

Beakers or Babies: Work-Life Balance among Women in STEM

Amber K. Stephens, MA Candidate
Sarah E. Thoman, MA
Rachael D. Robnett, Ph.D.

University of Nevada, Las Vegas
Las Vegas, NV 89154 USA



Introduction

Research Problem: Gender Parity and STEM

- Women are underrepresented at the highest levels in science, technology, engineering, and math disciplines (STEM: National Science Board, 2010) and comprise less than 30% of the STEM workforce (Landivar, 2013)
- Improving gender inclusion in STEM fields is a national priority (Koizumi, 2015)

Women in STEM: Challenges

Research documents the challenges women face in STEM, including healthcare, such as:

- Women indicate low self-efficacy with respect to STEM skills (e.g., math abilities)
 - This influences later perceived STEM success and pursuits (Eccles, 2011)
- Women tend to pursue gender typical specialties in medicine (e.g., pediatrics) despite nearly equal representation in medical school (Erikson, Jones & Tilton, 2012; American Medical Colleges, 2015)
- Women in STEM experience gender bias:
 - During hiring (Moss-Racusin et al., 2012)
 - From peers (Robnett, 2016)
 - From within the STEM workplace (Settles, Cortina, Buchanan, & Miner, 2012)

Gender and STEM: Work-Life Experiences

Studies indicate that women perceive and experience work-life topics differently than their male peers:

- View work-life choices in favor of family as incompatible with STEM careers (Ceci & Williams, 2011)
- Female faculty have fewer children (or dependents in the household) compared to their male peers, and are twice as likely to be single (Mason & Goulden, 2004)

Work-Life in STEM: Next Steps

Understanding women's perceived work-life experiences earlier in the STEM career pipeline may help enhance STEM inclusion:

- Exploring work-life experiences in STEM students is vital as students are making meaningful decisions about their career identities as emerging adults (Arnett, 2000)
 - STEM identity has later implications for later career commitment to continued STEM pursuits (Chemers, Zurbriggen, Syed, Goza, & Bearman, 2011)
 - College women, early in the career pipeline, expected to experience significant family interference in work, and were more apt to consider ways to ameliorate the potential conflict than their male peers
- However, these women may not be considering realistic future work-family options (Coyle, Van Leer, Schroeder, & Fulcher, 2015)

Objective

Characterize how early-career STEM women experience and perceive work-life issues while exploring how their experiences and perception of work-life issues influence their plans to ameliorate/address work-life and explaining how experienced/perceived conflict manifests.

- Our findings may help further psychological insight into women's retention in STEM and healthcare and enhance intervention efforts with respect to STEM inclusion.

Methodology

Design & Measures

A mixed-methods design investigating the role of work-life balance perceptions on STEM academic and career outcomes in early career STEM students.

A survey was administered at the end of the Fall 2015 semester

- Work-life conflict, the focus of these analyses, was assessed via items adapted from Carlson (2000) and items probing work-life concern.

Participants qualitatively described anticipated future work-family conflict via an open-ended survey prompt:

"I am concerned that having children will make it more difficult to obtain the career I want."

Responses were coded through a deductive and inductive approach via thematic analysis (Braun & Clarke, 2006).

Sample

$N = 156$ women ($M_{age} = 21.7$)

Education Level

- 83.3% Undergraduate ($n = 130$)
- 16.7% Graduate ($n = 26$)

STEM Focus

- 62.8% Life sciences ($n = 98$)
- 37.2% Math intensive ($n = 58$)

Current Romantic Involvement

- Undergraduate ($n = 74$)
- Graduate ($n = 16$)

Ethnicity

- 31.4% European American
- 24.4% East Asian
- 21.8% Latina
- 11.5% Other/Multiracial

Results & Discussion

Qualitative analyses revealed that two overarching mindsets characterized the current and perceived work-life experiences for the women in STEM in our sample: *challenge* and *opportunity*.

