21.0	1033	50.0	1542	37.9
Institution Type:												
Research Extensive	1146	27.5	5003	51.3	532	27.9	2949	55.9	564	27.3	1845	45.3
Research Intensive	760	18.2	1547	15.9	360	18.9	858	16.3	372	18.0	640	15.7
Masters	721	17.3	1475	15.1	269	14.1	621	11.8	406	19.7	778	19.1
Liberal Arts	545	13.1	581	6.0	281	14.7	301	5.7	255	12.3	270	6.6
Other	994	23.9	1150	11.8	466	24.4	543	10.3	469	22.7	541	13.3
Family Status:												

Table 6 continued.

	Full sample (*N* = 4168)				Cohort 1 (*n* = 1910)				Cohort 2 (*n* = 2066)			
	unweighted		weighted		unweighted		weighted		unweighted		weighted	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Married/Marriage-like relationship, with dependent child(ren)	1565	37.5	3342	34.2	488	25.5	1176	22.3	1065	51.5	2143	52.6
Married/Marriage-like relationship, without dependent children	1388	33.3	3655	37.5	934	48.9	2796	53.0	432	20.9	828	20.3
Unmarried/not in marriage-like relationship, with dependent child(ren)	86	2.1	167	1.7	45	2.4	81	1.5	40	1.9	84	2.1
Unmarried/not in marriage-like relationship, without dependent child(ren)	410	9.8	893	9.2	174	9.1	447	8.5	228	11.0	430	10.6
Insufficient marital/family status info	719	17.3	1701	17.4	269	14.1	774	14.7	301	14.6	588	14.4

Table 7.

Summary Statistics on Key Variables, Main Survey Data (Weighted Values)

	main sample								Cohort 1		Cohort 2		*d*
Measure	*n*	min	max	*M*	*SD*	skewness	kurtosis	alpha	*M*	*SD*	*M*	*SD*	
Work-Family Conflict	3375	1.00	4.00	2.66	0.72	-0.10	-0.15	0.93	2.56	0.68	2.80	0.75	0.34
Social Potency	3070	1.00	4.00	2.69	0.41	-0.05	0.52	0.83	2.70	0.38	2.68	0.44	-0.05
Social Closeness	3180	1.00	4.00	2.81	0.45	-0.09	0.68	0.89	2.77	0.43	2.85	0.47	0.18
Workload	3431	0.00	120.00	54.18	12.02	-0.12	2.23	n/a	54.65	10.55	53.60	13.86	-0.09
Approximate age	3300	28.00	75.00	50.66	10.79	0.30	-0.77	n/a	58.02	6.75	41.14	6.59	-2.53
Year PhD	3976	1958.00	2010.00	1990.65	11.41	-0.63	-0.39	n/a	1982.47	7.46	2001.24	4.25	3.00
Age First Child Born	2292	18.00	54.00	32.49	5.43	0.27	0.44	n/a	32.49	5.53	32.55	5.02	0.01

Table 7 continued.

Measure	main sample								Cohort 1		Cohort 2		*d*
	n	min	max	*M*	*SD*	skewness	kurtosis	alpha	*M*	*SD*	*M*	*SD*	
Count network - work-family balance advice	3625	0.00	19.00	1.36	1.94	1.91	5.26	n/a	1.10	1.60	1.72	2.35	0.32
Age At PhD	3272	23.00	50.00	30.23	4.02	1.55	3.27	n/a	29.45	3.27	31.25	4.75	0.45

Note: min = minimum value; max = maximum value; *M* = mean; *SD* = standard deviation; *d* = Cohen's *d* value

The weighted counts from the full sample show that the majority of the respondents are male (roughly 72%), and that Cohort 1 has a slightly higher percentage (roughly 79%) while Cohort 2 has a slightly lower percentage (roughly 62%) of men as compared to the full sample. The majority of the respondents work at research extensive institutions (roughly 51%, 56%, and 45%, for the full sample, Cohort 1 sample, and Cohort 2 sample, respectively), while 10% to 20% of respondents across the full, Cohort 1 and Cohort 2 samples work at research intensive and another 10% to 20% work at masters institutions, and 5% to 7% of respondents across the full, Cohort 1 and Cohort 2 samples work at liberal arts institutions. Most survey respondents are married (roughly 72%), and a larger portion of Cohort 2 respondents have dependent children as compared to Cohort 1 respondents.

The work-family conflict, social potency, and social closeness scales have acceptable internal consistency reliability values ($\alpha = 0.93$, 0.83, and 0.89, respectively). Significant differences between the two cohorts are present on WFC ($d = 0.34$), social closeness ($d = 0.18$), approximate age ($d = 2.53$), year of PhD ($d = 3.00$), count of network members from whom work-family balance advice is sought ($d = 0.32$), and age when PhD was earned ($d = 0.45$); given the construction of the cohort split, the large cohort differences on several of these variables (i.e., approximate age, year of PhD) is unsurprising, while the cohort differences on several variables (i.e., WFC, count of network members from whom work-family balance advice is sought) align with the fact that more respondents in Cohort 2 have dependent children than in Cohort 1. The sizeable cohort difference on age at PhD is interesting, as it indicates that respondents in Cohort 2

were, on average, significantly older (roughly 2 years older) when they earned their PhDs than were Cohort 1 respondents.

4.1.2 Follow-up Survey Sample.

The follow-up survey dataset includes 272 unique institutions, with between 1 and 9 respondents at each institution. The weighted and unweighted counts for the sample composition with respect to the focal variables of gender, institution type, and family status are displayed in Table 8. Summary statistics including range, mean, *SD* and alpha (when applicable) on key survey variables are provided in Table 9. Given that most analyses were performed on the sample split into two cohorts, the information in Tables 8 and 9 is provided for the full sample and for each cohort.

Table 8.

Composition of Follow-up Survey Sample With Respect to Gender, Institution Type, and Family Status (Weighted and Unweighted Counts)

	Full sample (N = 703)				Cohort 1 (n = 300)				Cohort 2 (n = 401)			
	unweighted		weighted		unweighted		weighted		unweighted		weighted	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Gender:												
Male	319	45.4	1133	64.8	163	54.3	695	75.6	155	38.7	435	45.4
Female	384	54.6	615	35.2	137	45.7	224	24.4	246	61.3	389	54.6
Institution Type:												
Research Extensive	192	27.3	872	49.9	94	31.3	524	57.0	98	24.4	348	27.2
Research Intensive	172	24.5	325	18.6	71	23.7	172	18.7	101	25.2	153	24.3
Masters	175	24.9	378	21.6	58	19.3	143	15.6	115	28.7	230	24.9
Liberal Arts	164	23.3	173	9.9	77	25.7	80	8.7	87	21.7	93	23.6
Family Status:												

Table 8 continued.

	Full sample (*N* = 703)				Cohort 1 (*n* = 300)				Cohort 2 (*n* = 401)			
	unweighted		weighted		unweighted		weighted		unweighted		weighted	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Married/Marriage-like relationship, with dependent child(ren)	360	51.2	798	45.7	104	34.7	266	28.9	255	63.6	530	51.1
Married/Marriage-like relationship, without dependent children	235	33.4	704	40.3	149	49.7	509	55.3	85	21.2	193	33.7
Unmarried/not in marriage-like relationship, with dependent child(ren)	11	1.6	20	1.1	3	1.0	6	0.6	8	2.0	14	1.6
Unmarried/not in marriage-like relationship, without dependent child(ren)	97	13.8	226	12.9	44	14.7	139	15.1	53	13.2	87	13.7

Table 9.

Summary Statistics on Key Variables, Follow-up Survey Data (Weighted Values)

	main sample								Cohort 1		Cohort 2		*d*
	n	min	max	*M*	*SD*	skewness	kurtosis	alpha	*M*	*SD*	*M*	*SD*	
Work-Family Conflict	684	1.00	6.00	3.69	1.30	-0.31	-0.53	0.92	3.40	1.15	4.02	1.38	0.49
Social Potency	650	1.00	4.00	2.75	0.42	-0.03	0.81	0.84	2.80	0.38	2.71	0.47	-0.21
Social Closeness	671	1.00	4.00	2.83	0.44	-0.03	0.58	0.89	2.81	0.41	2.86	0.46	0.12
Work Centrality	672	1.58	6.00	3.65	0.79	0.06	-0.18	0.83	3.77	0.73	3.52	0.82	-0.32
Workload	699	9.00	90.00	50.98	9.93	-0.16	1.70	n/a	51.40	8.84	50.55	11.05	-0.09
Approximate age	695	29.00	74.00	49.60	10.57	0.32	-0.67	n/a	57.41	5.90	40.82	7.29	-2.52
Year PhD	701	1965.00	2010.00	1991.61	10.92	-0.67	-0.25	n/a	1983.05	6.71	2001.16	4.54	3.13

Table 9 continued.

	main sample								Cohort 1		Cohort 2		*d*
	n	min	max	*M*	*SD*	skewness	kurtosis	alpha	*M*	*SD*	*M*	*SD*	
Age First Biological Child Born	481	18.00	55.00	32.68	5.54	0.40	1.14	n/a	32.63	5.70	32.76	5.06	0.02
Household labor hours (self)	660	0.00	53.00	17.75	9.43	1.08	1.44	n/a	18.64	8.99	16.70	9.48	-0.21
Childcare hours (self)	352	0.00	60.00	14.47	14.76	1.42	1.32	n/a	8.02	7.84	17.48	16.52	0.66
Household labor hours (spouse)	538	0.00	60.00	19.74	10.88	1.15	1.63	n/a	21.00	9.41	18.43	12.22	-0.24
Childcare hours (spouse)	337	0.00	60.00	15.65	13.70	1.23	0.63	n/a	10.27	8.76	18.26	15.06	0.60
Count network - work-family balance advice	701	0.00	12.00	1.58	1.92	1.49	2.65	n/a	1.19	1.52	2.02	2.27	0.43
Age At PhD	693	24.00	50.00	30.17	4.14	1.85	4.53	n/a	29.46	2.89	30.97	5.36	0.36

Table 9 continued.

	main sample								Cohort 1		Cohort 2		*d*
	n	min	max	*M*	*SD*	skewness	kurtosis	alpha	*M*	*SD*	*M*	*SD*	
Family friendliness ratings - research jobs	661	1.00	4.00	1.83	0.84	0.80	-0.35	n/a	1.93	0.75	1.72	0.91	-0.25
Family friendliness ratings - teaching jobs	631	1.00	4.00	2.62	0.78	-0.25	-0.22	n/a	2.58	0.65	2.66	0.90	0.10

Note: min = minimum value; max = maximum value; *M* = mean; *SD* = standard deviation; *d* = Cohen's *d* value

The weighted counts from the follow-up sample show that men comprise the majority of the full (roughly 65%) and Cohort 1 (roughly 76%) samples, while women comprise the majority of the Cohort 2 sample (roughly 55%). The majority of the full (roughly 50%) and Cohort 1 (roughly 57%) respondents work at research extensive institutions, with roughly 15% to 20% of both the full and Cohort 1 respondents working at research intensive institutions and another 15% to 20% of both the full and Cohort 1 respondents working at masters institutions, and less than 10% of both the full and Cohort 1 respondents working at liberal arts institutions. In the Cohort 2 sample, roughly ¼ of the respondents work at each institution type. As was the case in the full sample, the majority of follow-up respondents are married (roughly 86%), and a larger portion of Cohort 2 respondents have dependent children as compared to Cohort 1 respondents.

The work-family conflict, social potency, social closeness, and work centrality scales have acceptable internal consistency reliability values ($\alpha = 0.92$, 0.84, 0.89, and 0.83, respectively). Significant differences between the two cohorts are present on WFC ($d = 0.49$), work centrality ($d = 0.32$), approximate age ($d = 2.52$), year of PhD ($d = 3.13$), self-reported childcare hours worked by the respondent ($d = 0.66$), self-reported childcare hours worked by the respondent's spouse/partner ($d = 0.60$), count of network members from whom work-family balance advice is sought ($d = 0.43$), and age when PhD was earned ($d = 0.36$); given the construction of the cohort split, the large cohort differences on several of these variables (i.e., approximate age, year of PhD) is unsurprising, while the cohort differences on several variables (i.e., WFC, count of network members from whom work-family balance advice is sought, both reports of childcare hours) align with the fact that more respondents in Cohort 2 have dependent children than in Cohort 1. The

sizeable cohort difference on age at PhD is interesting, as it indicates that respondents in Cohort 2 are, on average, significantly older (roughly 1.5 years older) when they earn their PhDs than were Cohort 1 respondents.

4.2 Gender, Family, and Career Path Decisions

In this section, results related to the impact of gender and family status on career path decisions will be presented. A binary logistic regression analysis will be used to test predictors of reported preference for either a research-intensive environment or a teaching-intensive environment during one's initial post-PhD job search. Gender differences in various adjustments to career and family plans, including delaying having children, using tenure clock stop policies, and declining opportunities at work, will be assessed. The role of personality traits and values (social potency, social closeness, and work centrality) in career path decisions, as well as the extent to which men and women differ on these variables, will also be addressed in this section.

4.2.1 Testing of Initial Job Preference Logistic Regression Model.

Several hypotheses related to the prediction of faculty members' job preferences at the time of their initial post-PhD job search were tested within a binary logistic regression framework. This analysis allows for an assessment of the strength of the respective relationship between each individual predictor and the dependent variable, and also for an estimate of the total variance in initial job preference that is explained collectively by the full set of predictors. Please see Figure 3 for this model.

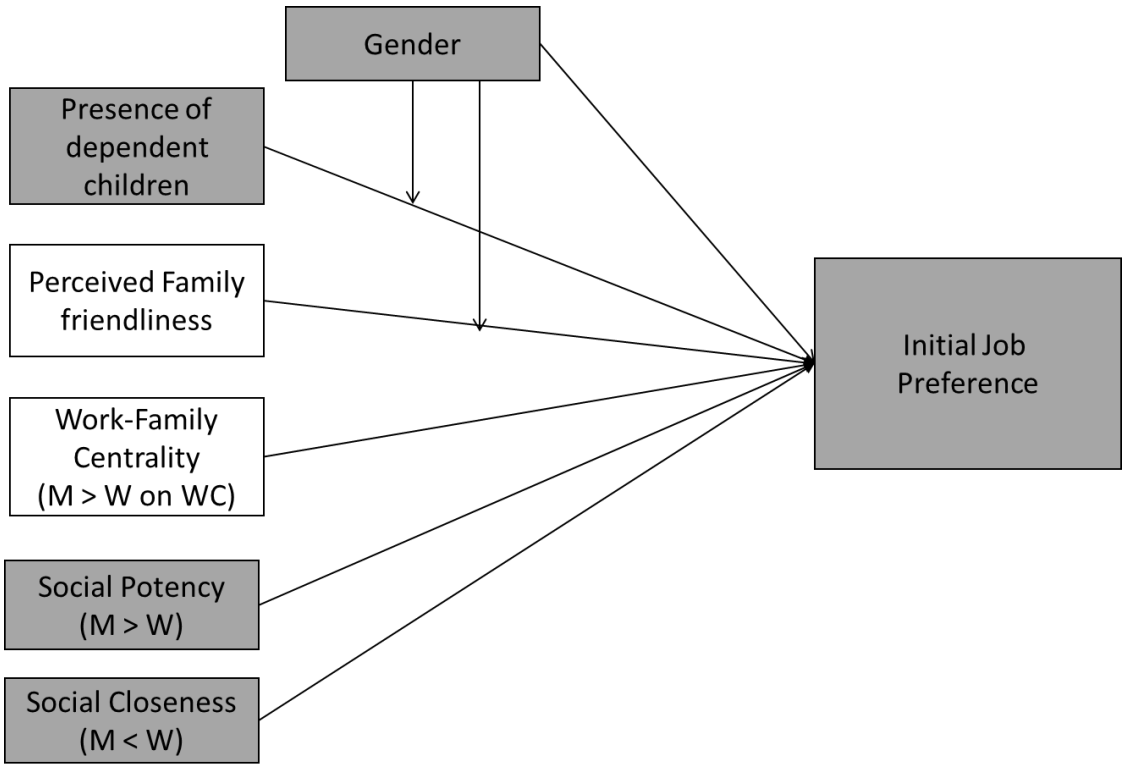

Figure 3: Binary logistic regression model predicting initial job preference
(note: M = men, W = women, WC = work centrality)

Data on variables included in the main survey (grey boxes) are available from the full sample, while data on variables included only in the follow-up survey (white boxes) are available from the follow-up survey sample only. In order to deal with these two types of data, a partial version of the above model (grey boxes only) was tested with the full sample. Subsequently, the full model was tested with the follow-up sample only. This model was intended to be tested on all survey respondents, regardless of their family and marital status. However, the wording of the sole question in the main survey about

presence of dependent children and their ages ("If you have dependent children, what are their current ages?") precludes a determination that some respondents do not have children. If a respondent has non-dependent children and did not list them, it is impossible to determine whether a child was present at the time of the initial job search. For this reason, a conservative approach was taken to setting up the variable presence of children at initial job search, such that this variable was constructed only for respondents who provided children's age data, and was set as missing for respondents who did not provide children's age data. This issue with the wording of this item was fixed in the follow-up survey and so the parallel analysis of this model with follow-up survey data does not have this problem.

Within the binary logistic regression framework, one category group from the categorical dependent variable is treated as the baseline group for comparison, and the other category group is contrasted with this baseline group (Cohen, Cohen, West, & Aiken, 2003). In this model, preference for a tenure track position in a research intensive environment served as the baseline group, so the likelihood of preferring a tenure track faculty position in a teaching intensive environment relative to the likelihood of preferring a tenure track faculty position in a research intensive environment is being predicted.

In both analyses, respondents who provided information indicating that they were very young (less than 18 years old) at the birth of their first child were filtered out. These respondents were excluded from this analysis because they represent outliers and their experiences with respect to incorporating these children into their career plans likely differ in meaningful ways from those of other respondents. In 10 of the 11 cases of this

type present in the follow-up survey data, the children causing this extremely low age at birth of first child were stepchildren; these data on presence of stepchildren are not available for the main survey sample. Stepchildren and adopted children in general, however, were not excluded from computation of this variable in the follow-up sample, as these children could have been present at one's initial job search and would likely exert similar effects as biological children.

The partial model was tested separately for Cohort 1 (PhD earned prior to 1995) and Cohort 2 (PhD earned 1995 or later) with data from the main survey respondents. The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimated yielded a significant Chi-square test for both Cohort 1 ($\chi^2(8, N = 880) = 33.93, p = .00$) and for Cohort 2 ($\chi^2(8, N = 902) = 18.70, p = .02$), indicating that the weighed and unweighted estimates are significantly different. Given the hypothesized relationships between the dependent variable and variables related to the weights (gender and institution type), respecifying the model to create independence between the dependent variable and the weights was not a viable option. So, per Winship & Radbill's (1994) recommendation, the weighted version of this regression model was used. The results from this weighted logistic regression analysis of the partial model tested with the main survey sample are presented in Table 10 (Cohort 1) and Table 11 (Cohort 2).

Table 10.

Summary of Weighted Binary Logistic Regression Analysis for Variables Predicting Initial Job Choice (Partial Model Tested With Main Survey Data, Cohort 1)

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Step 1						
Rank: Assistant vs. Associate	1.51	0.56	1.12	0.26	0.73	3.11
Rank: Associate vs. Full	1.74	0.37	2.61	0.01	1.15	2.63
Constant	0.53	0.11	-3.16	0.00	0.36	0.79
Step 2						
Rank: Assistant vs. Associate	1.29	0.53	0.63	0.53	0.58	2.88
Rank: Associate vs. Full	1.56	0.36	1.91	0.06	0.99	2.47
Gender	1.64	0.35	2.31	0.02	1.08	2.51
Dependent Children at 1st job search	1.40	0.32	1.47	0.14	0.89	2.21
Social Potency	0.70	0.25	-1.01	0.31	0.35	1.40
Social Closeness	1.36	0.37	1.14	0.26	0.80	2.33
Constant	0.43	0.37	-0.97	0.33	0.08	2.33
Step 3						
Rank: Assistant vs. Associate	1.27	0.54	0.55	0.58	0.55	2.94
Rank: Associate vs. Full	1.56	0.38	1.83	0.07	0.97	2.50
Gender	1.36	0.35	1.20	0.23	0.82	2.26
Dependent Children at 1st job search	1.22	0.33	0.73	0.47	0.71	2.09

Table 10 continued.

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Social Potency	0.70	0.24	-1.03	0.30	0.35	1.38
Social Closeness	1.38	0.38	1.20	0.23	0.81	2.36
Gender X Dependent Children at 1st job search	2.02	0.92	1.54	0.12	0.83	4.92
Constant	0.44	0.38	-0.96	0.34	0.08	2.35

Note: OR (odds ratio) = Exp (B); SE = standard error; CI = confidence interval

Step 1: χ^2 (2, N = 880) = 8.83, p = .01; R^2 = .02

Step 2: $\Delta\chi^2$ (4, N = 880) = 8.59, p = .07;
χ^2 (6, N = 880) = 19.56, p = .00; R^2 = .03

Step 3: $\Delta\chi^2$ (1, N = 880) = 2.38, p = .12;
χ^2 (7, N = 880) = 24.52, p = .00; R^2 = .03

Table 11.

