Career and Family Choices:
A Longitudinal Perspective by Women in Science Graduate Studies

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Introduction

A wide body of research has documented that women drop out of science at each successive stage of education and career, a phenomenon known as the leaky pipeline (Goulden, Frasch & Mason, 2009). This phenomenon is especially evident in Atmospheric Science (ATS), a group that loses women at a higher rate than other geoscience fields (NSF, 2013). One reason for this loss is the stress of education and career on family planning and vice versa (Thiry, 2011). This conflict is particularly intense for women in dual-career relationships, perhaps related to a socialized pressure to prioritize their relationships over their careers (Canetto, Trott, Thomas, & Wynstra, 2012; Larocque, 1995).

One limitation of prior studies is that they are cross-sectional. No previous research has longitudinally examined the work and family choices and experiences of female ATS graduate students. This study will do so by investigating how female graduate students in ATS think about commitment to one's partner and make decisions about job location.

Objective

The objective of this study was to explore how ATS female graduate students perceive:

1) The relationship between partner commitment and level of work/family conflict
2) The relationship between having a partner in science and work/family conflict

Method

Participants: Ten female, heterosexual, ATS graduate students between the ages of 24 and 30 (M_{age} = 27) participated in this study. At T_1 five were masters-level and five were doctoral-level; three were unmarried, one was in a committed relationship, one was engaged, and five were married. None had children.

Procedures: Participants were recruited via email invitation and via student and faculty referrals. In-depth, semi-structured interviews were conducted with each participant across two time points (separated by a year or more) to explore views and experiences of work/family conflict. Each interview was audio-recorded, transcribed verbatim, and edited for accuracy.

Data Analysis: The interviews were analyzed based on thematic analysis. Coding was completed by a three-member female team. The process consisted of (1) familiarizing oneself with the data; (2) generation of initial codes; (3) the search for themes; (4) the review of themes; (5) the definition and naming of themes; and (6) production of the report (Braun & Clarke, 2006).

Data Trustworthiness: Data was longitudinally collected providing a robust view of participants over time. Interviews were independently coded by three researchers. Individual codes were discussed and revised in coding meetings, with final codes being achieved via consensus.

Results

At T_2, three of the master's-level women had graduated and found employment, with two moving onto the doctoral program. Of the five doctoral-level students, four were still students and one had become a post-doctoral fellow. Two of the unmarried women remained unmarried and three of them married. All five married women remained married.

We found that two factors influenced women's work and family conflict, as evidenced by job location stress:

1) Level of commitment to partner
2) Partner's participation in science

Three stages of commitment were conceptualized according to these factors.

GROUP ONE
Partner not in science

T_1 Married → **T_2 Married**

Participants in this group experienced the least amount of work/family conflict

One participant stated

T_1: "*He's thought about starting his own company and that would be really good for him because he'd be able to work for himself and it would be good for me because if he was just doing contract work we could live almost anywhere.*"

T_2: "*My husband's work is kind of flexible, and he's also kind of at a point in his life where he's not 100 percent sure he wants to keep doing what he's doing, but we still have to take into account his job potentials, so that could be one barrier.*"

GROUP TWO
Partner in science

T_1 Unmarried → **T_2 Unmarried / Married**

Participants in this group experienced a moderate amount of work/family conflict due to having a partner in science. Increased commitment over time intensified this conflict.

Participant not married at either time point

T_2 "*Both of us going into it were like, 'Well, obviously we're going to pick an awesome job over each other.'…Obviously I don't want him to give up some sort of awesome job just to live close to me if that's what it takes.*"

Results Continued

Participant not married at T_1 and married at T_2

T_1: "*We are not at the same place in our programs…I wouldn't choose to stay here, or in this area because of him at this point. So that's why I've always been a little leery of dating before I figured out where I wanted to be. Because for me I have goals and they come first. At least until we're married or going to be married.*"

T_2: "*He's currently a little bit ahead of me so it's trying to balance what each of us want to do and maybe the flexibility that each of us has, whether we can actually find two positions in the same place. It's a major challenge.*"

GROUP THREE
Partner in science

T_1 Committed / Engaged / Married → **T_2 Married**

Participants in this group experienced a significant amount of work/family conflict, due to their commitment to a partner in science. All three of these participants finished their education with their master's degree and prioritized their partner's job location over their own.

Participant committed at T_1 and married at T_2

T_1: "*He doesn't love his grad school experience so far…[If he left] I guess it'd be open for me or him to be together wherever. His job, I think, is more flexible than mine. So then we could move somewhere where I needed to be.*"

T_2: "*His projects are kind of struggling right now, so sometimes he says he's going to leave with the master's…I would follow him somewhere if he needed to move.*"

Participant married at T_1 and married at T_2

T_1: "*I recently got married and he's also in the field and he's getting ready to graduate so location flexibility's probably my number one barrier.*"

T_2: "[Barriers have been] *definitely having to move a lot. I really, really enjoyed my last job and I was advancing very nicely in it. So having to stop work after I was only there for about a year and a half was definitely disruptive to my career. But in the long term I don't think that matters.*"

Discussion

The current study explores female ATS students' family choices and experiences while pursuing their education and career. Women in this sample experienced work/family conflict mainly through job location stress, such as worrying about how to find a job in the same location as a partner, prioritizing a partner's job location over one's own, and regret over moving for one's partner. Partner's participation in science seemed to play a larger role in conflict than did commitment level, though commitment level over time affected conflict; participants who were uncommitted at T_1 and committed at T_2 experienced more conflict at T_2.

These findings are consistent with previous research, in which it has been shown that women in science feel pressure to move for the jobs of a partner, a pressure that is particularly intense for women in dual-career partnerships. In one study these partnerships negatively impacted women's career progress more often than men's, yet women were found to be in dual-career partnerships at a rate twice as high as men (84% vs. 42%) (Macfarlane & Luzzadder-Beach, 1998).

This study supports these findings and the notion that women are pressured by societal expectations of gender-typed responsibilities, such as prioritizing relationships and family over careers. This has implications for the recruitment and retention of women in ATS. It may be that dual-career partnerships are a hazard for women along their education and career path in ATS.

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