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WORK-LIFE BALANCE FOR WOMEN IN STEM LEADERSHIP

Abstract

For women in leadership, managing work and life obligations is essential, especially when leading in male dominated occupations such as STEM. This study examined social support and work-family integration/blurring to determine how women in leadership perceived these dynamics. By surveying STEM women leaders, this research explored work-life strategies and support resources used by women leaders to balance their work and non-work domains and promote their roles as leaders. Women leaders indicated difficulty delineating between work and personal roles and recognized informational and emotional support as most significant to their roles as leaders. Findings also indicated that most support came from spouses/significant others, female co-workers, and mentors outside the organization, respectively. These sources provided the support needed to maintain and progress in their roles as women leaders.

Introduction

Many women seeking career advancement successfully manage multifaceted roles and responsibilities; however, despite these abilities, women continue to face hurdles advancing into senior leadership positions (Boatwright & Egidio, 2003; Ely, Ibarra, & Kolb, 2011; Fine, 2009; Loeffen, 2016; Place & Varderman-Winter, 2018; Tessens, White, & Web, 2011). The promotion of women into leadership positions has been marked with increased pressure and frustrations regarding women's roles and notably their desire to balance their work and non-work domains (Donnelly et al., 2016). The relationship between work-life balance (WLB) and women in leadership roles is complex and should be examined in light of identifying, understanding, and managing these leadership role development hurdles (Guillaume & Pochic, 2009; Kalysh, Kulik, & Perera, 2016; Loeffen, 2016; Powell & Greenhaus, 2010).

Limited research has been conducted on how WLB dynamics including social support and work-family integration affect women in leadership (Kalysh et al., 2016), especially within occupations traditionally dominated by men.

STEM

With the authorization of the America Completes Act (U.S. Congress, 2007) and its reauthorization (U.S. Congress, 2010), underrepresented groups including women have been encouraged to study and progress within science, technology, engineering, and mathematics (STEM) careers. Additionally, the Educate to Innovate campaign sought to expand educational and professional opportunities for women and other minorities within STEM fields (Office of the Press Secretary, 2010). While these initiatives

have prompted females to obtain STEM educational degrees and enter career opportunities, women continue to be underrepresented within STEM fields and STEM leadership positions (Blackburn, 2017).

Researchers (Blackburn, 2017; Mullet, Rinn, & Ketter, 2017; Wynn & Correll, 2018) argue that gender biases, chilly or nonaccepting cultures, insecure identities, lack of mentorship and sponsorship opportunities, unsupportive WLB policies, and failure to be included into career advancing networks continue to create a challenge for women in STEM careers and leadership positions. Additionally, the demand for role flexibility, WLB, and more importantly gender equality is increasingly evident in male dominated career fields, such as STEM, where women are underrepresented (Kabat-Farr & Cortina, 2014; Robnett, 2016). While gender bias and disparities are present across multiple career fields, recent findings have indicated that women in STEM careers continue to struggle with gender barriers including social isolation and exclusion from career-advancing discourses (Leaper & Brown, 2008; Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012; Robnett, 2016). Researchers have also reported that gender biases can be initiated by male and female peers, teachers, and supervisors, yet are also mitigated by these same sources (Halpern et al., 2007; Leaper & Brown, 2008). As senior positions, sponsorship, mentorship, and critical networks continue to allude women within STEM fields, further focus remains apparent in order to sustain women's progress within their STEM careers (O'Connor, O'Hagan, & Gray, 2018).