Summary of Weighted Binary Logistic Regression Analysis for Variables Predicting Initial Job Choice (Partial Model Tested With Main Survey Data, Cohort 2)

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Step 1						
Rank: Assistant vs. Associate	0.84	0.14	-1.07	0.29	0.61	1.16
Rank: Associate vs. Full	0.79	0.19	-0.99	0.32	0.50	1.26
Constant	0.61	0.08	-3.70	0.00	0.47	0.79
Step 2						
Rank: Assistant vs. Associate	0.83	0.14	-1.17	0.24	0.60	1.14
Rank: Associate vs. Full	0.76	0.18	-1.14	0.26	0.47	1.22
Gender	1.71	0.34	2.75	0.01	1.17	2.52
Dependent Children at 1st job search	1.59	0.33	2.24	0.03	1.06	2.38
Social Potency	1.39	0.38	1.22	0.22	0.82	2.37
Social Closeness	0.68	0.16	-1.64	0.10	0.42	1.08
Constant	0.52	0.41	-0.83	0.41	0.11	2.41
Step 3						
Rank: Assistant vs. Associate	0.83	0.14	-1.13	0.26	0.60	1.15
Rank: Associate vs. Full	0.77	0.19	-1.07	0.29	0.48	1.24
Gender	1.55	0.37	1.83	0.07	0.97	2.49
Dependent Children at 1st job search	1.44	0.40	1.32	0.19	0.84	2.49

Table 11 continued.

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Social Potency	1.39	0.38	1.21	0.23	0.82	2.38
Social Closeness	0.68	0.16	-1.63	0.10	0.42	1.08
Gender X Dependent Children at 1st job search	1.29	0.52	0.63	0.53	0.59	2.84
Constant	0.54	0.43	-0.78	0.44	0.12	2.53

Note: OR (odds ratio) = Exp (B); SE = standard error; CI = confidence interval

Step 1: χ^2 (2, N = 902) = 1.26, p = .54; R^2 = .003

Step 2: $\Delta\chi^2$ (4, N = 902) = 11.84, p = .02
χ^2 (6, N = 902) = 15.37, p = .02; R^2 = .02

Step 3: $\Delta\chi^2$ (1, N = 902) = 0.40, p = .53
χ^2 (7, N = 902) = 16.38, p = .02; R^2 = .02

The Cohort 1 results suggest that the set of predictors added in Model 2 ($\Delta \chi^2$ (4, N = 880) = 8.59, p = .07) and the interaction term predictor added in Model 3 ($\Delta \chi^2$ (1, N = 880) = 2.38, p = .12) each explained a nonsignificant amount of incremental variance in the dependent variable, suggesting that this model does not fit the Cohort 1 data very well. In Model 1 for Cohort 1, the only significant predictor of first job choice is:

Rank, associate vs. full professor status, with being at the rank of associate professor increasing the likelihood of preferring a teaching job, relative to a research job, to a level 1.74 times that demonstrated by respondents at full professor status [so this preference is more likely among associate professors than among full professors].

For Cohort 2, adding the set of predictors in Model 2 ($\Delta \chi^2$ (4, N = 902) = 11.84, p = .02) explained a significant amount of incremental variance, while the addition of the interaction term in Model 3 ($\Delta \chi^2$ (1, N = 902) = 0.40, p = .53) explained a nonsignificant amount of incremental variance. In Model 2 for Cohort 2, significant predictors of first job preference are:

Gender, with being female increasing the likelihood of preferring a teaching job, relative to a research job, to a level 1.71 times that demonstrated by males in the sample [so this preference is more likely among women].

Having a dependent child at one's initial job search, with the presence of one or more dependent children at one's initial job search increasing the likelihood of preferring a teaching job, relative to a research job, to a level 1.59 times that seen among respondents without children at one's initial job search [so this preference is more likely among respondents who had one or more children at the time of their initial job search].

These predictors collectively explain only a small portion of the variance in first job choice, with Model 1 accounting for roughly 2% of the variance in first job choice in Cohort 1, and the predictors in Models 2 and 3 not explaining significant incremental variance over the predictors in Model 1 for Cohort 1, and Model 2 accounting for roughly 2% of the variance in first job choice for Cohort 2. So taken together, these predictors do not account for a substantial portion of the variance in first job preference.

The full model was tested separately on Cohort 1 and on Cohort 2 with data from the follow-up survey. All variables displayed in Figure 3 were included in this model. The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimated yielded a nonsignificant Chi-square test for both Cohort 1 (χ^2 (13, N = 199) = 8.93, p = .78) and Cohort 2 (χ^2 (13, N = 289) = 9.97, p = .69), indicating that the weighed and unweighted estimates do not differ significantly. Following a nonsignificant result of this comparison procedure, Winship & Radbill (1994) recommend proceeding with the unweighted regression estimates. Note, however, that this procedure required use of the weighted estimates for the partial version of this model (Tables 10 & 11 above). To allow for consistency between the full and partial versions of this model, the weighted regression estimates for the full model are presented here in Table 12 (Cohort 1) and Table 13 (Cohort 2).

Table 12.

Summary of Weighted Binary Logistic Regression Analysis for Variables Predicting Initial Job Choice (Full Model Tested With Follow-up Survey Sample, Cohort 1)

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Step 1						
Rank: Assistant vs. Associate	3.54	1.95	2.28	0.02	1.20	10.45
Rank: Associate vs. Full	2.11	0.70	2.23	0.03	1.10	4.05
Constant	0.67	0.20	-1.33	0.18	0.37	1.21
Step 2						
Rank: Assistant vs. Associate	3.42	2.36	1.78	0.08	0.88	13.25
Rank: Associate vs. Full	1.49	0.62	0.97	0.33	0.66	3.36
Gender	2.20	0.92	1.90	0.06	0.97	4.98
Dependent Children at 1st job search	1.00	0.46	-0.01	0.99	0.41	2.44
FF – research jobs	0.32	0.09	-3.99	0.00	0.18	0.56
FF – teaching jobs	2.99	1.08	3.03	0.00	1.47	6.07
Work Centrality	0.57	0.13	-2.40	0.02	0.36	0.90
Social Potency	0.45	0.27	-1.33	0.18	0.14	1.46
Social Closeness	1.59	0.81	0.90	0.37	0.58	4.31
Constant	3.39	5.76	0.72	0.47	0.12	94.55
Step 3						
Rank: Assistant vs. Associate	3.43	2.28	1.86	0.06	0.93	12.60
Rank: Associate vs. Full	1.53	0.62	1.05	0.29	0.69	3.38

Table 12 continued.

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Gender	2.15	4.18	0.39	0.69	0.05	97.12
Dependent Children at 1st job search	1.12	0.65	0.19	0.85	0.36	3.50
FF – research jobs	0.22	0.09	-3.67	0.00	0.10	0.50
FF – teaching jobs	3.83	2.04	2.52	0.01	1.35	10.87
Work Centrality	0.59	0.14	-2.29	0.02	0.37	0.93
Social Potency	0.50	0.29	-1.19	0.23	0.16	1.56
Social Closeness	1.49	0.76	0.78	0.44	0.55	4.04
Gender X Dependent Children at 1st job search	0.87	0.71	-0.17	0.87	0.18	4.29
Gender X FF - research jobs	2.71	1.57	1.72	0.09	0.87	8.45
Gender X FF - teaching jobs	0.55	0.35	-0.94	0.35	0.16	1.91
Constant	2.47	4.72	0.47	0.64	0.06	105.00

Note: OR = Exp(B); SE = standard error; CI = confidence interval; FF = family friendliness rating

Step 1: χ^2 (2, N = 199) = 5.97, p = .06; R^2 = .02

Step 2: $\Delta\ \chi^2$ (7, N = 199) = 32.33, p = .00
χ^2 (9, N = 199) = 35.17, p = .00; R^2 = .24

Step 3: $\Delta\ \chi^2$ (3, N = 199) = 3.70, p = .30
χ^2 (12, N = 199) = 33.43, p = .00; R^2 = .25

Table 13.

Summary of Weighted Binary Logistic Regression Analysis for Variables Predicting Initial Job Choice (Full Model Tested With Follow-up Survey Sample, Cohort 2)

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Step 1						
Rank: Assistant vs. Associate	1.14	0.33	0.47	0.64	0.65	2.02
Rank: Associate vs. Full	1.44	0.51	1.01	0.31	0.71	2.89
Constant	0.78	0.17	-1.17	0.24	0.51	1.18
Step 2						
Rank: Assistant vs. Associate	1.02	0.27	0.07	0.94	0.60	1.72
Rank: Associate vs. Full	1.30	0.41	0.82	0.41	0.70	2.43
Gender	1.35	0.46	0.89	0.38	0.69	2.64
Dependent Children at 1st job search	2.04	0.80	1.82	0.07	0.95	4.41
FF – research jobs	0.58	0.14	-2.30	0.02	0.37	0.92
FF – teaching jobs	1.54	0.39	1.68	0.09	0.93	2.53
Work Centrality	0.98	0.22	-0.09	0.93	0.63	1.53
Social Potency	0.90	0.43	-0.23	0.82	0.35	2.29
Social Closeness	1.41	0.54	0.90	0.37	0.66	3.00
Constant	0.24	0.39	-0.88	0.38	0.01	5.87
Step 3						
Rank: Assistant vs. Associate	1.03	0.26	0.13	0.90	0.63	1.69
Rank: Associate vs. Full	1.30	0.41	0.82	0.41	0.69	2.42

Table 13 continued.

Predictor	OR	Robust SE	Z	*P* (Z)	Lower 95% CI	Upper 95% CI
Gender	1.55	2.15	0.32	0.75	0.10	23.35
Dependent Children at 1st job search	3.25	2.02	1.89	0.06	0.96	10.98
FF – research jobs	0.71	0.25	-0.95	0.34	0.35	1.43
FF – teaching jobs	1.32	0.50	0.73	0.47	0.63	2.78
Work Centrality	1.02	0.23	0.09	0.93	0.65	1.59
Social Potency	0.83	0.37	-0.43	0.67	0.34	2.00
Social Closeness	1.52	0.57	1.11	0.27	0.73	3.18
Gender X Dependent Children at 1st job search	0.40	0.31	-1.17	0.24	0.09	1.84
Gender X FF - research jobs	0.69	0.32	-0.80	0.42	0.28	1.70
Gender X FF - teaching jobs	1.28	0.65	0.49	0.63	0.47	3.46
Constant	0.21	0.36	-0.92	0.36	0.01	5.97

Note: OR = Exp(B); SE = standard error; CI = confidence interval; FF = family friendliness rating

Step 1: χ^2 (2, N = 289) = 1.17, p = .56; R^2 = .01

Step 2: $\Delta\ \chi^2$ (7, N = 289) = 10.79, p = .15; χ^2 (9, N = 289) = 11.92, p = .22; R^2 = .06

Step 3: $\Delta\ \chi^2$ (3, N = 289) = 2.25, p = .52; χ^2 (12, N = 289) = 13.71, p = .21; R^2 = .06

For Cohort 1, the predictors included in Model 2 explain 24% of the variance in initial job preference. Adding the three interaction terms in Model 3 ($\Delta \chi^2$ (3, N = 199) = 3.70, p = .30) did not result in a significant increase in the variance explained, so results from Model 2 are interpreted. For Cohort 1, in Model 2, significant predictors of preferring a tenure-track faculty position in a teaching-intensive environment, relative to a tenure-track faculty position in a research-intensive environment, include:

Family-friendliness rating for jobs in research-intensive environments, with each one-unit increase over the sample mean in this family-friendliness score being associated with .32 times the probability of preferring teaching relative to research as is seen among those reporting the sample mean [so this preference is less likely for higher family-friendliness ratings for research jobs]; and

Family-friendliness rating for jobs in teaching-intensive environments, with each one-unit increase over the sample mean in this family-friendliness score being associated with 2.99 times the probability of preferring teaching relative to research as is seen among those reporting the sample mean [so this preference is more likely for higher family-friendliness ratings for teaching jobs]; and

Work centrality scores, with each one-unit increase over the sample mean in work centrality being associated with .57 times the probability of preferring teaching relative to research as is seen among those reporting the sample mean [so this preference is less likely for higher work centrality scores].

For Cohort 2, neither the addition of the set of predictors in Model 2 ($\Delta \chi^2$ (7, N = 289) = 10.79, p = .15) nor the addition of the three interaction terms in Model 3 ($\Delta \chi^2$ (3, N = 289) = 2.25, p = .52) accounted for significant incremental variance explained in the

dependent variable, indicating poor fit of this model for Cohort 2 respondents. The rank contrast predictors in Model 1 also failed to account for a significant amount of variance in first job choice for Cohort 2 respondents (χ^2 (2, N = 289) = 1.17, p = .56).

4.2.2 Impact of Gender and Family Status on Initial and Most Recent Job Search Decisions

The set of hypotheses that will be tested in this section relates to the expectation that the decisions respondents report having made during their initial and most recent job searches differ by gender, such that women are attracted to work environments that are perceived as more family friendly and are more influenced by family-related factors than are men, and that these gender differences are heightened among respondents with dependent children.

Hypothesis 1a: Gender (being female) will increase the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment (expected odds ratio = 1.40).

Gender was tested as a predictor of initial job preference in the binary logistic regression model displayed in Figure 3 in order to assess the hypothesis that being female will increase the likelihood of preferring a teaching-intensive environment during one's initial job search. Main survey data from Cohort 2 indicated that gender was a significant predictor of initial job preference in the predicted direction (*OR* = 1.71, p = .01 for Cohort 2), with being female increasing the likelihood of preferring a teaching-intensive environment relative to a research-intensive environment. But the total amount of variance accounted for by the full set of predictors in this model was approximately 2% for Cohort 2, suggesting that gender is not a very important predictor of initial job

preference. Gender was a nonsignificant predictor of initial job preference in the full model tested with Cohort 1 (*OR* = 2.20, *p* = .06) data. The step in which gender was added as a predictor failed to account for significant incremental variance over the control variables in the partial model tested with Cohort 1 data and in the full model tested with Cohort 2 data.

So overall, there is limited support for the hypothesis that women will express a heightened preference for teaching-intensive academic work environments over research-intensive academic work environments, relative to men, but the total variance explained in the model in which gender served as a significant predictor is quite low, suggesting that even if this predictor operates in the hypothesized manner, its practical importance is fairly low.

Hypothesis 1b: Gender (being female) will strengthen the relationship of the presence of dependent children (at the time of the job search) increasing the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment (expected odds ratio: 1.90).

The interaction of gender and the presence of dependent children at one's initial job search was tested as a predictor of initial job preference in the binary logistic regression model displayed in Figure 3. The purpose of this analysis was to test whether the impact of the presence of dependent children at one's initial job search on initial job preference varies by gender. This hypothesis is unsupported, as the step in which this interaction term was added did not explain a significant amount of incremental predicted variance in the dependent variable in the main survey Cohort 1 ($\Delta \chi^2$ (1, N = 880) = 2.38,

p = .12) or Cohort 2 ($\Delta \chi^2$ (1, N = 902) = 0.40, p = .53) results, or in the follow-up survey Cohort 1 ($\Delta \chi^2$ (3, N = 199) = 3.70, p = .30) or Cohort 2 ($\Delta \chi^2$ (3, N = 289) = 2.25, p = .52) results.

Hypothesis 2a: Women will be more likely than men to cite family considerations as a factor related to a job move (expected effect size: d = 0.25; estimated from published results).

This hypothesis was addressed with three series of items: 1) a set of yes/no items on whether a various set of factors had played a role in respondents' decision to leave their last job (presented in the main survey); 2 & 3) two series of items in which respondents were asked to rate the importance (on a scale from 1 = "not at all important to me" to 6 = "extremely important to me") of a set of factors in a) their initial and b) most recent job search decisions (presented in the follow-up survey). Family and non-family related factors were included to allow for an assessment of whether the approaches of men and women in attending to these factors differ depending on the nature of each factor. The levels of importance respondents report having assigned to various factors during their initial and most recent job searches were compared by gender using t-test and F-tests, depending on whether the item was asked in a ratings scale or yes/no response format.

Across these three sets of items, this hypothesis was supported, and a clear pattern was present in the results: on job-related factors, gender differences were rarely present and were in the direction of men providing higher endorsement/agreement levels than did women, while on family-related factors, gender differences were observed frequently and were in the direction of women providing higher endorsement/agreement levels than did

men. In the first set of items described above, a significant gender difference was evident in endorsement of "spouse job change", with women being more likely to endorse this factor than men in both Cohort 1 (Φ = .20, with 3.8% of men and 15.4% of women endorsing) and Cohort 2 (Φ = .20, with 4.2% of men and 11.4% of women endorsing). Women were also significantly more likely than men to cite family considerations as a contributing factor to their last job change (Φ = .16, with 18.6% of men and 28.5% of women endorsing) in Cohort 2; no gender difference was evident on this item in Cohort 1 (Φ = .03, with 18.1% of men and 21.1% off women endorsing). The job-related factors exhibited different patterns, with significant gender differences either being absent, or occurring in the direction of men being more likely to endorse these factors than women. Men were significantly more likely than women to endorse the following job-related factors: "had inadequate lab facilities/equipment" (Φ = .07, with 13.2% of men and 7.3% of women endorsing; effect was significant for Cohort 1 only), "did not have students with sufficient interests or skills" (Φ = .15, with 12.3% of men and 5.8% of women endorsing; effect was significant for Cohort 2 only), "disliked teaching load" (Φ = .16, with 11.4% of men and 4.9% of women endorsing; effect was significant for Cohort 2 only). Across cohort groups, gender differences were not observed on the following factors: did not have colleagues with close interests, disliked courses I had to teach, disliked departmental/institutional culture, disliked geographic location, was denied tenure, expected promotion denial, was denied formal leadership position, was offered formal leadership position elsewhere, and workload was too high.

In the 2nd and 3rd sets of items described above, Cohort 2 results reveal no significant gender differences on any of the job-related or family-related factors for initial

or most recent job search, with the exception of women providing significantly higher agreement for the factor "institutional emphasis on teaching" in their initial job search (*M* (*SD*) = 2.70 (1.61) and 3.27 (2.19) for men and women, respectively, *d* = 0.30). Among Cohort 1 respondents, there is evidence of a significant gender difference in the direction of women assigning a higher importance rating than men, in both the initial and most recent job searches, for the following factors: spouse's career plans (initial job search: *M* (*SD*) = 2.96 (1.29) and 4.86 (2.03) for men and for women, respectively, *d* = 1.28; most recent job search: *M* (*SD*) = 3.57 (1.25) and 5.16 (1.58) for men and for women, respectively, *d* = 1.19), availability of time to care for children (initial job search: *M* (*SD*) = 2.05 (1.15) and 3.39 (2.31) for men and for women, respectively, *d* = 0.90; most recent job search: *M* (*SD*) = 2.92 (1.14) and 4.29 (1.96) for men and for women, respectively, *d* = 1.00), availability of childcare for children (initial job search: *M* (*SD*) = 1.49 (0.79) and 3.10 (2.35) for men and for women, respectively, *d* = 1.23; most recent job search: *M* (*SD*) = 2.40 (1.18) and 4.00 (2.34) for men and for women, respectively, *d* = 1.04,), and overall family friendliness of the job (initial job search: *M* (*SD*) = 2.27 (1.09) and 3.25 (2.14) for men and for women, respectively, *d* = 0.71; most recent job search:, *M* (*SD*) = 3.10 (1.03) and 4.13 (1.82) for men and for women, respectively, *d* = 0.81).

Women in Cohort 1 also provided significantly higher levels of agreement than did men in one job search but not the other on the following factors: proximity to family and friends (*M* (*SD*) = 2.31 (1.11) and 3.08 (2.25) for men and for women, respectively, *d* = 0.53, significant effect in initial job search only), availability of schools for children (*M* (*SD*) = 3.76 (1.33) and 4.46 (2.04) for men and for women, respectively, *d* = 0.46, significant effect in most recent job search only), and institutional academic reputation

(Cohort 1: *M* (*SD*) = 4.66 (0.83) and 5.01 (1.09) for men and for women, respectively, *d* = 0.39, significant effect in most recent job search only). These effects are all of magnitudes greater than the hypothesized effect size of *d* = 0.25.

The finding that gender differences on many of these family-related factors are present in Cohort 1 but not in Cohort 2 is primarily driven by the fact that men in Cohort 2 found these factors to be substantially more important that do men in Cohort 1, while women in Cohort 2 rated these factors as roughly equally important, and in some cases as slightly less important, than did women in Cohort 1. On the six family-related factors, all on a rating scale from one to six, the average difference between scores from Cohort 1 men and Cohort 2 men was 1.07 points for initial job search and 0.70 points for recent job search, with Cohort 2 men scoring higher. Among women, Cohort 2 respondents provided scores across these items that were an average of 0.14 points lower for initial job search and 0.38 points lower for most recent job search, as compared to Cohort 1 women.