Challengers

What is a challenger mindset?	Mindset that viewed children and family along with career as problematic (e.g., source of stress or difficulty) - Based on role conflict and role strain theory
Sample Challenger Response:	<i>"I am afraid that being a doctor will not allow me to raise my children how I would like to. I may have to work long hours."</i>
Demographics	Age: $M = 21.7$ years, $SD = 3.40$ Serious romantic relationship: 59.2% Ethnicity: - 28% European American - 26.4% East Asian - 24.8% Latina
STEM Characteristics	Life Sciences: 65.6% Math Intensive: 34.4% 84.8% Undergraduate, 15.2% Graduate
Qualitative Responses	Personal Perspective: 78.4% <i>An individual vs. general view of work-life Action:</i> - Opt Out (<i>forgoing children and family</i>): 51.4% - Delay (<i>initiate a family after career accomplishment</i>): 35.7% - Balance (<i>simultaneous pursuit of family and career</i>): 12.9%

Opportunists

What is an opportunist mindset?	Mindset that viewed children and family along with career as an occasion to pursue joint interests (e.g., fulfill various life goals) -Based on role expansion theory
Sample Opportunist Response:	<i>"One reason I plan to pursue pharmacy instead of research is so I can have the time to take care and spend time with my loved ones and future family."</i>
Demographics	Age: $M = 22.1$ years, $SD = 4.83$ Serious romantic relationship: 51.6% Ethnicity: - 45.2% European American - 16.1% East Asian - 12.9% Other/multi-racial
STEM Characteristics	Life Sciences: 51.6% Math Intensive: 48.4% 77.4% Undergraduate, 22.6% Graduate
Qualitative Responses	Personal Perspective: 77.4% <i>An individual vs. broad general view of work-life Action:</i> - Opt Out (<i>forgoing children and family</i>): 14.3% - Delay (<i>initiate a family after career accomplishment</i>): 19.0% - Balance (<i>simultaneous pursuit of family and career</i>): 81.0%

- Challengers**
 - More likely to indicate **higher levels of current work-interfering with family** ($t(154) = 2.84, p=.005$), **family-interfering with work** ($t(154) = 2.29, p=.02$), and **higher overall concern about work-life in the future** ($F(1,154) = 91.47, p < .001$) than opportunists
 - More likely to indicate **opting out** or **delaying** children and family than opportunists ($X^2(2) = 36.83, p < .001$)
- Opportunists**
 - More likely to indicate **higher STEM identity**, or identification with their current career, than challengers ($t(154) = -2.504, p=.013$)
- Challengers and Opportunists**
 - Significant difference in STEM identity such that **those choosing to balance vs. opt out indicated significantly higher STEM identity** ($F(2,88) = 3.52, p=.034$)
 - Balancers** also had significantly lower levels of concern about work-life in the future ($F(2,88) = 3.69, p=.029$)



Conclusions

Takeaways:

- In our findings: early career women in STEM were more likely to express a **Challenge** mindset (anticipate role strain and role conflict with respect to work-life in the future), and reported higher overall current work-life conflict and perceived worry about work-life in the future than **Opportunists**
- Challengers** indicated compromised STEM career identity, as opposed to **Opportunists** who indicated higher STEM identity.
- Challengers** were more likely to indicate the intent to forego children/family or delay the onset of family, whereas **Opportunists** were more likely to indicate the intent to balance work and family
- Those choosing to opt out of children or family reported lower STEM identity and higher concern for work-life in the future than those planning to balance work and family.

What does this mean for Gender Parity?

- Early career women in STEM are differentially experiencing work-life issues at their current life stage and when considering their future careers.
- Both Challenge and Opportunist mindsets may need to be discussed earlier in the career pipeline to either ameliorate issues or to help individuals learn from the strengths of one another (e.g., learn of the approach or perspective of an opposing or complementary viewpoint). Decrements to STEM identity indicate reduced later commitment to STEM careers.
- Until work-life perceptions are markedly altered, gender inclusion in STEM will likely remain illusive. Additionally, men merit a role in the discussion of work-life as well.

Future Directions:

What can be done to promote or inform a woman's mindset around work-life topics?

- Research indicates that certain kinds of intervention have helped women in STEM such as informational pamphlets on competencies in STEM when promoting STEM self-efficacy in adolescent girls (Harackiewicz, et al., 2012), or providing mentors or models who women in STEM can relate to and look up to (Sadler, Burgin, McKinney, & Ponjuan, 2010). Further research is needed to connect our findings to particular interventions for those early in the STEM pipeline.

What about women of different generations working in STEM or healthcare?

- Our research focused on early career women (under age 40), though comparative work investigating the role and/or presence of a challenge vs. opportunist mindset across women at different career stages may further illuminate gender norms and expectations at work and home.

Do these findings apply to women in STEM in different social categories or cultures?

- Our research was conducted with heterosexual female undergraduate and graduate students in the U.S. Women in international communities, as well as women who identify with LGBTQ communities may engage in or experience work-life topics differently. Further research may investigate this.

References & Suggested Reading

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Poster Contact

Amber K. Stephens
MA Candidate, Department of Communication
University of Nevada, Las Vegas
akory@unlv.nevada.edu