In a departure from the gender pattern seen with most of the family-related factors, there were few significant gender differences in importance ratings for the job-related factors. There is no evidence for a significant gender difference, in either the initial or most recent job search, among respondents from either cohort, on the following factors: salary, benefits, geographic location, alleviating a disliked aspect of the previous job (presented in the most recent job search section only), and institutional emphasis on research. Ample power to detect these effects was achieved, with power to detect a medium-sized effect ranging from $1 - \beta = .96$ - .99 in Cohort 1 and from $1 - \beta = .98$ - .99 in Cohort 2, depending on the specific n for each gender comparison.

Gender differences observed on another item support the findings discussed above on the greater weight women give to their spouse/partner's career plans than do men, but only among Cohort 1 respondents. Respondents who reported being married/in a marriage-like relationship were asked a locally-developed single item about whose career has driven family decisions, particularly decisions related to relocating for jobs. The average score for men and for women from both cohorts on this item indicate that their careers have driven such decisions to a larger extent that their spouse/partner's careers. There is a significant gender difference on this item among Cohort 1 respondents, with men's reports indicating a significantly higher level of their careers driving such decisions than do women's (Cohort 1: *M* (*SD*) = 1.69 (0.72) and 2.67 (1.41) for men and for women, respectively *d* = 1.06; on a response scale where 1 = mine almost entirely, 2 = mine more so than my spouse/partner's, 3 = mine and my spouse/partner's equally, 4 = my spouse/partner's more so than mine, and 5 = my spouse/partner's almost entirely). No such gender difference is apparent among Cohort 2 respondents (Cohort 2: *M* (*SD*) = 1.91 (0.95) and 2.22 (1.41) for men and for women, respectively, *d* = 0.26).

Hypothesis 1c: Gender (being female) will strengthen the relationship of a higher rating of perceived family friendliness of a position in a research-intensive environment decreasing the likelihood (and a higher rating of perceived family friendliness of a position in a teaching-intensive environment increasing the likelihood) of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment (expected odds ratio = 0.30 for family friendliness of a position in a research-intensive environment and 1.70 for family friendliness of a position in a teaching-intensive environment).

The interactions of gender and two separate family friendliness ratings (tenure track faculty position in a research intensive environment and tenure track faculty position in a teaching intensive environment) were each tested as predictors of initial job preference in the binary logistic regression analysis in order to assess whether the impact of these family friendliness ratings on initial job preference varies by gender. These family friendliness ratings were also entered as independent predictors so their impact irrespective of gender could be evaluated. These two predictors were entered into the full binary logistic regression model tested with the follow-up survey sample (data on these family-friendliness ratings were not collected from the main survey sample). The family friendliness ratings were entered as unique predictors in Model 2, and each was entered as an interaction term with gender in Model 3. These two interaction terms failed to significantly predict first job preference among respondents from either Cohort (gender by family friendliness rating of a tenure track faculty position in a research intensive environment: $OR = 2.71$, $p = .09$ for Cohort 1; $OR = 0.69$, $p = .42$ for Cohort 2; gender by family friendliness rating of a tenure track faculty position in a teaching intensive environment: $OR = 0.55$, $p = .35$ for Cohort 1; $OR = 1.28$, $p = .63$ for Cohort 2), thus failing to support this hypothesis.

Both types of family friendliness ratings operated on first job choice as independent predictors in Model 2 in a similar manner as indicated in this hypothesis, but only among Cohort 1 respondents. Within this group, heightened family friendliness scores for teaching intensive environments acted to significantly increase the likelihood of preferring a job in a teaching intensive environment ($OR = 2.99$, $p = .00$), and increased family friendliness scores for research intensive environments acted to

significantly decrease the likelihood of preferring a job in a teaching intensive environment (*OR* = 0.32, *p* = .00). These family friendliness ratings entered as independent factors were significant predictors of first job choice among Cohort 1 respondents, suggesting that they are important contributors to first job choice decisions for this group, but the level of importance does not vary by gender as hypothesized. Among Cohort 2 respondents, the step in which these family friendliness ratings were added as independent predictors failed to account for a significant amount of incremental variance over that explained by the predictors ($\Delta \chi^2$ (7, *N* = 289) = 10.79, *p* = .15).

Family friendliness ratings of teaching jobs did not differ significantly by gender for either cohort (on a rating scale from 1 = not at all family-friendly and 4 = extremely family-friendly, and with responses of "I don't know" filtered out, Cohort 1: *M* (*SD*) = 2.59 (0.55) and 2.55 (0.87) for men and for women, respectively *d* = 0.06, *p* = .74 ; Cohort 2: *M* (*SD*) = 2.66 (0.80) and 2.66 (1.03) for men and for women, respectively, *d* = 0.00, *p* = .97). A significant gender difference on family friendliness ratings of research jobs was present in Cohort 1 (*M* (*SD*) = 2.00 (0.65) and 1.69 (0.88) for men and for women, respectively, *d* = 0.45, *p* = .01), but was absent in Cohort 2 (*M* (*SD*) = 1.70 (0.80) and 1.75 (1.01) for men and for women, respectively, *d* = 0.06, *p* = .68).

A related predictor, the importance given to the family-friendliness of various jobs during one's initial job search, exhibited a similar pattern, with a significant gender difference on this variable being present in Cohort 1 (*M* (*SD*) = 2.27 (1.09) and 3.25 (2.14) for men and for women, respectively, *d* = 0.71, *p* = .00) but absent in Cohort 2 (*M* (*SD*) = 3.31 (1.50) and 3.36 (2.21) for men and for women, respectively, *d* = 0.03, *p* = .85). This variable was a significant predictor of initial job preference in Cohort 1 (*OR* =

1.44, p = .01, overall R^2 = .17) but not in Cohort 2 (OR = 1.20, p = .09, overall R^2 = .05), when an alternate version of the regression model in which this variable replaced the specific job-related family friendliness ratings was tested.

4.2.3 Biological Clock vs. Tenure Clock.

This section covers hypotheses related to the heightened preferential treatment of either career or family among women relative to men, as indicated by increased delays in starting a family and increased use of tenure clock stop policies among faculty women relative to faculty men.

Hypothesis 2b: When compared with U.S. national data on the average age at the birth of one's first child for women and men with a college degree (Amuedo-Dorantes & Kimmel, 2005; Martinez et al., 2006), women in the faculty sample will report having their first child at a significantly later average age relative to the corresponding national sample while men in the faculty sample will not (expected effect size: d = 0.50 for women; estimated by author).

One-sample t-tests were conducted separately for men and women in order to compare the average age at the birth of one's first child among faculty men and women to the respective national average age at the birth of one's first child among college-educated men and women. This test was intended to assess the extent to which faculty members delay childbirth relative to their college-educated peers; follow-up tests were also conducted to examine the extent to which the size of this delay varies by gender. Due to differences in the specificity of survey questions about respondents' children, for main survey respondents, this variable reflects their age when the oldest child they listed

was born, and for follow-up survey respondents, this variable reflects their age when the oldest child they listed and specified as a biological child was born.

While this hypothesis was intended to be tested with main survey data, it was also tested with follow-up survey data because the main survey question specifies dependent children when asking for the ages of one's children. The data reveal that many respondents ignored this part of the question and listed non-dependent (i.e., age 18 and older) children, but the presence of older children of respondents who only reported the ages of dependent children per the question's wording is not indicated by these data. For this reason, a parallel analysis was performed with data from the follow-up survey, in which the wording of the demographic questions about children specifically asked about both dependent and non-dependent children. As discussed in section 3.3.2 on the treatment of outliers, respondents who were less than 18 or older than 59 when their first child was born had their data recoded as missing on this variable.

Results from both of these analyses indicate that both male and female faculty members in both cohorts were significantly older at the birth of their first child than the national average for college-educated women and men (please see Table 14 for means and age comparisons by gender for both the main and follow-up samples, split by cohort). The hypothesized finding was that this age difference would exist for women but not for men, so the hypothesis as initially conceptualized is not supported. With a significant age difference present for both genders, a useful follow-up question is whether there exists a significant gender difference in the size of this age gap: are female faculty members waiting significantly longer than male faculty members, as compared to the national average ages for women and for men, to have their first child?

To address this follow-up question, Cohen's d values were computed from the sample means and standard deviations for each gender along with the respective national average comparison values for each gender, and 95% confidence intervals were constructed around these gender-specific d values (formulas for these calculations were taken from Hunter & Schmidt, 1990) (please see Table 14 for *d* values and 95% confidence intervals around these *d* values). The 95% confidence intervals around the *d* values for men and for women do not overlap for either cohort group in the main survey data, but they do overlap for both cohort groups in the follow-up survey data. So the size of this age difference does differ significantly by gender, with a larger deviation from the national average being found among women as compared to men, in the main survey data. The trend is in the same direction in the follow-up survey data, with the effect size of the difference being larger among women than among men in both cohort groups, but the 95% confidence intervals around the d values overlap, indicating that the size of the age gap does not differ significantly by gender.

Table 14.

Gender Comparisons of Age at Birth of First Child vs. National Average

Main Survey Data	Gender	*M*	*SD*	Comparison value	One-sample t-test result	*N* (unweighted)	*d* (from *M* & *SD*)	95% confidence interval around *d*	
Cohort 1	Men	32.27	4.97	29.40	*t* (3206) = 8.08, *p* = .00	754	0.58	0.50	0.66
	Women	33.37	6.35	26.30	*t* (3206) = 19.94, *p* = .00	387	1.11	0.94	1.28
Cohort 2	Men	32.54	4.69	29.40	*t* (3041) = 10.57, *p* = .00	595	0.67	0.56	0.78
	Women	32.57	5.77	26.30	*t* (3041) = 25.69, *p* = .00	537	1.09	0.94	1.23
Follow-up Survey Data	Gender	*M*	*SD*	Comparison value	One-sample t-test result	*N* (unweighted)	*d* (from *M* & *SD*)	95% confidence interval around *d*	
Cohort 1	Men	32.75	5.06	29.4	*t* (613) = 3.44, *p* = .00	123	0.66	0.48	0.84
	Women	32.22	5.77	26.3	*t* (613) = 9.71, *p* = .00	90	1.03	0.68	1.38
Cohort 2	Men	32.69	4.34	29.4	*t* (565) = 5.09, *p* = .00	104	0.76	0.53	0.99
	Women	32.84	6.00	26.3	*t* (565) = 13.53, *p* = .00	162	1.09	0.83	1.35

Note: *M* = mean; *SD* = standard deviation; *d* = Cohen's *d* value

The age-based analysis detailed in the preceding paragraphs represents a behaviorally-based examination of gender differences in family planning. Data on respondent's perceptions of the impact of their career goals on their family plans, and of the impact of their family goals on their career plans, were collected in a series of yes/no items presented in the follow-up survey. Women in Cohort 1 were significantly more likely than men in Cohort 1 to report that, because of their career goals, they had decided not to have children (endorsed by 2% of men and 18% of women, $\Phi = .25$), and they had decided not to have more children than they currently had (endorsed by 21% of men and 40% of women, $\Phi = .16$). Gender differences on these two decisions were not present among Cohort 2 respondents. So limiting the number of children one has is fairly common among academics, while deciding not to have children at all is less common, but both of these decisions are made more frequently by women than by men, among Cohort 1 respondents.

Cohort 1 respondents also reported that, because of their family goals, they had declined opportunities that would have advanced their academic careers (endorsed by 33% of men and 50% of women, $\Phi = .13$), that they had taken time off from the paid workforce (endorsed by 2% of men and 17% of women, $\Phi = .24$), and that they had worked part-time for a period of time (endorsed by 4% of men and 20% of women, $\Phi = .21$). Cohort 2 respondents differed by gender on two of these same decisions, with women being significantly more likely to endorse taking time off (endorsed by 2% of men and 16% of women, $\Phi = .22$) and working part time (endorsed by 5% of men and 11% of women, $\Phi = .12$). With respect to work adjustments made in service of career goals, declining opportunities was fairly common while taking time off and working part-

time were less frequently endorsed, but all of these were endorsed more frequently by women across both cohort groups (except that the gender difference on declining opportunities was not significant among Cohort 2 respondents). Gender differences were not observed in either cohort group on the following types of adjustments: delaying having children, delaying marriage, deciding not to get married, taking a different career path than was originally planned, and taking a more family friendly career path. These findings support the belief that women, to a larger extent than men, exhibit behaviors throughout their career paths which indicate the perceived need to choose between work and family, but primarily among Cohort 1, as such differences are seen less frequently among Cohort 2 respondents.

Hypothesis 2c: Women will be more likely than men to have extended or reset the tenure clock while at their current institution (expected effect size: d = 0.65; estimated by author).

The rates of endorsement/levels of agreement with the tenure clock stop/extension policy items were compared (using F-tests or t-tests, depending on the nature of the item) for men and women to determine whether women in these samples use such policies more frequently than do men. Please note that here and throughout the results section, when weighted results are presented for mean comparisons on categorical data in a two-by-two contingency table, the statistic being reported is a corrected F-test. This test is based on the typical Pearson X^2 statistic, but in order to account for the sampling weights, the uncorrected X^2 statistic is converted (using a second-order Rao & Scott correction) into a corrected F-statistic, for which the p-value can be interpreted in the same manner as the X^2 statistic p-value would be (Stata software support website,

http://www.stata.com/support/errata/i/stata11/svy_tab2.pdf, accessed 3/12/13). The typical effect size estimate for an F-test, f^2, cannot be computed from this corrected F-statistic because this is not a traditional F-test, and as such the information necessary to compute f^2 is not available. To provide an effect size estimate for this type of analysis, a phi coefficient will be computed from the uncorrected Pearson X^2 statistic.

In the main survey, respondents were asked a Yes/No item on whether they had extended or reset their tenure clock while at their current institution. Women from both cohorts were significantly more likely to endorse this item than were men, thus providing confirmation for this hypothesis (for Cohort 1, $F(1, 3732) = 24.12$, $p = .00$, $\Phi = .16$, with 4.4% of men and 15.0% of women endorsing; for Cohort 2, $F(1, 3715) = 24.12$, $p = .00$, $\Phi = .19$, with 7.1% of men and 19.2% of women endorsing). In the follow-up survey, a related question was presented: respondents were asked to rate the extent to which they agree with the statement: "Caring for my children has caused me to reset/extend my tenure clock" (on a response scale from 1 = "strongly disagree" to 6 = "strongly agree"). An independent samples t-test was conducted to test for a gender difference on this item. There was a significant gender difference among Cohort 1 respondents, with women reporting a higher level of agreement with the statement than did men, $t(638) = 3.363$, $p = .00$, $d = 0.72$ (M (SD) = 1.99 (2.25) and 1.17 (0.54) for women and for men, respectively). For Cohort 2 respondents, the effect exhibited a trend in the same direction but failed to reach significance at a level of $\alpha = .05$, with women reporting a higher level of agreement with the statement than did men, $t(583) = 1.87$, $p = .06$, $d = 0.30$ (M (SD) = 2.50 (2.67) and 1.84 (1.65) for women and for men, respectively). Results from both cohort groups on the main survey item and results from Cohort 1 on the follow-up survey

item support the hypothesis that use of tenure clock stop/extension policies will be higher among women than among men.

4.2.4 Gender, Personality and Values, and Initial Job Preference.

In this section, social potency, social closeness, and work centrality will each be tested for gender differences and as predictors of initial job preference.

Hypothesis 2d: Women will indicate significantly lower levels of work centrality as compared to men (expected effect size: d = 0.65; estimated by author).

Men's and women's work centrality scores were compared using an independent samples t-test in order to assess the presence and extent of a gender difference on this variable. The follow-up survey included a 12-item work centrality scale (Paulley et al., 1994). The expected gender difference on this scale was present among Cohort 1 respondents, with men scoring significantly higher on work centrality as compared to women (M (SD) = 3.85 (0.61) and 3.52 (0.97) for men and for women, respectively; $t(685) = 2.48$, $p = .01$, $d = 0.46$), but not among Cohort 2 respondents (M (SD) = 3.47 (0.68) and 3.56 (0.97) for men and for women, respectively; $t(684) = -0.74$, $p = .46$, $d = 0.11$). So this hypothesis is supported, although with an effect size slightly smaller than expected, with data from Cohort 1 respondents only; the expected gender difference was not evident among Cohort 2 respondents.

Work centrality was also conceptualized and assessed in a different way, with a series of locally developed items in which respondents were asked about their ideal allocations of time, emotional investment, and cognitive investment to work and to personal/family life. Respondents were instructed that answers for each resource type (e.g., ideal allocation of time to work and ideal allocation of time to family) were

supposed to sum to 100 percent, and respondents providing answers that did not sum to 100 percent were excluded from this analysis. These instructions and treatment of the data introduced dependencies, meaning that the effect sizes of the gender differences on these variables are likely somewhat overestimated.

A significant gender difference was observed among Cohort 1 respondents on the ideal time allocation items, $t(687) = 2.98$, $p = .00$, $d = 0.54$, with women reporting an average ideal time allocation of 52.1% ($SD = 14.89$) to work and 47.9% ($SD = 14.89$) to family/personal life, and men reporting an average ideal time allocation of 58.2% ($SD = 9.80$) to work and 41.8% ($SD = 9.80$) to family/personal life. Men and women from Cohort 2 did not report significantly different ideal time allocations, $t(687) = 0.27$, $p = .78$, $d = 0.04$, with women reporting an average ideal time allocation of 50.4% ($SD = 15.852$) to work and 49.6% ($SD = 15.85$) to family/personal life, and men reporting an average ideal time allocation of 51.1% ($SD = 14.13$) to work and 48.9% ($SD = 14.13$) to family/personal life.

Gender differences were not seen with ideal allocation of emotional investment to work in either Cohort 1, $t(687) = 1.54$, $p = .12$, $d = 0.26$, or in Cohort 2, $t(687) = -0.47$, $p = .64$, $d = 0.06$. Mean ideal allocations of emotional resources to work were 36.7% ($SD = 16.13$) and 40.4% ($SD = 12.40$) for Cohort 1 women and men, respectively, and 37.7% ($SD = 18.37$) and 36.7% ($SD = 14.90$) for Cohort 2 women and men, respectively. Significant gender differences were also absent with ideal allocation of cognitive investment to work in both Cohort 1, $t(685) = 0.81$, $p = .42$, $d = 0.14$, and in Cohort 2, $t(684) = -0.81$, $p = .42$, $d = 0.14$. Mean ideal allocations of cognitive resources to work were 61.4% ($SD = 16.74$) and 63.2% ($SD = 10.50$) for Cohort 1 women and men,

respectively, and 59.8% (*SD* = 16.45) and 57.8% (*SD* = 15.07) for Cohort 2 women and men, respectively.

There is no evidence for any gender differences among Cohort 2 respondents on work centrality as measured both with a well-established scale and with locally developed items on ideal allocation of time, emotional resources, and cognitive resources to work and to person/family life. Men from Cohort 1 scored significantly higher on work centrality, (d = 0.47) and reported that they would ideally allocate a significantly higher amount of their overall time investment to work (d = 0.55), as compared to women from Cohort 1. Cohort 1 men and women did not significantly differ in their reported ideal allocation of their emotional and cognitive resources to work. These results provide moderate support for this hypothesis, but only among Cohort 1 respondents; the hypothesis is completely unsupported among Cohort 2 respondents.

Hypothesis 1d: Higher scores on work centrality will decrease the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Work centrality was tested as a predictor of initial job preference in the binary logistic regression model in order to evaluate the hypothesis that heightened work centrality scores will be associated with a decreased likelihood of preferring a teaching-focused environment for one's first post-PhD job. This hypothesis is supported with results from the Cohort 1 model, as work centrality was a significant predictor of first job choice in the full binary logistic regression model (OR = 0.57, p = .02, R^2 = .24 for the full set of predictors in Step 2), such that increased work centrality scores are associated with a decreased likelihood of preferring an initial job in a teaching-intensive

environment. For Cohort 2 respondents, the full set of predictors in the model in which work centrality was added failed to account for significant incremental variance beyond that accounted for by the control variables ($\Delta \chi^2$ (7, N = 289) = 10.79, p = .15), so this hypothesis is unsupported among Cohort 2 respondents.

Hypothesis 1e: Higher scores on social potency will decrease the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Social potency was tested as a predictor of initial job preference in the binary logistic regression model in order to evaluate the hypothesis that heightened social potency scores will be associated with a decreased likelihood of preferring a teaching-focused environment for one's first post-PhD job. This hypothesis was unsupported, as social potency was not a significant predictor of first job choice in either the Cohort 2 version of the partial model (OR = 1.39, p = .22) or in the Cohort 1 version of the full model (OR = 0.45, p = .18), and the step in which this predictor was added failed to account for a significant amount of incremental variance beyond that explained by the control variables in the Cohort 1 version of the partial model ($\Delta \chi^2$(4, N = 880) = 8.59, p = .07) and the Cohort 2 version of the full model ($\Delta \chi^2$ (7, N = 289) = 10.79, p = .15).

Hypothesis 1f: Higher scores on social closeness will increase the likelihood of an initial preference for a tenure-track job in a teaching-intensive environment relative to an initial preference for a tenure-track job in a research-intensive environment.

Social closeness was tested as a predictor of initial job preference in the binary logistic regression model in order to evaluate the hypothesis that heightened social closeness scores will be associated with an increased likelihood of preferring a teaching-

focused environment for one's first post-PhD job. This hypothesis was unsupported, as social closeness was not a significant predictor of first job choice in either the Cohort 2 version of the partial model (*OR* = 0.68, *p* = .10) or in the Cohort 1 version of the full model (*OR* = 1.59, *p* = .37), and the step in which this predictor was added failed to account for a significant amount of incremental variance beyond that explained by the control variables in the Cohort 1 version of the partial model ($\Delta \chi^2(4, N = 880) = 8.59$, *p* = .07) and the Cohort 2 version of the full model ($\Delta \chi^2 (7, N = 289) = 10.79$, *p* = .15).

Hypothesis 2e: Men will score significantly higher than women on social potency (expected effect size: d =0 .30; estimated from published results).

An independent samples t-test was used to compare the social potency scores of men and women in order to evaluate the hypothesis that men will score significantly higher on social potency than will women. This hypothesis was tested by comparing the scores of male and female main survey respondents on the social potency scale from the IPIP. This hypothesis was not supported, as men and women do not differ significantly on social potency in either Cohort 1, $t(3524) = -1.34$, $p = .18$, $d = 0.11$ or in Cohort 2, $t(3488) = 0.42$, $p = .67$, $d = 0.02$. Mean (*SD*) values are 2.73 (0.48) and 2.69 (0.34) for Cohort 1 women and men, respectively, and 2.67 (0.54) and 2.68 (0.38) for Cohort 2 women and men, respectively.

Hypothesis 2f: Women will score significantly higher than men on social closeness (expected effect size: d = 0.30; estimated from published results).

An independent samples t-test was used to compare the social closeness scores of men and women in order to evaluate the hypothesis that women will score significantly higher on social closeness than will men. This hypothesis was tested by comparing the

scores of male and female main survey respondents on the social closeness scale from the IPIP. This hypothesis was supported, as women scored significantly higher on social closeness than did men in both Cohort 1, $t(3586) = -3.60$, $p = .00$, $d = 0.33$, and Cohort 2, $t(3534) = -4.50$, $p = .00$, $d = 0.26$. Mean (*SD*) values are 2.88 (0.56) and 2.74 (0.38) for Cohort 1 women and men, respectively, and 2.92 (0.53) and 2.80 (0.42) for Cohort 2 women and men, respectively. This effect is small, but matches the hypothesized magnitude and direction, thus providing support for this hypothesis with data from both cohorts.

4.3 Gender and Time Allocation to Work and Family

In this section, gender and family commitments will be tested as predictors of workload. Gender differences in various types of family commitments and the perceived impact of such commitments on work will be examined. The relationships among work centrality, institutional prestige, and workload will also be assessed.

4.3.1 Testing of Workload Regression Model.

Several hypotheses related to the prediction of faculty members' work hours were tested within a multiple linear regression framework. This analysis allows for an assessment of both the amount of variance in workload explained by each predictor and by the full set of predictors. It also provides a test of whether adding an interaction term comprised of two predictors explains as significant amount of incremental variance beyond that explained by the full set of predictors. Please see Figure 4 for this model.

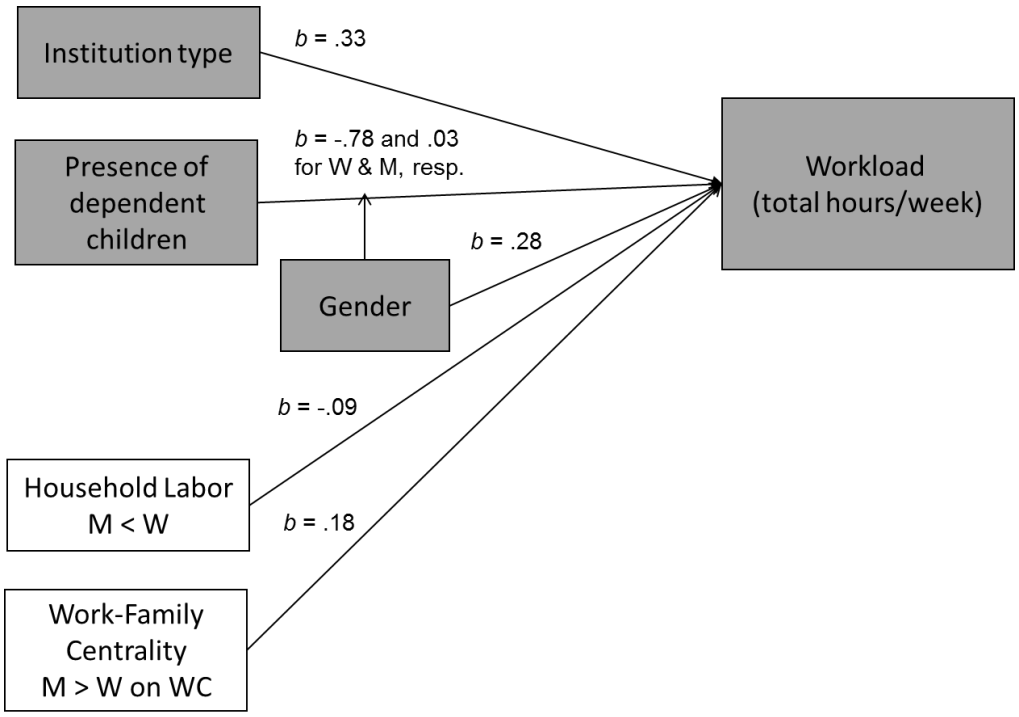

Figure 4. Linear regression model predicting workload
(note: M = men, W = women, WC = work centrality)

Data on variables included in the main survey (grey boxes) are available from the full sample, while data on variables included only in the follow-up survey (white boxes) are available from the follow-up survey sample only. In order to deal with these two types of data, a partial version of the above model (grey boxes only) was tested with the full sample. Subsequently, the full model was tested with the follow-up sample only. This model was tested on all survey respondents, regardless of their family and marital status. Filters applied to this regression include analyzing only respondents who reported working 35 hours/week or more, as respondents working less than full-time may differ in the way they plan for and experience their working hours, and including only respondents from one of the four focal institution types (research extensive, research intensive, liberal arts, and masters), as institution type and institutional prestige were used as predictors in various versions of this model. Additionally, the model was tested separately for the two

cohort groups in order to determine whether any of the predictors of workload operate differently for the two cohort groups.

The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimates yielded a nonsignificant *F* value for the Cohort 1 version of the model ($F(7, 1187) = 1.41$, $p = .20$), but yielded a significant *F* value for the Cohort 2 version of the model ($F(7, 1303) = 2.37$, $p = .02$), indicating that the weighed and unweighted estimates are not significantly different for the Cohort 1 version but are significantly different for the Cohort 2 version. So, per Winship & Radbill's (1994) recommendation, the weighted version should be used for Cohort 2; the weighted version was also used for Cohort 1 to ensure consistency between the two versions of the model. The results from this weighted linear regression analysis of the partial model tested with the main survey sample are presented in Table 15 (Cohort 1) and Table 16 (Cohort 2).

Table 15.

Summary of Weighted Linear Regression Analysis for Variables Predicting Workload, (Partial Model Tested With Main Survey Sample, Cohort 1, n = 1201)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	-0.71	1.30	-0.03	-0.55	0.58
Rank: Associate vs. Full	-0.94	0.80	-0.08	-1.17	0.24
Constant	54.74	0.74		73.56	0.00
Step 2					
Rank: Assistant vs. Associate	-0.58	1.28	-0.03	-0.45	0.65
Rank: Associate vs. Full	-0.86	0.84	-0.07	-1.02	0.31
Institution type	1.27	0.39	0.10	3.25	0.00
Presence of dependent children	-1.81	1.09	-0.08	-1.66	0.10
Gender	1.38	0.91	0.05	1.51	0.13
Constant	54.29	0.94		57.92	0.00
Step 3					
Rank: Assistant vs. Associate	-0.59	1.28	-0.03	-0.46	0.65
Rank: Associate vs. Full	-0.86	0.84	-0.07	-1.02	0.31
Institution type	1.27	0.39	0.10	3.24	0.00
Presence of dependent children	-1.86	1.35	-0.08	-1.37	0.17
Gender	1.31	1.15	0.05	1.14	0.26
Gender X Presence of dependent children	0.20	1.88	0.00	0.10	0.92

Table 15 continued.

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Constant	54.30	0.96		56.32	0.00

Note: SE = standard error

Step 1: $F(2, 1198) = 0.72$, $p = .49$, $R^2 = .00$

Step 2: $\Delta F(3, 1195) = 5.81$, $p = .00$;
$F(5, 1195) = 4.00$, $p = .00$, $R^2 = .02$

Step 3: $\Delta F(1, 1194) = 0.01$, $p = .92$;
$F(6, 1194) = 3.37$, $p = .03$, $R^2 = .02$

Table 16.

Summary of Weighted Linear Regression Analysis for Variables Predicting Workload, (Partial Model Tested With Main Survey Sample, Cohort 2, n = 1317)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	0.85	0.66	0.07	1.28	0.20
Rank: Associate vs. Full	0.31	0.90	0.02	0.35	0.73
Constant	54.46	0.54		101.46	0.00
Step 2					
Rank: Assistant vs. Associate	0.63	0.65	0.05	0.96	0.34
Rank: Associate vs. Full	0.07	0.87	0.00	0.08	0.94
Institution Type	0.62	0.40	0.05	1.56	0.12
Presence of dependent children	-4.29	1.10	-0.19	-3.91	0.00
Gender	-0.68	0.87	-0.03	-0.77	0.44
Constant	57.39	1.12		51.22	0.00
Step 3					
Rank: Assistant vs. Associate	0.63	0.65	0.05	0.96	0.34
Rank: Associate vs. Full	0.07	0.86	0.00	0.08	0.94
Institution Type	0.63	0.40	0.05	1.58	0.11
Presence of dependent children	-4.18	1.72	-0.18	-2.43	0.02
Gender	-0.50	1.73	-0.02	-0.29	0.78
Gender X Presence of dependent children	-0.28	1.97	-0.01	-0.14	0.89

Table 16 continued.

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Constant	57.31	1.51		38.06	0.00

Note: SE = standard error

Step 1: $F(2, 1314) = 1.02$, $p = .36$, $R^2 = .00$

Step 2: $\Delta F(3, 1311) = 5.76$, $p = .00$;
$F(5, 1311) = 4.38$, $p = .00$, $R^2 = .04$

Step 3: $\Delta F(1, 1310) = 0.02$, $p = .89$;
$F(6, 1310) = 5.80$, $p = .00$, $R^2 = .04$

It should be noted that throughout the presentation and discussion of results on weekly work hours, the variable being assessed is self-reported weekly work hours, which is influenced by each respondent's perceptions and beliefs about his/her work life. As such, these self-reported weekly work hours may be over or under-reported, and should not be interpreted as an entirely accurate and unbiased metric of one's time commitment to work. This issue will be further discussed in section 5.3 on limitations of the study.

For both the Cohort 1 and Cohort 2 analyses, the addition of the interaction term in Model 3 ($\Delta F(1, 1194) = 0.01$, $p = .92$ for Cohort 1 and $\Delta F(1, 1310) = 0.02$, $p = .89$ for Cohort 2) did not account for a significant amount of incremental variance, so Model 2 results were interpreted. Collectively, the set of predictors in Model 2 account for roughly 2% and 4% of the variance in weekly hours worked for Cohort 1 and Cohort 2, respectively. Significant predictors of weekly work hours in the partial regression model include.

Prestige of institution type, operationalized as a contrast between research-focused and teaching-focused institutions, with respondents at research-focused institutions working significantly longer hours (an average increase of 1.27 hours/week), $\beta = .10$, $p = .00$ for the Cohort 1 model (this effect is not significant in the Cohort 2 model);

Presence of dependent children, with respondents who have 1 or more dependent children working significantly fewer hours per week (an average reduction of 4.29 hours/week) than those who do not, $\beta = -.19$, $p = .00$ for the Cohort 2 model (this effect is not significant in the Cohort 1 model);

The full model was tested with data from the follow-up survey. The only filter applied to this regression entailed analyzing only respondents who reported working 35 hours/week or more, as respondents working less than full-time may differ in the way they plan for and experience their working hours. The filter on institution types used in the partial version of this model was not needed for the full version, as only respondents from one of the four focal institution types (research extensive, research intensive, liberal arts, and masters) were included in the follow-up survey. Additionally, the model was tested separately for the two cohort groups described above in order to determine whether any of the predictors of workload operate differently for the two cohort groups.

The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimated yielded a nonsignificant *F* value for both the Cohort 1 ($F(9, 243) = 0.59$, $p = .80$) and the Cohort 2 ($F(9, 337) = 1.42$, $p = .18$) models, indicating that the weighed and unweighted estimates are not significantly different. So, per Winship & Radbill's (1994) recommendation, the unweighted version of this regression model would be used; however, to ensure consistency with the partial versions of this model presented in Tables 15 & 16 (for which the weighted results were presented due to a significant *F* value for the Winship & Radbill (1994) procedure for the Cohort 2 version), the weighted results are presented for the full model. The results from this weighted linear regression analysis of the full model tested with the follow-up survey sample are presented in Table 17 (Cohort 1) and Table 18 (Cohort 2).

Table 17.

Summary of Weighted Linear Regression Analysis for Variables Predicting Workload (Full Model Tested With Follow-up Survey Sample, Cohort 1, n = 261)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	-0.10	2.87	0.00	-0.03	0.97
Rank: Associate vs. Full	0.37	1.67	0.03	0.22	0.83
Constant	52.09	1.57		33.12	0.00
Step 2					
Rank: Assistant vs. Associate	0.08	2.65	0.00	0.03	0.98
Rank: Associate vs. Full	0.91	1.59	0.07	0.57	0.57
Institution Type	-0.04	0.77	0.00	-0.05	0.96
Presence of dependent children	-0.98	1.40	-0.05	-0.70	0.49
Gender	-1.95	1.48	-0.09	-1.32	0.19
Household labor hours	-0.17	0.09	-0.18	-1.95	0.05
Work Centrality	0.76	1.03	0.07	0.74	0.46
Constant	54.99	4.74		11.59	0.00
Step 3					
Rank: Assistant vs. Associate	0.49	2.54	0.02	0.19	0.85
Rank: Associate vs. Full	1.03	1.53	0.08	0.67	0.50
Institution Type	-0.04	0.77	0.00	-0.05	0.96
Presence of dependent children	-2.85	1.84	-0.14	-1.55	0.12
Gender	-13.56	4.17	-0.62	-3.25	0.00

Table 17 continued.

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Household labor hours	-0.17	0.09	-0.18	-1.99	0.05
Work Centrality	0.80	1.04	0.07	0.77	0.44
Gender X Presence of dependent children	6.94	2.55	0.56	2.72	0.01
Constant	58.21	5.18		11.24	0.00

Note: SE = standard error

Step 1: $F(2, 258) = 0.07$, $p = .93$, $R^2 = .00$

Step 2: $\Delta F(5, 253) = 1.56$, $p = .17$;
$F(7, 253) = 1.15$, $p = .33$, $R^2 = .05$

Step 3: $\Delta F(1, 252) = 7.38$, $p = .01$;
$F(8, 252) = 2.74$, $p = .01$, $R^2 = .07$

Table 18.

Summary of Weighted Linear Regression Analysis for Variables Predicting Workload (Full Model Tested With Follow-up Survey Sample, Cohort 2, n = 355)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	2.25	1.06	0.24	2.13	0.03
Rank: Associate vs. Full	2.46	0.95	0.19	2.59	0.01
Constant	50.67	0.67		76.17	0.00
Step 2					
Rank: Assistant vs. Associate	2.20	0.91	0.23	2.41	0.02
Rank: Associate vs. Full	2.75	0.86	0.21	3.19	0.00
Institution Type	0.22	0.60	0.02	0.37	0.71
Presence of dependent children	2.99	1.70	0.16	1.75	0.08
Gender	1.53	1.40	0.09	1.09	0.28
Household labor hours	0.03	0.08	0.03	0.42	0.68
Work Centrality	1.35	0.74	0.11	1.81	0.07
Constant	40.37	2.59		15.57	0.00
Step 3					
Rank: Assistant vs. Associate	2.39	0.84	0.25	2.86	0.01
Rank: Associate vs. Full	2.92	0.79	0.22	3.68	0.00
Institution Type	0.13	0.59	0.01	0.23	0.82
Presence of dependent children	-0.58	2.80	-0.03	-0.21	0.84
Gender	-7.99	3.86	-0.45	-2.07	0.04

Table 18 continued.

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Household labor hours	0.06	0.08	0.06	0.80	0.43
Work Centrality	1.31	0.75	0.11	1.75	0.08
Gender X Presence of dependent children	6.95	3.08	0.61	2.26	0.03
Constant	44.75	3.60		12.42	0.00

Note: SE = standard error

Step 1: $F(2, 352) = 3.47$, $p = .03$, $R^2 = .03$

Step 2: $\Delta F(5, 347) = 4.12$, $p = .00$;
$F(7, 347) = 4.30$, $p = .00$, $R^2 = .10$

Step 3: $\Delta F(1, 346) = 5.09$, $p = .02$;
$F(8, 346) = 8.21$, $p = .00$, $R^2 = .13$

The addition of the gender by presence of dependent children interaction term in Model 3 accounted for significant incremental variance over that explained by the predictors in Model 2 for both Cohort 1 ($\Delta F(1, 252) = 7.38$, $p = .01$) and Cohort 2 ($\Delta F(1, 346) = 5.09$, $p = .02$), so Model 3 results were interpreted for both versions. Collectively, the set of predictors in Model 2 account for 7% and 13% of the variance in workload for Cohort 1 and Cohort 2, respectively. Significant predictors in this model include:

Rank, with assistant professors working significantly more (an average increase of 2.39 hours/week) than associate professors, $\beta = .25$, $p = .01$ for the Cohort 2 model (rank is not a significant predictor in the Cohort 1 model);

Rank, with associate professors working significantly more (an average increase of 2.92 hours/week) than full professors, $\beta = .22$, $p = .00$ for the Cohort 2 model (rank is not a significant predictor in the Cohort 1 model);

Interaction between gender and presence of dependent children, $\beta = .56$, $p = .01$ for Cohort 1 and $\beta = .61$, $p = .03$ for Cohort 2 (this interaction term will be analyzed further and interpreted in the following section).

4.3.2 Commitment to Family and Its Impact on Work.

In this section, hypotheses on the impact of gender and family status on work hours, as well as the manner in which family commitments both relate to work hours and differ by gender, will be tested.

Hypothesis 3b: Gender (being male) will be a positive predictor of workload ($\beta = .28$; estimated from published results).

Gender was tested as a predictor of workload in order to evaluate the hypothesis that being male will be associated with heightened weekly work hours. In results from the partial model tested with data from Cohort 2, gender failed to significantly predict workload (β = .05, p = .13 for Cohort 1; β = -.03, p = .44 for Cohort 2). In the full model, in the step prior to adding the gender by presence of dependent children interaction term, gender as a unique predictor failed to explain significant variance in weekly work hours (β = -.09, p = .19 for Cohort 1; β = .09, p = .28 for Cohort 2). The hypothesis that gender (being male) will be a significant, positive predictor of workload is not supported by these results.

Hypothesis 3c: Gender will moderate the expected negative relationship between the presence of dependent children and workload, such that the relationship will be stronger for women than for men (β = -.78 for women; β = .03 for men; estimated from published results).

The interaction of gender and the presence of dependent children was tested as a predictor of workload in order to evaluate the hypothesis that the relationship between presence of dependent children and workload will vary by gender. This hypothesis was unsupported by results from the partial model (β = .00, p = .92 for Cohort 1 and β = .01, p = .89 for Cohort 2). This interaction term significantly predicted workload in the full model tested with both cohort groups (β = .56, p = .01 for Cohort 1 and β = .61, p = .03 for Cohort 2).

Follow-up tests were performed in Stata to interpret this significant interaction term. First, Wald tests of a composite linear hypothesis were conducted to tell if a) gender and the gender by presence of dependent children interaction term are jointly

significantly different from zero, and b) presence of dependent children and the gender by presence of dependent children interaction term are jointly significantly different from zero. The former test was significant for Cohort 1 ($F(2, 252) = 5.82$, $p = .00$) but nonsignificant for Cohort 2 ($F(2, 346) = 2.58$, $p = .08$), while the latter test was significant for both Cohort 1 ($F(2, 252) = 3.89$, $p = .02$) and Cohort 2 ($F(2, 346) = 11.64$, $p = .00$).

Next, point estimates were obtained for the regression coefficient when gender is held constant and presence of dependent children varies, and when presence of dependent children is held constant and gender varies. The first set of these estimates (estimates for dependent children and no dependent children with gender held constant) allows for assessment of whether the impact of gender on workload varies by the presence of dependent children. These tests suggest that, among Cohort 1 respondents, gender (being female) is a significant, negative predictor of workload for people with dependent children ($B = -6.63$, $p = .001$) while gender is a nonsignificant predictor of workload for people without dependent children ($B = 0.31$, $p = .87$). So among the subset of academic faculty in Cohort 1 without dependent children, men and women do not differ significantly in their weekly work hours. But among the subset of academic faculty in Cohort 1 with dependent children, women work significantly fewer hours (an average of 6.63 fewer hours per week) than do men. This analysis was not conducted on Cohort 2 because the corresponding joint significance test was not significant.

The second set of these point estimates (estimates for men and for women with presence of dependent children held constant) allows for assessment of whether the impact of dependent children on workload varies by gender. These tests suggest that in

both cohort groups, women without dependent children work significantly longer hours per week (B = 4.08, p = .02 for Cohort 1 and B = 6.37, p = .00) than do women with dependent children, while no such effect is present for men (B = -2.85, p = .12 for Cohort 1 and B = 0.58, p = .84 for Cohort 2). So across both cohorts, having one or more dependent children is associated with a significant reduction in work hours for women (an average reduction of 4.08 and 6.37 hours per week for Cohort 1 and Cohort 2 women, respectively), but not for men.

Hypothesis 3d: Hours of household labor will be a negative predictor of workload (β = -.09; estimated from published results).

Self-reported household labor hours were tested as a predictor of workload in order to evaluate the hypothesis that heightened household labor hours will be associated with reduced weekly work hours. This hypothesis was partially supported, as hours of household labor was a significant predictor of workload in the full regression model tested with Cohort 1 data (β = -.18, p = .048), but was not a significant predictor of workload in the full regression model tested with Cohort 2 data (β = .06, p = .43). These results support this hypothesis, but only among Cohort 1 respondents. Among Cohort 1 respondents, each 1-hour increase in household labor is associated with an average reduction in weekly work hours of 0.17 hours. This relationship is not present among Cohort 2 respondents.

Hypothesis 4a: Both male and female respondents who are married with dependent children in the home will report that the female carries a larger amount of the household labor and childcare duties (expected effect size: d = 1.1; estimated from published results).

Respondents provided reports of the weekly household labor and childcare hours worked both by themselves and by their spouses/partners; these and a variety of other measures related to the division of household and childcare duties were analyzed with independent samples t-tests in order to test for the presence and magnitude of gender differences on these variables. This group of analyses is performed only on respondents who are married/in a marriage-like relationship and who have one or more dependent children, as these analyses specifically pertain to issues related to childcare and household duties, and the manner in which such duties are shared between spouses/partners.

Because same-sex couples tend to approach the division of household labor and childcare in a different way than do opposite-sex couples (Kurdek, 2005; Kurdek, 2006), it was necessary to exclude respondents in same-sex couples (n = 19) from this group of analyses. Additionally, respondents who were younger than 18 years old when their oldest child was born were excluded from this analysis, as this is often indicative of an atypical family situation (e.g., 2nd or later marriages for one or both spouses, 1 or more stepchildren), and as such the dynamics of division of childcare and household labor duties may be altered for these respondents.

Independent samples t-tests were conducted to test for gender differences on the following variables: a) self-reported household labor hours; b) self-reported childcare hours; d) reports on household labor hours of one's spouse/partner; e) reports on childcare hours of one's spouse/partner. These results are presented in Table 19.

Table 19.

Gender Differences in Household and Childcare Labor Hours for Self & for Spouse (Follow-up Survey Sample)

Variable (hours per week)	Reported on	Cohort	*M* (*SD*) Male	*M* (*SD*) Female	*t*	*df*	*p*	*d*
Household labor	Self	1	18.62 (7.95)	22.34 (11.33)	-1.30	688	0.20	0.41
Childcare	Self	1	7.02 (7.02)	9.45 (10.34)	-1.19	693	0.23	0.30
Household labor	Spouse	1	22.00 (10.96)	20.00 (11.88)	0.59	686	0.56	-0.18
Childcare	Spouse	1	10.48 (6.81)	8.58 (10.94)	0.90	693	0.37	-0.23
Household labor	Self	2	15.24 (7.37)	18.08 (10.89)	-2.20	677	0.03	0.31
Childcare	Self	2	15.87 (14.50)	20.24 (20.93)	-1.23	689	0.23	0.25
Household labor	Spouse	2	21.63 (12.31)	16.31 (11.56)	1.90	673	0.06	-0.44
Childcare	Spouse	2	19.58 (13.44)	16.56 (18.68)	1.03	684	0.29	-0.19

Note: *M* = mean; *SD* = standard deviation; *df* = degrees of freedom

These results do not support this hypothesis, as the only significant gender difference, in self-reported household labor hours for Cohort 2 (d = 0.31), is substantially smaller than the hypothesized effect size of d = 1.1. Cohort 1 respondents did not differ significantly by gender on their reports of household labor and childcare hours for themselves or their spouses, and Cohort 2 respondents did not differ significantly by gender on their reports of household labor for their spouses or on their reports of childcare hours for themselves or their spouses.

A series of locally developed items was designed to assess respondent's feelings on whether they do their "fair share", or more or less than their fair share, of the household labor and childcare duties, and also how satisfied they are with the division of these duties if they are married/in a marriage-like relationship. The mean results indicate that, on both household labor and childcare duties, and in both cohorts, women report, on average, doing slightly more than their fair share while men report, on average, doing slightly less than their fair share. These gender differences have medium to large effect sizes (for share of household labor, d = 0.87 and d = 0.70 for Cohorts 1 and 2, respectively; for share of childcare duties, d = 0.84 and d = 0.89 for Cohorts 1 and 2, respectively).

Perhaps not surprisingly given their reported levels of participation in these duties, Cohort 2 men and women also differ in their levels of satisfaction with the division of labor on both household (d = 0.44) and childcare duties (d = 0.36), with women reporting significantly lower satisfaction levels with the division of labor with their spouses/partners on both types of duties. Mean scores from both men and women from both cohort groups indicate that, on average, respondents are all relatively satisfied

with the division of both types of duties with their spouses/partners (mean scores on these satisfaction items ranged from 4.25 to 5.06 on a scale with 1 = extremely unsatisfied to 6 = extremely satisfied). Despite the comparably sized gender differences on share of household labor and childcare duties for Cohorts 1 and 2, Cohort 1 respondents do not exhibit the gender differences seen on the satisfaction items among Cohort 2 respondents. Perhaps Cohort 1 women tend to feel more comfortable with a slightly inequitable division of labor on household and childcare duties than do women in Cohort 2.

A separate series of locally developed items was designed to capture behaviorally-based indicators of the manner in which respondents divide specific child-related duties with their spouses. These child-related duties include attending school/extracurricular events, being interrupted during work by one's children, and dealing with children's sicknesses. The effect sizes for the gender differences on these items are likely overestimated due to dependencies present in the data as a result of the instructions that responses on all parts of a given item should sum to 100%; data for respondents whose responses did not sum to 100% on all parts of a given item were deleted for that item.

These results indicate a clear gender gap in the division of these types of duties that is, for the most part, consistent across cohort groups. When their children have events, respondents report that they attend these events with their spouses roughly 50% of the time, and that neither they nor their spouse attends roughly 5% of the time. These figures are consistent across cohorts and men and women do not differ on these reports. Men and women do differ in their reports on what happens the other 45% of the time: in both cohorts, men report that their spouse/partner attends the event without them a higher

percentage of the time than do women (Cohort 1: *M* (*SD*) = 22.8 (14.0) and 14.2 (12.3) for men and for women, respectively *d* = 0.64; Cohort 2: *M* (*SD*) = 25.4 (16.8) and 15.8 (20.4) for men and for women, respectively, *d* = 0.52). Cohort 2 men also report that they attend the events without their spouse/partner a significantly lower percentage of the time than do women (*M* (*SD*) = 17.5 (14.3) and 30.0 (31.2) for men and for women, respectively, *d* = 0.54); men and women in Cohort 1 do not differ significantly on this variable (*M* (*SD*) = 22.6 (20.4) and 31.2 (27.9) for men and for women, respectively, *d* = 0.38). With respect to having their work interrupted by their children, women in both cohorts report that they are interrupted more often (Cohort 1: *M* (*SD*) = 40.7 (18.4) and 62.4 (26.5) for men and for women, respectively, *d* = 1.02; Cohort 2: *M* (*SD*) = 43.6 (26.5) and 59.6 (32.3) for men and for women, respectively, *d* = .55), and their spouse/partner is interrupted less often, (Cohort 1: *M* (*SD*) = 59.3 (18.4) and 37.6 (26.5) for men and for women, respectively, *d* = 1.02; Cohort 2: *M* (*SD*) = 56.4 (26.5) and 40.4 (32.3) for men and for women, respectively, *d* = .55) as compared to men.

Likewise, when their children are sick, women report that they stay home with them a higher percentage of the time (Cohort 1: *M* (*SD*) = 25.5 (21.6) and 52.7 (27.0) for men and for women, respectively, *d* = 1.17; Cohort 2: *M* (*SD*) = 29.3 (20.7) and 45.8 (33.9) for men and for women, respectively, *d* = .61), and that their spouse/partner stays home with them a lower percentage of the time (Cohort 1: *M* (*SD*) = 58.4 (25.4) and 42.7 (26.9) for men and for women, respectively, *d* = 0.61; Cohort 2: *M* (*SD*) = 65.8 (23.4) and 43.5 (36.8) for men and for women, respectively, *d* = .75), as compared to men. Percentages on these two options for staying home with sick children do not sum to 100 because there were two additional response options: my spouse/partner and I stay home

with him/her (this option used less than 3% of the time across gender and cohort groups), and we rely on paid or unpaid help to stay home with him/her (this option used between 3% and 15% of the time across gender and cohort groups). In general, these results provide fairly consistent evidence that women in both cohorts report that they more frequently attend their children's events, have their work interrupted by their children, and stay at home with sick children, and that their spouses/partners do these things less frequently, than do men.

In acknowledgement of the fact that not all caregiving duties involve dependent children, a series of items included in the follow-up survey was designed to assess whether respondents provide care for anyone other than their dependent children, and if so, to whom they provide this care, how much time they spend providing this care, and the extent to which it impacts their work responsibilities. Given the relatively low number of respondents reporting that they provide such care, analyses on additional caregiving were not conducted separately by cohort. Approximately 12% of men and 17% of women reported providing care to one or more individuals other than their dependent children; this does not constitute a significant gender difference, $F(1, 692) = 1.11$, $p = .27$. The recipients of this care were most likely to be parents, with 62.0% of respondents who provide such care providing it to a parent. Parents-in-law, adult children, and spouse/partners were reported as care recipients by 16.1%, 11.9%, and 8.3%, respectively, of respondents who reported providing additional care. A sibling, sibling-in-law, aunt or uncle, friend, and neighbor were each reported as a care recipient by 5% or less of respondents providing additional care.

The average number of hours spent per week providing this care was *M* (*SD*) = 4.73 (2.98) and 7.34 (11.43) for men and for women, respectively, and did not differ significantly by gender, $t(81) = -1.30$, $p = .20$. Roughly 22% of these respondents have one or more of their care recipients living with them, and the likelihood of doing so does not vary by gender, $F(1, 89) = .02$, $p = .89$.

In line with the relatively low weekly average time commitment respondents report spending on providing this type of care, reported levels of agreement that providing this care had required a variety of work-related adjustments were relatively low, ranging from *M* (*SD*) = 1.02 (0.13) to 1.59 (0.99) for men and from *M* (*SD*) = 1.09 (0.74) to 2.62 (2.37) for women on a scale from 1 ("Strongly disagree") to 6 ("Strongly agree"). However, significant gender differences ranging in magnitude from $d = 0.39$ to 0.79 were present on several of these potential adjustments (i.e., reduce my teaching load, reduce my travel schedule, reduce the quantity of my publications, reduce the quality of my publications, miss work obligations, and take a less demanding job), all in the direction of women providing higher levels of agreement that they had made such adjustments as a result of providing care to non-dependent children. On average, these types of adjustments were not frequently made as a result of providing care to individuals other than dependent children, but on several adjustments medium-sized gender differences did exist, all in the direction of women being more likely to make these adjustments than were men.

Hypothesis 4b: Women will report that their children exert a larger impact on the quantity and quality of work they are able to get done, relative to men (expected effect size: d =0 .77; estimated from published results).

In addition to stopping the tenure clock, several other possible adjustments to one's career path in order to accommodate childcare responsibilities were investigated for gender differences. Respondents were asked to provide their level of agreement with statements on making a variety of work-related adjustments as a result of caring for their dependent children. All respondents who reported having children were asked this series of questions. Independent samples t-tests were performed on each item to test for gender differences in level of agreement.

For all items on which a significant gender difference was observed, the difference was in the direction of women expressing a higher level of agreement. Women expressed a significantly higher level of agreement than men that caring for their dependent children had caused them to: reduce the quantity of their publications (*M* (*SD*) = 3.08 (1.38) and 4.07 (2.15) for men and for women, respectively, *d* = 0.63, significant result in Cohort 1 only), increase the quality of their publications (*M* (*SD*) = 1.43 (0.80) and 1.77 (1.44) for men and for women, respectively, *d* = 0.30, significant result in Cohort 2 only), reset/extend their tenure clock (*M* (*SD*) = 1.17 (0.54) and 1.99 (2.25) for men and for women, respectively, *d* = 0.72, significant result in Cohort 1 only), reduce their teaching load (*M* (*SD*) = 1.27 (0.61) and 1.86 (1.91) for men and for women, respectively, *d* = 0.57, significant result for Cohort 1 only), reduce their travel schedule (*M* (*SD*) = 3.22 (1.35) and 3.98 (2.17) for men and for women, respectively, *d* = 0.49, significant result for Cohort 1 only), take a leave of absence (Cohort 1: *M* (*SD*) = 1.23 (0.71) and 2.07 (2.32) for men and for women, respectively, *d* = 0.68; Cohort 2: *M* (*SD*) = 1.38 (0.97) and 2.15 (2.45) for men and for women, respectively, *d* = 0.43), go from working full-time to part-time (*M* (*SD*) = 1.14 (0.43) and 1.52 (1.69) for men and for

women, respectively; d = 0.44, significant result for Cohort 1 only), and take a less demanding job (M (SD) = 1.14 (0.47) and 1.96 (1.95) for men and for women, respectively, d = 0.83, significant result for Cohort 1 only). Significant gender differences were not observed among respondents from either cohort on reduce the quality of my academic publications, increase the quantity of my academic publications, or miss work obligations. These findings are notable because they are all in the same direction, with women agreeing more strongly that they have made various work adjustments as a result of caring for their children. Not a single significant result was seen in the opposite direction, indicating a strong trend in the data despite the small to medium effect sizes.

Two additional items on the follow-up survey provide further evidence about the overall perceptions respondents have about the way they have simultaneously approached their career and family/personal life goals throughout their academic careers. When asked about overall satisfaction with one's allocation of time to work and to personal/family life, the mean scores of both men and women fell roughly halfway between indicating an ideal allocation of time to work and to personal/family life and allocating somewhat more time to work that one would have liked (Cohort 1: M (SD) = 3.43 (0.56) and 3.66 (0.98) for men and for women, respectively; Cohort 2: M (SD) = 3.61 (0.71) and 3.67 (1.02) for men and for women, respectively). No significant gender differences were present in either cohort (for Cohort 1, d = 0.34, p = .07; for Cohort 2 and d = 0.07, p = .55). An item on hypothetical adjustments in time devoted to one's career if one had not had children revealed a significant gender difference among Cohort 1 respondents, with women reporting significantly higher scores than did men on the continuum from 1 = significantly less time and 5 = significantly more time (M (SD) = 3.93 (0.62) and 4.34

(0.86) for men and for women, respectively, $d = 0.61$, $p = .00$), suggesting that the additional efforts respondents perceive that they would have devoted to their career if they had not had children are greater among women than among men. Mean responses on this item do not differ significantly for men and women in Cohort 2 (M (SD) = 4.38 (0.72) and 4.41 (0.93) for men and for women, respectively, $d = 0.04$, $p = .84$). So men and women within each cohort provide comparable average responses to an item on their overall satisfaction level with the time they have allocated to work and to personal/family life, while women in Cohort 1 but not Cohort 2 report that, had they not had children, they would have devoted a significantly larger amount of time to their careers than did men.

4.3.3 Relationships Among Work Centrality, Workload, and Institutional Prestige.

In this section, a series of hypotheses on interrelationships among institutional prestige, work hours, and work centrality are presented and tested, with a focus on congruence between personal values (work centrality) and work decisions/behaviors (weekly workload and place of employment).

Hypothesis 3a: The prestige of one's current institution type will be a positive predictor of workload (β = .33; estimated from published results).

Institutional prestige, operationalized both as a broad research vs. teaching-focused contrast and as selectivity of the undergraduate student body at each individual institution (per Carnegie Foundation classification data), was tested as a predictor of workload in order to test the hypothesis that heightened prestige will be associated with increased self-reported weekly work hours. The weighted regression results from both the

full and partial models provide limited support for this hypothesis. Prestige of one's institution operationalized as undergraduate selectivity per classification data from the Carnegie Foundation, was a significant, positive predictor of workload in the partial regression model (β = .08, *p* = .04 for Cohort 1 and β = .14, *p* = .00 for Cohort 2), but failed to significantly predict workload in the full regression model (β = .01, *p* = .90 for Cohort 1 and β = .10, *p* = .28 for Cohort 2). The support is limited because the significant beta weights for this predictor are substantially smaller than the β = .33 weight that was predicted, and undergraduate selectivity was a significant predictor in the partial but not in the full model.

The research vs. teaching-focused institution type variable significantly predicted work hours in the partial model tested with Cohort 1 of the main survey sample (β = .10, *p* = .00), but did not significantly predict work hours in the partial model tested with Cohort 2 of the main survey sample (β = .05, *p* = .12) or in the full model tested with the follow-up survey sample (β = .00, *p* = .96 for Cohort 1 and β = .01, *p* = .82 for Cohort 2). So the prestige of an individual institution predicted workload in the partial model only, but to a lesser extent than was hypothesized, and the broad research vs. teaching distinction predicted workload in the partial model for Cohort 1 respondents, also to lesser degree than was hypothesized, and failed to predict workload in the partial model for Cohort 2 respondents, the full model for Cohort 1 respondents, and the full model for Cohort 2 respondents. Overall, the support for either conceptualization of institutional prestige as a meaningful predictor of workload is weak. This is a notable finding because ample power to detect these effects was achieved (1 - β = .99 in both cohort groups for testing the full model), yet working at a research-focused institution, or at a more

prestigious institution, was not associated with significantly elevated work hours as compared to working at a teaching-focused institution, or at a less prestigious institution. *Hypothesis 4c: Work centrality will increase with increasing institutional type prestige (expected effect size: d = 0.65; estimated by author).*

Prestige operationalized as a research-focused (research intensive and research extensive) vs. teaching-focused (masters and liberal arts) institution type dichotomy was tested as a predictor of work centrality. The unweighted regression results are reported, as the procedure suggested by Winship & Radbill (1994) resulted in a nonsignificant F-test for Cohort 1 ($F(4, 277) = 0.91$, $p = .46$) and for Cohort 2 ($F(4, 377) = 0.21$, $p = .93$), indicating that the weighted and unweighted estimates are not significantly different from each other. In the analysis of Cohort 1 data, adding the research vs. teaching variable ($\beta = .12$, $p = .043$) accounted for a significant increase in variance predicted ($\Delta F(1, 281= 4.12$, $p = .043$) above that predicted by the control variables in Model 1 (rank – assistant vs. associate, and rank – associate vs. full), but the p-value here is quite close to the $\alpha = .05$ cutoff for significance, and the p-value on the change from Model 1 to Model 2 increased to $p = .06$ when the previously unweighted respondents were filtered out (please see discussion of this issue on p. 51 in section 4.1.1 above). The total variance in work centrality explained by the rank variables and the research vs. teaching variable is approximately 7%, indicating that these are not robust predictors of work centrality. In the analysis of Cohort 2 data, adding the research vs. teaching variable ($\beta = .02$, $p = .64$) in Model 2 did not account for additional variance predicted ($\Delta F(1, 381) = 0.23$, $p = .64$) beyond that predicted by the control variables included in Model 1 (rank – assistant vs.

associate, and rank – associate vs. full). So the research vs. teaching dichotomization of institution types is not a meaningful predictor of work centrality in either cohort.

Prestige operationalized as selectivity of undergraduate students was tested as a predictor of work centrality. The unweighted regression results are reported, as the procedure suggested by Winship & Radbill (1994) resulted in a nonsignificant F-test for both Cohort 1 ($F(4, 275) = 1.29$, $p = .27$) and Cohort 2 ($F(4, 371) = 0.49$, $p = .74$), indicating that the weighted and unweighted estimates are not significantly different from each other. Adding the undergraduate selectivity variable ($\beta = .03$, $p = .56$ for Cohort 1 and $\beta = .06$, $p = .21$ for Cohort 2) in Model 2 did not account for additional variance predicted ($\Delta F(1, 279) = 0.33$, $p = .57$ for Cohort 1 and $\Delta F(1, 375) = 1.56$, $p = .21$ for Cohort 2) beyond that predicted by the control variables added in Step 1 (rank – assistant vs. associate, and rank – associate vs. full). So undergraduate selectivity is not a significant predictor of work centrality. This hypothesis is unsupported, as institutional prestige, conceptualized as both a broad research vs. teaching-focused distinction of institution types and prestige of the specific institution based on Carnegie classification data, failed to serve as a meaningful predictor of work centrality in either cohort.

Hypothesis 3e: Work centrality will be a positive predictor of workload ($\beta = .18$; estimated from published results).

Work centrality was entered as a predictor in the full linear regression model predicting workload, and it was a nonsignificant predictor in both the Cohort 1 ($\beta = .07$, $p = .44$) and the Cohort 2 ($\beta = .11$, $p = .08$) analyses, so this hypothesis was not supported.

4.4 Gender, Personality, and Academic Network Utilization as Predictors of WFC

In this section, hypotheses related to values, work demands, and family demands as predictors of WFC will be tested with a linear regression model. Gender differences in patterns of advice seeking from members of one's academic network will be investigated. Lastly, a proposed structural equation model mapping the relationships among social closeness, measures of close ties with members of one's network, advice-seeking from members of one's network, and WFC will be tested.

4.4.1 Testing of WFC Regression Model.

Several hypotheses related to the prediction of faculty members' work-family conflict were tested within a multiple linear regression framework. The goal of this analysis was to test both the unique and joint strength of the set of potential predictors in explaining variance in WFC. Please see Figure 5 for the model to be tested.

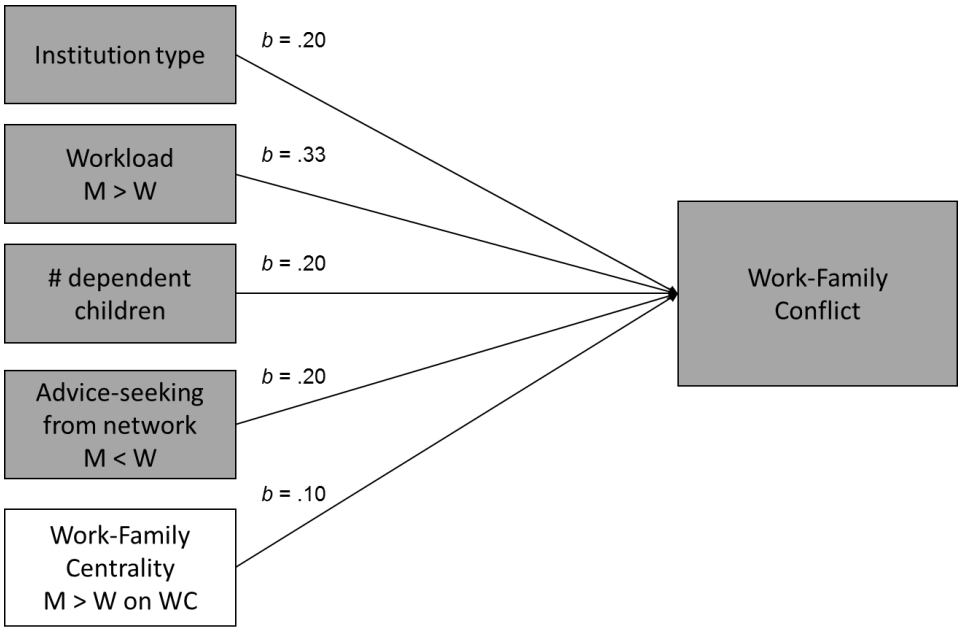

Figure 5. Linear regression model predicting work-family conflict
(note: M = men, W = women, WC = work centrality)

Data on variables included in the main survey (grey boxes) are available from the full sample, while data on variables included only in the follow-up survey (white boxes) are available from the follow-up survey sample only. In order to deal with these two types of data, a partial version of the above model (grey boxes only) was tested with the full sample. Subsequently, the full model was tested with the follow-up sample only. Given expected differences in work-family conflict by family and marital status, this model was tested only on respondents who are married/in a marriage-like relationship and have dependent children in the household. Additional filters include restricting this analysis to only the focal institution types (for the main survey only, as only the focal institution types were included in the follow-up survey), restricting weekly workload to 35 hours or higher, and restricting one's age at the birth of one's first child to 18 or higher.

A multiple linear regression was performed to test the partial model with the main survey sample. The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimated yielded a nonsignificant *F* value for both Cohort 1 ($F(7, 335) = 0.79$, $p = .60$) and Cohort 2 ($F(7, 782) = 1.05$, $p = .40$), indicating that the weighed and unweighted estimates are not significantly different. So, per Winship & Radbill's (1994) recommendation, the unweighted version of this regression model is presented. Variables listed in brackets in the paragraph above were excluded from this model because they are not present in the main data set. The unweighted results from this partial model tested with the main survey sample are presented in Table 20 (Cohort 1) and Table 21 (Cohort 2).

Table 20.

Summary of Unweighted Linear Regression Analysis for Variables Predicting Work-Family Conflict (Partial Model Tested With Main Survey Sample, Cohort 1, n = 341)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	0.19	0.13	0.14	1.51	0.13
Rank: Associate vs. Full	0.22	0.07	0.29	3.08	0.00
Constant	2.98	0.07		44.34	0.00
Step 2					
Rank: Assistant vs. Associate	0.19	0.12	0.14	1.65	0.10
Rank: Associate vs. Full	0.22	0.07	0.29	3.26	0.00
Institution Type	-0.09	0.04	-0.13	-2.61	0.01
Workload	0.03	0.00	0.35	7.07	0.00
Count of dependent children	0.02	0.05	0.02	0.48	0.63
Network count – work-family balance advice	0.03	0.02	0.08	1.53	0.13
Constant	1.49	0.23		6.45	0.00

Note: SE = standard error

Step 1: $F(2, 338) = 6.41$, $p = .00$, $R^2 = .03$

Step 2: $\Delta F(4, 334) = 14.46$, $p = .00$;
$F(6, 334) = 12.12$, $p = .00$, $R^2 = .16$

Table 21.

Summary of Unweighted Linear Regression Analysis for Variables Predicting Work-Family Conflict (Partial Model Tested With Main Survey Sample, Cohort 2, n = 773)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	0.08	0.04	0.12	2.28	0.02
Rank: Associate vs. Full	0.09	0.05	0.09	1.74	0.08
Constant	2.88	0.03		96.69	0.00
Step 2					
Rank: Assistant vs. Associate	0.06	0.03	0.09	1.76	0.08
Rank: Associate vs. Full	0.10	0.05	0.10	1.99	0.05
Institution Type	0.01	0.02	0.01	0.43	0.67
Workload	0.02	0.00	0.36	10.61	0.00
Count of dependent children	0.03	0.03	0.04	1.19	0.24
Network count – work-family balance advice	0.02	0.01	0.06	1.88	0.06
Constant	1.59	0.13		12.36	0.00

Note: SE = standard error

Step 1: $F(2, 770) = 2.61$, $p = .08$, $R^2 = .01$

Step 2: $\Delta F(4, 766) = 29.91$, $p = .00$;
$F(6, 766) = 20.94$, $p = .00$, $R^2 = .14$

The predictors included in Model 2 account for approximately 16% of the variance in WFC for Cohort 1 and 14% of the variance in WFC for Cohort 2. Significant predictors include:

Rank, with associate professors having significantly higher WFC (an average of 0.22 points higher for Cohort 1 and an average of 0.10 points higher for Cohort 2, both on a 4-point scale) than full professors ($\beta = .29$, $p = .00$ for Cohort 1; $\beta = .10$, $p = .046$ for Cohort 2, but this predictor becomes nonsignificant in Cohort 2 when previously unweighted respondents are filtered out, $p = .07$);

Workload, with weekly work hours being a positive predictor of WFC, such that each 1-hour increase in weekly work hours is associated with a 0.03 point increase in WFC for Cohort 1 and a 0.02 point increase in WFC for Cohort 2, both on a 4-point scale ($\beta = .35$, $p = .00$ for Cohort 1 and $\beta = .36$, $p = .00$ for Cohort 2); and

Institutional prestige, conceptualized as a contrast between research-focused and teaching-focused institutions, such that respondents at research-focused institutions have significantly lower WFC (an average of 0.09 points lower on a 4-point scale) than those at teaching-focused institutions ($\beta = -.13$, $p = .01$ for Cohort 1; institutional prestige is not a significant predictor for Cohort 2).

A multiple linear regression analysis was performed to test the full model with the follow-up survey data. All variables displayed in the figure above were included in this model. The results of the Winship & Radbill (1994) procedure to test for consistency in the weighted and unweighted estimated yielded a nonsignificant F value for both Cohort 1 ($F(8, 74) = 0.90$, $p = .52$) and Cohort 2 ($F(8, 218) = 1.49$, $p = .16$), indicating that the weighed and unweighted estimates are not significantly different. So, per Winship &

Radbill's (1994) recommendation, the unweighted version of this regression model is presented. Results from this analysis are presented in Table 22 (Cohort 1) and Table 23 (Cohort 2).

Table 22.

Summary of Unweighted Linear Regression Analysis for Variables Predicting Work-Family Conflict (Full Model Tested With Follow-up Survey Sample, Cohort 1, n =90)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	1.13	0.56	0.39	2.01	0.05
Rank: Associate vs. Full	0.72	0.32	0.44	2.28	0.03
Constant	4.20	0.30		14.11	0.00
Step 2					
Rank: Assistant vs. Associate	1.21	0.57	0.42	2.13	0.04
Rank: Associate vs. Full	0.64	0.32	0.39	1.99	0.05
Institution Type	-0.03	0.16	-0.02	-0.22	0.83
Workload	0.01	0.02	0.05	0.50	0.62
Count dependent children	0.08	0.18	0.04	0.42	0.67
Network count – work-family balance advice	0.14	0.08	0.19	1.80	0.08
Work Centrality	-0.26	0.23	-0.13	-1.14	0.26
Constant	4.32	1.22		3.55	0.00

Note: SE = standard error

Step 1: $F(2, 87) = 2.61$, $p = .08$, $R^2 = .06$

Step 2: $\Delta F(5, 82) = 1.04$, $p = .40$;
$F(7, 82) = 1.49$, $p = .18$, $R^2 = .11$

Table 23.

Summary of Unweighted Linear Regression Analysis for Variables Predicting Work-Family Conflict (Full Model Tested With Follow-up Survey Sample, Cohort 2, n = 230)

Predictor	*B*	SE(*B*)	*Beta*	*t*	*p*
Step 1					
Rank: Assistant vs. Associate	0.13	0.12	0.10	1.05	0.30
Rank: Associate vs. Full	0.04	0.16	0.03	0.28	0.78
Constant	4.06	0.09		43.29	0.00
Step 2					
Rank: Assistant vs. Associate	0.06	0.12	0.04	0.47	0.64
Rank: Associate vs. Full	0.05	0.16	0.03	0.31	0.76
Institution Type	-0.02	0.08	-0.01	-0.23	0.82
Workload	0.04	0.01	0.29	4.48	0.00
Count dependent children	0.14	0.10	0.09	1.40	0.16
Network count – work-family balance advice	0.06	0.03	0.11	1.74	0.08
Work Centrality	0.20	0.11	0.12	1.80	0.07
Constant	0.91	0.64		1.41	0.16

Note: SE = standard error

Step 1: $F(2, 227) = 0.75$, $p = .48$, $R^2 = .01$

Step 2: $\Delta F(5, 222) = 5.78$, $p = .00$;
$F(7, 222) = 4.37$, $p = .00$, $R^2 = .12$

The full set of predictors in Model 2 does not account for a significant amount of incremental variance beyond that explained by the control variables in Cohort 1, $\Delta F(5, 82) = 1.04$, $p = .40$. The control variables included in Model 1 ($F(2, 87) = 2.61$, $p = .08$) also fail to account for a significant amount of variance in WFC for Cohort 1 respondents.

The predictors included in Model 2 do account for a significant amount of incremental variance beyond that accounted for by the control variables ($\Delta F(5, 222) = 5.78$, $p = .00$) among Cohort 2 respondents, with these predictors accounting collectively for approximately 12% of the variance in WFC for Cohort 2. Significant predictors of WFC among Cohort 2 respondents include:

Workload, with weekly work hours being a positive predictor of WFC, such that each 1-hour increase in weekly work hours is associated with a 0.4 point increase in WFC on a 6-point scale ($\beta = .29$, $p = .00$ for Cohort 2; workload is not a significant predictor for Cohort 1).

4.4.2 Values, Work Demands, and Family Demands as Predictors of WFC.

In this section, the extent to which institutional prestige, self-reported work hours, number of dependent children, and work centrality serve as predictors of WFC in a linear regression framework will be tested.

Hypothesis 5a: Prestige of one's current institution will be a positive predictor of work-family conflict ($\beta = .20$; estimated by author).

Prestige of one's institution (operationalized as selectivity of undergraduate student body per classification data from the Carnegie Foundation) was not a significant predictor of work-family conflict in the Cohort 2 analysis of the partial model ($\beta = .02$, p

= .51), the Cohort 1 analysis of the full model (β = .06, *p* = .55), or the Cohort 2 analysis of the full model (β = -.03, *p* = .67). This prestige variable did significantly predict work-family conflict in the Cohort 1 analysis of the partial model (β = .10, *p* = .04), but the effect size is half of the magnitude of the hypothesized effect size, and the significance of this predictor increased above the α = .05 significance cutoff (to *p* = .056) when the previously unweighted respondents were filtered out. Taken together, these results do not support the hypothesis of institutional prestige serving as a significant, positive predictor of WFC.

When the research vs. teaching dichotomous variable was used instead of undergraduate selectivity to predict WFC, it was a significant predictor of WFC in the partial model tested on Cohort 1 (β = -.13, *p* = .01) but not in the partial model tested on Cohort 2 (β = .01, *p* = .67). When this predictor was used in the full model, it was a nonsignificant predictor in both the Cohort 1 (step in which this predictor was added was not significant, Δ *F*(5, 82) = 1.04, *p* = .40) and Cohort 2 (β = -.01, *p* = .82) versions of the model. So in three of the four model tested, the broad research vs. teaching institution type distinction served as a nonsignificant predictor, and in the single case where it was a significant predictor, the effect size was substantially smaller than the hypothesized effect of β = .33. So neither individual institution prestige, nor prestige of broad institutional type, served as a robust, consistent predictor of the level of WFC experienced by employees of these various institutions, despite achieved power of 1 - β = .87 and 1 - β = .99 in the Cohort 1 and Cohort 2 versions of the full model, respectively.

Hypothesis 5b: Workload will be a positive predictor of work-family conflict (β = .33; estimated from published results).

This hypothesis is mostly supported, as workload is a significant, positive predictor of WFC in the Cohort 1 version of the partial model (β = .35, *p* = .00), the Cohort 2 version of the partial model (β = .36, *p* = .00), and the Cohort 2 version of the full model (β = .29, *p* = .00). These beta weights are all relatively close in magnitude to the predicted beta weight of β = .33. Workload did not significantly predict WFC in the Cohort 1 version of the full model, as the set of predictors in this model did not explain a significant amount of incremental variance in WFC over that explained by the control variables (Δ *F*(5, 82) = 1.04, *p* = .40). In three of the four models in which it was tested, workload significantly predicted WFC in the predicted direction and with an effect of the predicted magnitude, thus providing support for this hypothesis.

Hypothesis 5c: The number of dependent children will be a positive predictor of work-family conflict (β = .20; estimated from published results).

This hypothesis is not supported, as the number of dependent children a respondent has is not a significant predictor of his/her reported level of WFC in either the full (step in which this predictor was added was not significant, Δ *F*(5, 82) = 1.04, *p* = .40 for Cohort 1 and β = .04, *p* = .24 for Cohort 2) or the partial model (β = .04, *p* = .67 for Cohort 1 and β = .09, *p* = .16 for Cohort 2).

Hypothesis 5e: Work centrality will be a positive predictor of work-family conflict (β = .10; estimated from published results).

This hypothesis is not supported, as work centrality is not a significant predictor of WFC in the full model (step in which this predictor was added was not significant, Δ *F*(5, 82) = 1.04, *p* = .40 for Cohort 1 and β = .12, *p* = .07 for Cohort 2).

4.4.3 Gender, Network Utilization and WFC.

In this section, hypotheses related to gender differences in advice seeking from one's academic network and the interrelationships among the personality trait social closeness, socializing with one's network members, seeking advice from one's network members, and experienced levels of WFC will be tested.

Hypothesis 5d: The count of network members from whom one seeks advice about work/family balance will be a negative predictor of work-family conflict (β =- .20; estimated from published results).

This hypothesis is unsupported, as count of network members from whom work-family balance advice is sought is not a significant negative predictor of WFC in any model. There was a clear trend in the data with this variable being positively associated with WFC (partial model: $\beta = .08$, $p = .13$ for Cohort 1 and $\beta = .06$, $p = .06$ for Cohort 2; full model: $\beta = .19$, $p = .08$ for Cohort 1 and $\beta = .11$, $p = .08$ for Cohort 2), although the effect failed to reach significance at $\alpha = .05$. These effects all show a trend of a small, positive relationship between work-family balance advice seeking and work-family conflict, perhaps reflecting a situation in which experiencing more WFC is associated with seeking work-family balance advice from a larger number of one's network members. The hypothesized effect whereby advice seeking serves to reduce experienced levels of WFC is unsupported.

Hypothesis 6a: Women will report seeking advice related to work-family balance from more of their network members than will men (expected effect size: d =0 .46; estimated from published results).

Seeking work-family conflict advice, perhaps as a strategy to deal with and attempt to reduce work-family conflict, as well as several potentially related network

variables, were tested for gender differences. In order to assess this hypothesis among a group of respondents facing similar work-family balance challenges, this analysis was first performed only on respondents who are married/in a marriage-like relationship and who have one or more dependent children. The analysis was also split by cohort to investigate potential cohort differences. As expected, women had a significantly higher count of females in their networks than did men (Cohort 1: *M* (*SD*) = 2.92 (2.55) and 1.34 (1.48) for women and for men, respectively, $d = 0.87$, $p = .00$; Cohort 2: *M* (*SD*) = 2.97 (2.77) and 1.56 (1.55) for women and for men, respectively, $d = 0.69$, $p = .00$), and women reported seeking work-family balance advice from a significantly higher count of their network members than did men (Cohort 1: *M* (*SD*) = 1.86 (2.19) and 1.18 (1.64) for women and for men, respectively, $d = 0.38$, $p = .00$; Cohort 2: *M* (*SD*) = 2.48 (2.79) and 1.52 (1.74) for women and for men, respectively, $d = 0.44$, $p = .00$). Gender differences were not observed on count of network members considered to be close friends (Cohort 1: *M* (*SD*) = 2.83 (2.57) and 2.70 (2.69) for women and for men, respectively, $d = 0.05$, $p = .72$; Cohort 2: *M* (*SD*) = 2.56 (2.90) and 2.51 (2.45) for women and for men, respectively, $d = 0.02$, $p = .79$). This hypothesis is supported, as the expected gender difference was observed on tendency to seek advice on work-family balance issues from members of one's academic network, and the magnitudes of these effects are reasonably close to what was predicted.

In order to assess advice seeking from one's academic network in a more general sense, and also to provide context for the rate of seeking advice about work/family balance relative to other types of advice, gender differences were investigated among the full sample on the work-family advice variable as well as on responses to similar

questions about whether several other types of advice are sought from each network member. Seven other types of advice were included in this series of questioning, and each was examined for mean count of network members from whom advice is sought for men and women, and significance and magnitude of gender differences on rates of advice seeking. Men and women sought advice from approximately equal numbers of network members on grants (d = 0.13 and d = 0.10 for Cohorts 1 and 2, respectively) and publishing (d = 0.02 and d = 0.05 for Cohorts 1 and 2, respectively). For industry/government collaboration, men sought advice from significantly more network members than did women (d = 0.15 and d = 0.14 for Cohorts 1 and 2, respectively). For the four remaining types of advice, teaching, departmental politics, student issues, and interactions with colleagues, women sought advice from a higher count of network members than did men (d-values range from 0.16 to 0.29 for Cohort 1 and from 0.18 to 0.31 for Cohort 2). In terms of average network size (i.e., total count of network members), men and women in Cohort 1 do not differ (M (SD) = 9.45 (5.03) and 9.00 (3.68) for women and for men, respectively, d = 0.11), while men and women in Cohort 2 do differ, such that women have larger networks than do men (M (SD) = 9.15 (4.81) and 8.35 (3.61) for women and for men, respectively, d = 0.19).

With respect to overall rates of advice seeking, the work-related types of advice are sought from a higher number of network members among both men and women (mean values range from 1.96 to 2.84 for Cohort 1 men, from 2.20 to 3.21 for Cohort 1 women, from 2.60 to 2.95 for Cohort 2 men, and from 2.95 to 3.66 for Cohort 2 women) than is work-family balance advice (Cohort 1: M (SD) = 0.99 (1.40) and 1.48 (2.22) for men and women, respectively; Cohort 2: M (SD) = 1.44 (2.05) and 2.16 (2.77) for men

and women, respectively). One exception to this pattern is advice on industry/government collaboration, which is sought from a low count of network members for both men and for women (Cohort 1: *M* (*SD*) = 0.76 (1.30) and 0.55 (1.62) for men and women, respectively; Cohort 2: *M* (*SD*) = 0.79 (1.86) and *M* (*SD*) = 0.55 (1.56) for men and women, respectively). Women seek most types of advice from a larger number of their network members than do men, although most of these differences are of small magnitude. When overall rates of advice seeking are compared, all faculty members seek work-related advice, as compared to work-family balance advice, from a larger number of their network members.

Hypothesis 7: The personality variable social closeness will relate negatively to WFC levels through its association with close network ties and subsequent utilization of one's network for advice on work-family issues, as displayed in Figure 6.

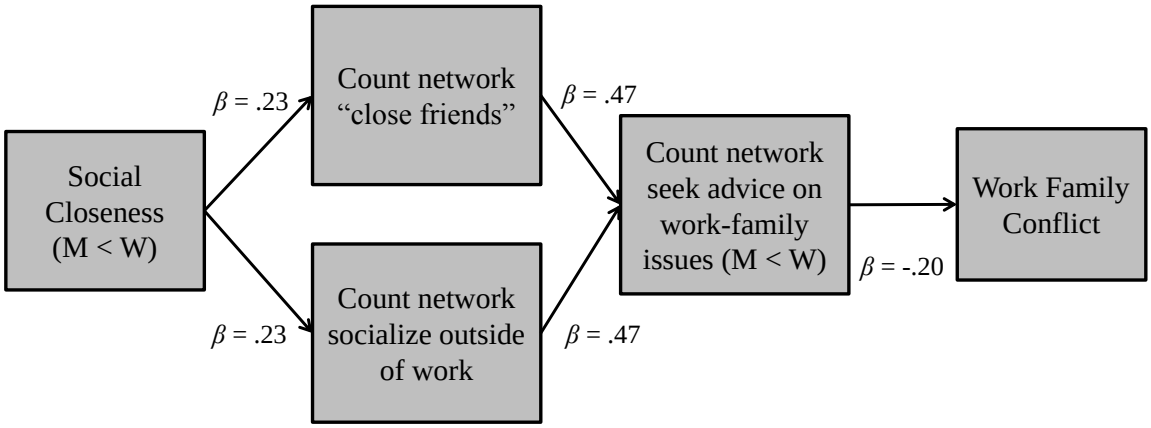

Figure 6. SEM for relationships among personality, network utilization, and work-family conflict (proposed); note: M = men and W = women

All variables included in this model were measured in the full sample, so the full model was tested on the full sample. Given expected differences in work-family conflict

by family and marital status, this model was tested only on respondents who are married/in a marriage-like relationship with dependent children in the household. Stata was used to perform the SEM analysis. Weighted and unweighted versions of the models did not differ in any substantive way, so the unweighted results are reported. The model was tested as originally conceptualized on 1,405 participants, and fit was quite poor: RMSEA = .29, $p < .001$; CFI = .49; χ^2 (5, N = 1,405) = 611.04, $p < .001$. Upon further examination of the variables included in the model, a large, positive correlation (r = .64, p = .00) was observed between the count of network members reported to be close friends and the count of network members with whom the respondent socializes. A modification was introduced into the original model whereby the network socialization variable was regressed on the network close friends variable. This revised model was tested on 1,405 participants and relatively good model fit was achieved: RMSEA = .051, p = .42; CFI = .99; χ^2 (4, N = 1,405) = 18.66, $p < .001$. Please see Figure 7 for the revised model with standardized path coefficients (standard errors for the path coefficients are in parentheses) and standardized residual variances (standard errors for the residual variances are in parentheses). All path coefficients are significant at $\alpha = .01$.

As expected, social closeness related positively to both the count of network members one considers to be close friends and the count of network members with whom one socializes. These two network variables were themselves positively related, with the count of network members considered to be close friend relating positively to the count of network members with whom one socializes. Each of these in turn related positively to the count of network members from whom work-family balance advice is sought. Seeking advice on work-family balance issues was conceptualized as possibly serving as

a mechanism for alleviating one's work-family conflict, and as such a negative relationship was expected between advice-seeking and work-family conflict. Instead, a small, positive relationship was found, suggesting perhaps that people with more work-family conflict are inclined to seek advice on these issues from more of their network members.

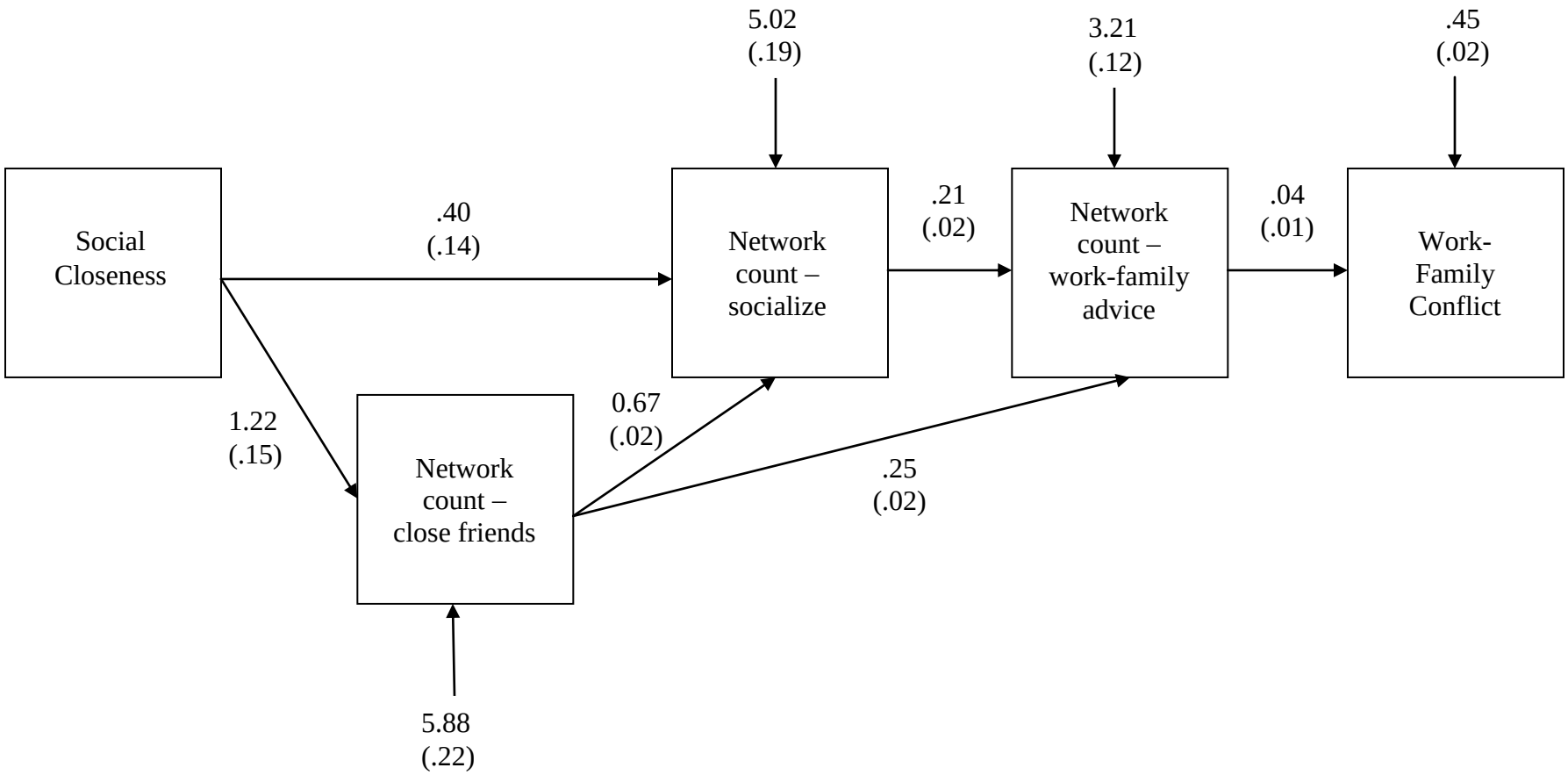

Figure 7. SEM for relationships among personality, network utilization, and work-family conflict (result)

CHAPTER 5

DISCUSSION

The primary goal of this study was to achieve a heightened level of understanding about a subset of factors potentially underlying the differential representations of men and women across various STEM higher education positions. Men and women must differ in the decisions they make along their career paths, because they end up distributed differentially across academic jobs, with men being overrepresented and women being underrepresented in more prestigious types of jobs and institutions, relative to their respective representations in the initial PhD pool. Academic career paths were examined with respect to two distinct temporal periods: early career path planning and decisions, and current career path behaviors and adjustments. The results of these analyses provide insight into the ways men and women differ, and also the ways in which their approaches are more similar than different, as they plan for and operate within their selected academic career paths.

Given well-documented changes over recent decades in the academic job market, nature of faculty experiences, and legal and policy landscapes with respect to family issues, an effort was made to understand the ways in which the relationships under investigation here may differ between respondents who earned their PhDs more and less recently. Analyses were performed separately for the two cohort groups created by splitting the sample by year in which PhD was earned (Cohort 1 respondents earned their PhDs prior to 1995, while Cohort 2 respondents earned their PhDs in 1995 or later); differences between these two cohort groups are highlighted in this discussion section.

5.1 Gender Differences in Initial Job Search Preferences & Decisions

Results related to preferences for various types of jobs, and the impact of family factors on decisions made, during one's initial job search offer insight into potential gender differences in early career planning. These early career path preferences and decisions are critical, as academic career paths do not allow for much deviation once a certain course is embarked upon (Barbezat & Hughes, 2001; Wolfinger et al., 2009).

The results from the binary regression model testing predictors of initial job preference provide evidence that family friendliness ratings of academic jobs in research-focused environments and work centrality may serve as potential explanatory factors for the heightened representation of women, relative to men, in jobs in teaching-focused academic environments. Given that medium-sized gender differences are present on these two variables, with men scoring higher than women, and each serves to decrease the likelihood of preferring a teaching-focused environment in one's initial job search (such that a respondent scoring one point above the mean on work centrality and family friendliness ratings of research jobs has, respectively, 0.32 and 0.57 times the likelihood of preferring a teaching-intensive environment, relative to a respondent scoring at the mean on these variables), these two factors potentially underlie some part of the observed overrepresentation of women, relative to men, in teaching-focused academic environments. A separate predictor, self-reported importance of overall family friendliness of jobs in one's initial job search, operated similarly when tested in an alternate version of this model: women scored significantly higher than did men on this predictor, and higher scores on this predictor were associated with a significantly increased likelihood of preferring a teaching-focused environment for one's initial job

(such that a respondent scoring one point above the mean on this variable has 1.44 times the likelihood of preferring a teaching-intensive environment, relative to a respondent scoring at the mean on this variable). These results hold only for Cohort 1 respondents, as significant gender differences on these variables were not observed, nor did these variables serve as significant predictors of initial job preference, among Cohort 2 respondents.

The mechanisms underlying these differences between Cohort 1 and Cohort 2 respondents with respect to the gender differences in these variables and their relationships with initial job preferences should be the subject of future research efforts, as it seems likely that these difference are related in some manner to the increasing proportion of women across STEM academic positions seen with each more recent Cohort in Table 3. The importance of these factors (i.e., family friendliness ratings of specific job types, the overall importance of the family friendliness of potential jobs in one's job search, and work centrality) as predictors of initial job preference in the Cohort 1 model, and the corresponding gender differences on these factors among Cohort 1 respondents, is a key finding, as it addresses the primary goal of this study in highlighting factors which may underlie the discrepant gender distribution of women across various faculty positions and institution types.

In approaching their initial job searches, women and men in Cohort 1 assigned equal importance to job-related factors, while women weighted family-related factors more heavily than did men, and these gender differences were associated with medium to large-sized effects. In Cohort 2, gender differences were absent on all family items and all but one job-related item. In general, the driver of these gender differences being

present in Cohort 1 and absent in Cohort 2 was the tendency of Cohort 2 men to assign higher average importance ratings to these family-related factors than did Cohort 1 men. Taken together, these results show that Cohort 1 men and women differ in the importance they place on family-related factors in their initial job search decisions, while Cohort 2 men and women differ to a much lesser extent on these same factors. Again, investigating the underlying mechanisms for these cohort differences represents an important avenue for future research.

In summary, several predictors of initial job search preferences (i.e., work centrality, family friendliness ratings of faculty jobs in research-focused environments, and reported overall importance of family friendliness of jobs in one's initial job search), by virtue of both exhibiting a gender difference and significantly predicting initial job search preferences, may help explain some of the discrepancies in gender distributions across higher education institution types, but this pattern of results holds only for respondents in Cohort 1. Additionally, women tend to assign heightened importance to family-related factors, and roughly equal importance to job-related factors, during their initial job searches, but again only for respondents in Cohort 1; Cohort 2 respondents show minimal gender differences on both types of job search factors.

Two personality traits, social potency and social closeness, were also examined both for gender differences and as predictors of initial job preferences. Neither social potency nor social closeness predicted initial job preferences in either model or in either cohort group, so there is no support for an assertion that gender differences on these personality traits might explain in part the differential representation of women at various types of institutions. An interesting pattern of gender differences did emerge on these

traits, such that women in the main survey sample from both cohorts scored higher than men on social closeness, but scored comparably to men on social potency; this pattern of gender differences on these traits differs from that observed in other samples. The social closeness scores of respondents in the main survey sample align with previously reported gender differences on this trait, while social potency scores do not. Why do women in this sample match other women in their heightened social closeness relative to men, but show equal standing with men on social potency in a manner that defies expectations based on previous findings? A potential explanation is that tenure-track faculty positions in STEM disciplines either attract women with heightened social potency relative to their peers, and/or foster this trait in their occupants. Further exploration into the personality traits of STEM faculty members, and whether women differ from their peers on these traits prior to entering into these career paths, and/or become more different from their peers in these traits over the course of their careers, should be undertaken in an effort to further explore this finding.

5.2 Gender Differences in Balancing Work and Family/Personal Life Roles on Current Career Path

5.2.1 Contribution of Institutional Prestige to Work Hours and WFC.

The career decisions of some academic women are influenced by beliefs that certain higher education positions are more family-friendly than others (Mason et al., 2009; Wolf-Wendel & Ward, 2006), but data on whether these beliefs are supported by actual differences in workload and WFC across the various institution types are scarce. Results on the extent to which workload and levels of WFC vary by prestige of broad institution types and of specific institutions allow for an assessment of the accuracy of

self-reported beliefs that certain higher education jobs are more compatible with family than others.

In most cases, the research-focused vs. teaching-focused contrast failed to predict work hours, and when it was a significant predictor the effect size was much smaller than the hypothesized $\beta = 0.33$. These results provide strong evidence that a strategic plan to work at a teaching-focused institution in order to enjoy a lighter work schedule than would be expected at a research-focused institution is not likely to result in the desired effect (achieved power of $1 - \beta = .99$ in both cohort groups to detect this effect in Step 2 of the full model allows for limited interpretation of null findings). Specific institutional prestige was a stronger and more consistent predictor of work hours, as it significantly predicted work hours in the partial model tested with both cohort groups (but not in the full model tested with either cohort group), but with effect sizes roughly one-half the predicted $\beta = .33$ effect size. So neither institutional prestige conceptualized as the broad teaching vs. research-focused categorization, nor institutional prestige operationalized as undergraduate selectivity of each individual institution, served to predict work hours with an effect size matching the hypothesized effect size.

As was the case with its prediction of work hours, the research vs. teaching contrast variable was a nonsignificant predictor of WFC in three of the four tests of the model, and when it was significant, the effect size was substantially smaller than the hypothesized effect size, and the effect was not in the hypothesized direction. Specific institutional prestige also served as a significant predictor of WFC in just one of four tests of the model, and again with a smaller than hypothesized effect size. The absence of significant differences at the hypothesized effect sizes, in light of the ample power to

detect an effect if it was present (achieved power for the full model is $1 - \beta = .87$ for Cohort 1 and $1 - \beta = .99$ for Cohort 2), implies that respondents employed at different types of institutions do not experience meaningful levels of systematic variation in work-family conflict. These results provide no evidence to support the belief that a strategy of preferentially seeking out employment at teaching-focused institution types over research-focused institution types results in reduced work-family conflict.

These results, which represent a novel contribution to the literature, serve as the first known quantitative exploration of factors underlying the finding that PhD holders expect jobs at teaching-focused institutions to be more family friendly than jobs at research-focused institutions. Across broad institution types and across specific institutional prestige levels, respondents experience fairly comparable levels of both work-family conflict and workload. The existence of such small differences in workload and WFC by institution type and institutional prestige is notable, given the previously reported expectations, and job search and career path behavior in line with those expectations (Mason et al., 2009; Wolf-Wendel & Ward, 2006), that positions at teaching-focused institutions are more amenable to combination with family life than are those at research-focused institutions. These types of jobs certainly differ in other meaningful ways that contribute to their overall family-friendliness beyond workload and level of WFC experienced by their employees, but the lack of sizeable differences in the expected directions on these two important outcome variables despite adequate levels of achieved power to detect them indicates that the picture is likely more complex and nuanced than a simple research vs. teaching dichotomization of academic jobs and family-friendliness.

5.2.2 Additional Significant Predictors of Workload.

While the gender by presence of dependent children did not significantly predict workload in the partial model tested with data from either cohort group, presence of dependent children as a predictor on its own significantly predicted work hours among Cohort 2 respondents, such that respondents with dependent children worked an average of 4.29 fewer hours per week than respondents without dependent children. This interaction term was significant in both versions of the full model, such that among men, dependent children exert no significant impact on workload, but among women, the presence of one or more dependent children is associated with an average reduction in self-reported weekly work hours of 4.08 and 6.37 hours, respectively for Cohort 1 and Cohort 2, relative to women without one or more dependent children. These reductions in weekly working hours are nontrivial, and amassed over time could represent meaningful differences in productivity (Lubinski & Benbow, 2007).

Rank also served as a significant predictor of weekly work hours in the Cohort 2 version of the full model, such that both the contrast between assistant and associate professor status and the contrast between associate and full professor status were significant, with assistant professor status being associated with a 2.39 hour increase in weekly work hours over those of associate professors, and associate professor status being associated with a 2.92 hour increase in weekly work hours over those of full professors.

5.2.3 Additional Significant Predictors of WFC.

Work hours emerged as the only consistent predictor of WFC, with each additional hour of work being associated with a 0.03 unit increase in WFC (on a 4-point

scale; partial model, Cohort 1), a 0.02 increase in WFC (on a 4-point scale; partial model, Cohort 2), and a 0.04 increase in WFC (on a 6-point scale; full model, Cohort 2). Workload was not a significant predictor of WFC in the Cohort 1 version of the full model. So working an additional 10 hours per week would translate roughly to a $1/5^{th}$ point increase in WFC scores (on a 4-point scale). This relationship is well-supported in the literature, and work-family conflict is, by definition, driven in part by one's work commitments, so this finding is unsurprising.

5.2.4 Joint Pursuit of Work and Personal/Family Goals During Academic Career Path Progression.

Details about the ways in which men and women simultaneously pursue their work and family goals were gleaned through tests of gender differences in the influence of family factors on job moves and respondents' most recent job searches, use of tenure clock stop and extension policies, tendencies to adjust one's career plans and behaviors in service of family goals and vice versa, and age at birth of one's first child. Hypotheses related to these variables all stemmed from the notion that, when faced with the task of coalescing their work and family goals while moving along their career paths, women are more likely than men to behave in a manner that reflects giving preference to work over family, or vice versa, than are men.

When reporting on the manner in which various factors impacted their decisions during their most recent job searches, Cohort 2 respondents exhibited few gender differences on either family-related or job-related factors, while Cohort 1 men and women tended to provide similar ratings on job-related factors and Cohort 1 women tended to rate family-related factors as more important than did Cohort 1 men (d = 0.39 –

1.19). When respondents were asked a series of yes/no items about whether a variety of factors had caused them to leave their last job, men were likely than women to endorse job-related factors (Φ = .07 - .16), and women were more likely than men to endorse family-related factors (Φ = .16 - .20), when significant gender differences in endorsement levels of these factors were present. The cohort differences were less clear-cut in this series of items than with the importance ratings of various factors in one's most recent job searches, with some gender differences on each type of factor appearing within each cohort group, and a significant gender difference in the factor family considerations appearing in Cohort 2 but not Cohort 1.

These differences in the approaches that men and women take, on average, to their job search decisions could result in a situation where a woman is more selective than a man within the context of a given job search, and could also lead to a situation in which a job with desirable standing on job-related factors but less desirable standing on family-related factors is taken by a male candidate but passed up by a female candidate. But, these gender differences on family-related job search factors are more frequent and more robust among Cohort 1 respondents than among Cohort 2 respondents, suggesting that something in the way men and/or women approach these factors has changed over time, with the end result being that male and female faculty members who earned their PhD more recently (i.e., 1995 or later) approach their job search decisions, both in their initial and most recent job searches, more similarly to one another than do their counterparts who earned their PhDs less recently (i.e., prior to 1995).

When respondents were asked to report their level of agreement that caring for their children had required a variety of adjustments to their work behaviors, medium to

large-sized gender differences were present on several of these adjustments (*d* values range from 0.48 to 0.85 for Cohort 1 and from 0.30 to 0.43 for Cohort 2), all in the direction of women agreeing more strongly than men. These differences were observed more frequently, and were larger when they were observed, among Cohort 1 respondents as compared to Cohort 2 respondents. Similarly, when respondents were asked whether they had made a variety of adjustments to their career plans in service of family goals and vice versa, significant gender differences were consistently in the direction of women being more likely than men to make both type of adjustments, and were observed more frequently among Cohort 1 respondents than among Cohort 2 respondents.

A clear pattern emerges upon examination of the results from the initial and most recent job search factors, the adjustments to family plans in service of career goals and vice versa, and the adjustments to work behaviors as a result of caring for children: gender differences are present on many of these variables, almost always in the direction of women being more likely than men to make these adjustments or more heavily weight family factors in their job searches than do men, and the frequency with which such differences are present and the size of such differences when they are present is substantially higher among Cohort 1 respondents as compared to Cohort 2 respondents.

Stopping one's tenure clock exemplifies giving priority to family over work, and women reported higher rates of usage of such policies in Cohort 1 and Cohort 2 in the main sample and in Cohort 1 in the follow-up sample, with effect sizes of $\Phi = .16$, $\Phi = .19$, and $d = 0.74$, respectively. It should also be noted that overall endorsement of/agreement with both versions of this item are relatively low; this finding could be driven by generally limited availability of such policies, and/or the tendency of faculty

members not to use such policies when they are available (Drago et al., 2006). But the small subset of faculty members using these policies is comprised of a larger portion of women than of men. Conversely, academic faculty members can give priority to work over family by delaying having children in order to facilitate their career goals. Relative to the national average ages at birth of one's first child for men and women, all respondents exhibited a significant delay, and the size of this delay was significantly larger among women than among men in both cohort groups in the main survey.

As discussed previously, it is important to consider the possibility that women may elect to devote themselves to caring for children because of a lack of interest and/or success in pursuing a full-time, demanding career. While the full-time employment status of all respondents prevents a thorough investigation of this question, analyses on follow-up survey questions about whether/how respondents would have approached their careers differently if they did not have children, and their overall satisfaction with the time they have allocated to work and to personal/family life, allow for an initial assessment of this possibility. If women were engaging in household and caregiving duties as a means of avoiding a career in which they were not terribly interested and/or successful, they would likely report that they had allocated much more time to work than they would have liked. However, mean responses on this item indicate that both men and women are fairly happy with the manner in which they have allocated their time to work and to personal/family life, and there were no significant gender differences on this item in either cohort.

Respondents were also asked to report how they would have adjusted their approach to their career if they had not had children, in terms of devoting less time, more

time, or the same amount of time to their career. Again, if women devote time to their household and childcare duties as a means of justifiably drawing back from their careers, it follows that they would report wanting to spend comparable time, or less time, on their careers if they had not had children. Across cohorts, men and women report that they would have devoted more time to their careers if they had not had children, with mean values falling around "slightly more time" or between "slightly more time" and "significantly more time". Men and women in Cohort 2 do not differ on this item, while Cohort 1 women provided significantly higher scores than did Cohort 1 men.

The possibly certainly exists that respondents hold this belief as a means of self-preservation, in that people might feel uncomfortable admitting that they would have invested no additional time and effort into their careers had they not had children, but this is a piece of information that is difficult to glean from self-report data. Knowledge of people's true career intentions would be required to thoroughly address this question; these intentions are certainly confounded by many factors including their education, job options, geographic mobility, spouse's career, and family and societal influences on their career and family goals. But these data suggest that, at least based on their self-reports, women in this sample are not consciously engaging in childcare and household duties as a means to justifiably pull back from their careers. They report that they have devoted somewhat more time to work than they would have liked (and their reports on this item are comparable to the reports of men on this item), and that they would have devoted even more time to their careers had they not had children.

The academic career path requires a different approach to family planning than is seen among other college-educated individuals, and this is true for both men and for

women. This is likely due to the high time requirements of PhD programs and post-doctoral positions, as well as the rigid tenure progression, that are hallmarks of the academic career path and present challenges with respect to family planning that are largely absent from other career paths (Wolfinger et al., 2009). There are both costs and benefits to delaying having children (Amuedo-Dorantes & Kimmel, 2005), and these are likely to be more salient for faculty members given their tendency, on average, to wait longer than their non-academic peers to have children. These constraints impact both men and women, but women are affected to a larger degree, illustrated by both the significantly larger delay, relative to the national average, in birth of first child among women in the main sample as compared to men (across cohort groups), and the greater endorsement level of limiting the number of children one has and deciding not to have children in service of one's career goals among women in the follow-up sample as compared to men (among Cohort 1 respondents only). University personnel interested in attracting the best job candidates and optimizing the productivity of their current faculty members would be well-advised to take these family planning issues into account when designing benefits packages and human resources policies.

5.2.5 Time Allocation to Family Responsibilities.

Exploration of gender differences in time allocation to family responsibilities focused on reports of time spent by self and spouse (if applicable) on childcare and household labor tasks. Male and female respondents' reports were also compared on such variables as satisfaction with division of household labor and childcare duties and how specific childcare duties are shared by respondents and their spouses/partners. These

analyses were restricted to respondents who are married/in a marriage-like relationship, are part of an opposite-sex couple, and who have one or more dependent children.

Men and women provided largely equivalent self-reports on the number of hours per week they and their spouses/partners spend on household labor and childcare duties. The only exception to the above statement was that Cohort 2 women reported spending more time on household labor than did Cohort 2 men (d = 0.32). The finding of fewer significant effects than expected, and also smaller magnitude effects than was anticipated, indicates a somewhat more equal division of household labor and childcare duties than has been reported in a separate faculty sample (Suitor et al., 2001). Ample power to detect these result was achieved, as $1 - \beta = .99$ to detect an effect of the hypothesized size for both cohort groups. The discrepancy in these results may be due in part to the differences in the current sample and that from the Suitor et al. (2001) study, which included only research university faculty, and also the possibility that traditional gender-based approaches to the division of household labor may have eroded in the intervening 10 plus years since the Suitor et al. (2001) data were collected. In general, male and female respondents do not differ to a large degree in the hours that they or their spouses/partners spend on household duties or childcare, a finding that runs counter to previously reported results in the literature.

When asked to report on the manner in which they divide specific childcare duties (e.g., attending events, being interrupted at work, and staying at home when children are sick) with their spouses/partners, in nearly all cases, women reported handling such duties on their own a significantly higher percentage of the times than did men, while men reported that their spouse/partners handled such duties on their own a significantly

higher percentage of the times than did women. These gender differences were consistently in the same direction, were of medium to large effect size, and were consistent across cohorts for the most part. These gender differences on these specific ways of handling child-related events and interruptions run counter to the findings of women and men self-reporting that they and their spouses/partners spend roughly equal amounts of time on childcare. Asking about events in this specific, behaviorally-grounded way may serve to pinpoint areas in which men and women differ in their commitment to family duties, and their expectations of what they are responsible for with respect to specific aspects of childcare. These results also provide insight into possible mechanisms underlying the gender differences observed in the extent to which caring for children causes respondents to reduce their teaching loads, their travel schedules, and the quantity of their academic publications: if women are attending their childrens' events, being interrupted at work by their children, and staying home with their children when the children are sick, the cumulative effect of such behaviors would not surprisingly be reductions in one's ability to fulfill work duties and obligations. Men are of course impacted by the needs of their children, as their reported frequencies of attending their children's events, being interrupted at work by their children, and staying home with their children when the children are sick are not trivial, but the magnitude of the gender differences in these reports are substantial. High publication rates and frequent travel are requirements for success during the pre-tenure years, and if women are reducing their participation in these activities as a result of caring for their children more so than men are, women may be disadvantaged in their efforts to earn tenure (Berheide & Anderson-Hanley, 2012).

5.2.6 Gender and Network Relationships and Utilization.

Aspects of the social support derived from one's collaborative academic network were studied as they relate to gender, personality and WFC. Social closeness was expected to relate positively to various aspects of social support, including the number of "close friends" in one's network, the number of network members with whom one socializes outside of work, and the extent to which advice on work/family balance is sought from members of one's network. These relationships were tested with SEM analysis, and the expected relationships were observed, as social closeness predicted count of network members considered to be close friends and count of network members with whom one socializes outside of work, both of which in turn predicted count of network members from whom work-family balance advice was sought. Women were expected to seek such support from a larger portion of their network members than do men, and this hypothesis was supported (d = 0.30 and d = 0.44 for Cohort 1 and Cohort 2 respondents, respectively), with an effect size reasonably close to the predicted effect size of d = 0.46.

Lastly, the manner in which this social support translates into actual benefits was investigated by exploring the relationship between amount of work/family balance advice sought and levels of WFC. The potential use of this specific type of social support as a means of reducing experienced work-family conflict was unsupported, as advice sought was a nonsignificant predictor of work-family conflict in both the linear regression models (partial model: β = .08 p = .13 for Cohort 1 and β = .06 p = .06 for Cohort 2; the model in which this predictor is added does not account for a significant amount of variance in the dependent variable for Cohort 1 and β = .11 p = .08 for Cohort 2) and the

SEM (standardized path coefficient = .041, $p < .001$) analyses. Instead of functioning as a means to alleviate WFC and being associated with lower levels of WFC, seeking advice from a larger number of one's network members on work-family balance advice is linked to heightened WFC. The direction of this relationship may indicate a situation where respondents seek out more advice on these issues if they are experiencing more problems in successfully balancing the work and family arenas.

So personality did relate to network behaviors as expected, but the network behaviors did not alleviate experienced work-family conflict as expected. Future research efforts in this area should examine the frequency with which this advice is sought, the quality of this advice, and whether the person receiving the advice puts any of it to use. Knowing that a respondent seeks this type of advice from a certain number of his/her network members tells us something about how salient work-family balance issues are in his/her life, and it also tells us something about the nature of the respondent's relationship with a given network member, but this information is limited in terms of affording an understanding of if and how this type of advice might be used by the respondent. The manner in which the advice is evaluated and used by the respondent may be more likely to relate in the expected way to experienced levels of work-family conflict.

5.3 Limitations

Several limitations of the current study should be considered alongside the presentation and interpretation of the results. Exclusive reliance on self-report measures, use of retroactive self-reports, inclusion of only faculty members already on the academic career path, exclusive focus on a narrow set of STEM disciplines, overreliance on significance testing, and failure to account for large amounts of variance in the dependent

variables of interest in some of the linear regression models all represent important limitations of the current work; each is discussed in turn below.

While the measures used to assess personality traits, work centrality, and work-family conflict are all well-established and exhibited satisfactory psychometric properties, they are self-report measures and sole reliance on self-reports of these and all other key study variables represents a major limitation of this work. Work hours, a key dependent variable of interest in this study, was also assessed solely via self-report; work hours may be over or under-reported due to social desirability, in that respondents may report higher or lower work hours than they actually believe that they work in an effort to make themselves look better (Bonke, 2005). Social desirability could lead to over or under-reporting, as high or low work hours may each be viewed as socially undesirable. The irregular work schedules of most academics, such that on some days only a few hours of work or none at all may be subject to an actual schedule (e.g., teaching, meetings), coupled with the quick responses (estimated to be roughly 10 seconds or less) most people provide to survey questions on how many hours one works per week/in a typical week/last week, often result in estimates that rely on standard societal and/or organizational conventions rather than a thoughtful and accurate accounting of one's work activities (Robinson, Chenu & Alvarez, 2002). However, given that most academic faculty members do not punch a time clock upon arrival and departure from work, and they often have the flexibility to switch from work to non-work activities many times throughout the day and week should they choose to do so, an entirely unbiased measure of weekly work hours is unlikely to exist. Corroborations of respondents' weekly work hours from spouses/partners and/or colleagues would be useful data points to collect in

future research efforts. Use of time diaries and grid-type items to assess more specific work behaviors has also been shown to be associated with increased accuracy in self-reported work hours over more general survey items, although the extent of this improvement in accuracy varies by study and population (Bonke, 2005; Frazis & Stewart, 2004; Robinson et al., 2002).

Additionally, the manner in which these self-reported measures and variables relate to unbiased quantitative data points such as salary, years taken to reach tenure, number and quality of publications, and placement of graduate students if applicable would serve to more clearly illustrate their potential relationships with success along the academic career path. Some of these data are available in the current dataset while other such data points would need to be collected; relating the currently available self-report variables with these objective career success metrics should provide a worthwhile avenue for future research.

Another limitation of this data set is the reliance on retrospective reports of initial job preferences and early career path decisions. While the search for one's first post-PhD job happened recently for some respondents, it happened several decades ago for others. With this type of data, the concern that time elapsed will have eroded memory of these data points and compromised their accuracy does, and should, exist. This limitation could be overcome with an investigation of these questions in a sample of PhD students nearing graduation, and/or an early career sample.

A related limitation of this study is that all respondents are currently on the academic career path, employed in full-time faculty positions. This precludes investigations of those individuals who have opted out of the academic career path and

their reasons for having done so. A longitudinal design in which PhD students nearing graduation were followed through their early career trajectories would be ideal, as respondents who continued on the academic career path, as well as those who did not, could be investigated. In order to more deeply and thoroughly investigate the reasons underlying the differential representation of men and women at different institution types, longitudinal designs should be employed; these would allow for both analyses of respondents' career path decisions as they are occurring, and examinations of differences between PhD holders who do and do not continue to pursue academic career paths. Furthermore, all respondents are from a narrow set of STEM disciplines; while there were methodological justifications behind the selection of these disciplines (please see section 3.1.1, p. 37, for a discussion of this issue), the extent to which these results will generalize to other STEM disciplines and across all STEM fields is unclear.

From a statistical perspective, the total number of significance tests performed represents a limitation of this study. The use of a very large overall number of significance tests while maintaining an $\alpha = .05$ cutoff for significance means that some effects are likely over interpreted. This problem has been mitigated somewhat by focusing the interpretation of results and corresponding discussion on effect size estimates (e.g., *d* and Φ) rather than solely relying on a significant/not significant distinction. Lastly, the hypothesized amount of variance explained in both the workload and WFC models was not achieved in any version of the model tested. The hypothesized R^2 value in the workload model prior to adding the interaction term was .16, and the actual R^2 values achieved in the partial model (in which the interaction term was not significant) are .02 and .04 for Cohort 1 and Cohort 2, respectively. The hypothesized R^2

value in the workload model after adding the interaction term was .25, and the actual R^2 values achieved in the full model (in which the interaction term was significant) are .07 and .13 for Cohort 1 and Cohort 2, respectively. In the WFC model, the total hypothesized amount of variance explained was 25%; achieved R^2 values were roughly ½ of the hypothesized value: R^2 = .16, .14, and .12, for the Cohort 1 partial model, the Cohort 2 partial model, and the Cohort 2 full model, respectively. The predictors in the Cohort 1 full model did not account for a significant amount of variance in WFC. These figures clearly indicate that the set of hypothesized predictors did not account for nearly the amount of total variance in workload and WFC that was hypothesized. These are both highly complex variables with many potential underlying factors beyond those included in the models. Important contributors to workload and WFC were excluded from these analyses, and investigations into what these excluded factors might be would be useful future research endeavors.

5.4 Summary and Conclusions

The results discussed above reveal surprising and useful information about gender differences in behaviors and decisions exhibited by academic faculty as they embark and progress upon their career paths. The initial job preferences of Cohort 1 respondents are predicted quite well by specific family-friendliness ratings of academic jobs in teaching-focused and in research-focused environments, work centrality scores, and the importance of overall family-friendliness of jobs in one's initial job search. Gender differences with small to medium effect sizes were observed on all of these variables except for family-friendliness ratings of academic jobs in teaching-focused environments, providing support for each of these as explanatory factors for the overrepresentation of

women, relative to men, in teaching-focused institutions. These predictors did not operate in the same manner, nor were gender differences found on them, among Cohort 2 respondents, suggesting that the mechanisms underlying the interrelationships among these variables differ in meaningful ways between the two cohort groups.

A separate set of survey items support this finding that family-friendliness is more important to the initial job searches of women than of men, as women rated a series of family-related factors as having been more important to their initial job searches than did men; as was seen with the regression results, these gender differences were present among Cohort 1 respondents and absent among Cohort 2 respondents. Women provided roughly equal importance ratings to a series of job-related factors. These results portray slightly different approaches taken by men and by women in Cohort 1 to their initial job searches, whereby women weight family factors more heavily, and job-related factors equally, as compared to men. Cohort 2 men and women provide roughly equal importance ratings to all the family-related factors and nearly all the job-related factors; the driver of these discrepant findings between cohorts is primarily higher reported importance levels assigned to family-related factors during one's initial job search by Cohort 2 men as compared to Cohort 1 men.

Graduate students and faculty members believe that research-focused academic environments are less family-friendly than teaching-focused academic environments, but the basis for these expectations is unclear. The general trend of nonsignificant or smaller than expected results regarding differences in work hours, WFC, and work centrality across research vs. teaching-focused institutions, and across specific institutional prestige levels, provides evidence against such beliefs, at least on the basis of the variables

considered here. Academic faculty members strategically pursuing employment at a less prestigious or a teaching-focused institution in an effort to enjoy reduced work hours or WFC are not likely, per these results, to achieve these intended outcomes. These beliefs are important contributors to career planning; whether and why these beliefs on discrepant family-friendliness of different types of academic jobs continue to persist in light of minimal or no actual differences in these critical family-friendliness variables should be a focus of future research efforts. If future research efforts provide further support for the finding that such beliefs are inaccurate, this information should be provided to graduate students and early career faculty members to prevent them from making decisions based on faulty beliefs regarding the family friendliness of various types of academic jobs.

Support for the notion that women, to a greater extent than do men, exhibit behaviors indicative of adjusting work goals and decisions to accommodate family goals and decisions, and vice versa, is also seen in these results, with most of the evidence for such gender differences coming from Cohort 1 respondents and not Cohort 2 respondents. Women in this sample were significantly more likely to report having limited the number of children they had, or having decided not to have children, than were men, and there is limited evidence that women delayed having children to a larger extent than did men when compared to the respective national averages for age at birth of first child. Both men and women reported having adjusted their family planning in service of their career goals, and both men and women exhibited heightened age at birth of one's first child relative to the respective national averages, but in nearly all cases these adjustments were more likely and the size of this delay was larger among women

relative to men. Institutions interested in attracting and retaining desirable job candidates should demonstrate an understanding of, and make available the necessary accommodations for, the challenges that the academic career path presents for both men and women interested in having children.

Women exhibit heightened likelihood, relative to men, of making various other types of adjustments in order to care for their children, including decreasing the quantity of their academic publications, reducing their travel schedules, reducing their teaching loads, and resetting/extending their tenure clock. These gender differences were observed more frequently among Cohort 1 respondents than among Cohort 2 respondents. When the performance of faculty members is evaluated, the necessity of such adjustments among both men and women, and the often elevated propensity of women to make such adjustments, relative to men, should be taken into account to the extent possible. Some academic jobs will not allow for such adjustments to be made without a concomitant decrease in overall performance, and in jobs where this is the case, gender differences are likely to persist. However, the detrimental effect of such adjustments on academic jobs should be investigated rather than assumed, as in some positions it may be possible for the critical job functions to be accomplished in an acceptable manner while these types of adjustments are simultaneously made.

With respect to commitment to household labor and childcare duties, some gender differences were observed, all in the direction of women expressing higher commitment to this life arena than do men. In most cases men and women provide roughly equal reports of the amounts of time both they and their spouses spend engaged in household labor and childcare duties, indicating a more egalitarian level of participation by men and

women in these types of duties than has been reported in other faculty samples. Significant gender differences in the direction of women reporting heightened involvement relative to men were observed in commitment to specific child-related duties, such as attending children's school events, staying home with sick children, and being interrupted at work by children.

These results provide researchers with a clear and robust understanding of the current state of gender and family status differences in STEM higher education career path decisions and work behaviors, and an evaluation of several potential explanatory factors underlying these differences. These results illustrate the impact of family friendliness ratings of specific jobs, and the stated overall importance of family friendliness of jobs being considered within a given job search, in predicting initial job preference, and also highlight meaningful differences in the ways in which men and women evaluate various factors in job search and job change decisions throughout their academic careers. When a varied set of both career path adjustments to accommodate family/personal life events, and adjustments to family/personal life decisions in service of career goals are analyzed, consistent gender differences emerged with women tending to make both types of adjustments more frequently. Meaningful cohort differences were observed, such that gender differences on many variables were present only among Cohort 1 and not among Cohort 2, despite ample power to detect these effects in both cohort groups in most analyses.

In general, the results presented here run counter to the belief held by faculty members (in this and other samples) that academic jobs in teaching-focused environments are more family friendly than academic jobs in research-focused

environment, as substantial differences in work hours and WFC were not observed between respondents employed at these two types of institutions. Additionally, men and women generally did not differ in their reports on the amount of time that both they and their spouses/partners spend on household labor and childcare duties, while significant gender differences in the direction of women expressing higher levels of commitment were present on a series of items on the division of specific childcare duties with one/s spouse/partner. It is expected that these results will inform leaders of higher education institutions and policy makers so that barriers facing both men and women interested in simultaneously pursuing family and a demanding career in STEM higher education can be effectively reduced.

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