Work-life Balance

WLB encompasses the harmony and interference that occurs between paid work and non-work domains (Chang, McDonald, & Burton, 2010); despite the term being coined in 1986, managing work and family role obligations continues to be considered an imperative labor force issue today (Carlson, Kacmar, & Williams,

2000; Phipps & Prieto, 2016). Greenhaus and Beutell (1985) initially suggested the attainment of WLB required resources, energy, time, and commitment distribution across work and non-work domains. Later, Clark (2000) defined WLB as the successful performance and function between home and work. Gregory and Milner (2009) described WLB as the cultural and innate bond between work and non-work time and space; an equilibrium between these two roles increased the flexibility and independence of an individual balancing their interest, time, and physical presence in both work and home domains. Hilbrecht, Shaw, Johnson, and Andrey (2008) added that work-life imbalance resulted in the abandonment of critical relationships and obligations as well as the harmful increase of physical, mental, and emotional quality of life issues. Carlson, Grzywacz, and Zivnuska (2009) and Nitzche, Jung, Kowalski, and Pfaff (2014) inferred from these definitions that WLB does not suggest that an individual excelled in both the family and work domains or simply balanced equally work and non-work roles; however, effective WLB occurred when individuals maintained mutually agreed upon requirements in each role, met essential domain responsibilities within each role, and released perfectionistic needs, which demanded high levels of success or effectiveness in both or either role.

WLB continues to receive attention considering initiatives such as work flexibility, compressed work weeks, job sharing, tele-communiting, leave options, stress management, and child/dependent/elderly care (Phipps & Prieto, 2016). To promote improved quality of life, work performance, and organizational commitment as well as to minimize job dissatisfaction, work fatigue, and absenteeism, organizational leaders have initiated work-life policies aimed at offering assistance through improved scheduling flexibility, child and adult care services, and peer/supervisor emotional support (Breaugh & Frye, 2008; ten Brummelhuis & van der Lippe, 2010). While these WLB initiatives have proven valuable (Methot &

LePine, 2016; Paustian-Underdahl, Halbesleben, Carlson, & Kacmar, 2016; Quick, Henley, & Quick, 2004), women in leadership often aspire to their leadership role because they want to make a deep meaningful impact on the organization and often feel work-life interference as they balance their desire to excel in both work and non-work roles (Fine, 2009).

Work-life interference, also called work-family conflict or WFC, is composed of two distinct yet linked concepts: work interfering with family and family interfering with work (Chang et al., 2010; Nitzche et al., 2014; Moreno-Jiménez et al., 2009). Work-life imbalance has been identified as an antecedent to organizational employee wellness issues including stress, professional burnout, poor organizational citizenship behaviors, turnover, and absenteeism (Al-Qutop & Harrim, 2011; Chang et al., 2010; French, Dumani, Allen, & Shockley, 2018; Maertz & Boyar, 2011; Steinmetz, Frese, & Schmidt, 2008; ten Brummelhus & van der Lippe, 2010).

Social Support. Social support is a complex construct under the WLB umbrella and is frequently examined as a contextual antecedent of WFC (French et al., 2018). Initially defined as the means by which an individual reduces strain and improves health and well-being (Cohen & Wills, 1985) or the exchange of resources between individuals with the intent to enhance well-being (Shumaker & Brownell, 1984; Zimet, Dahlem, Zimet, & Farley, 1988), subsequent research has validated that social support positively relates to improved work and family satisfaction (Ferguson, Carlson, Kacmar, & Halbesleben, 2016; Ford, Heinen, & Langkamer, 2007), mental health (Lee, Sudom, & Zamorski, 2013; Webber, & Fendt-Newlin, 2017), physical and psychological health (Bjørnstad, Patil, & Raanaas, 2016; Crain et al., 2014) and protection under adverse conditions (French et al., 2018). Social support has been classified by its forms including cognitive, behavioral, and perceptions (Barrera, 1986; Lakey & Cassady, 1990) as well as types including instrumental, appraisal, emotional, and informational support (Cohen & McKay, 1984; Parasuraman, Greenhaus, & Granrose, 1992).

The pressure that women leaders feel operating in work and non-work domains is significant; however, social support, which takes many forms, may assuage workplace stress (Kalysh et al., 2016). Emotional support (empathy, care, concern, and trust), instrumental support (time, money, resources, responsibility, and energy), appraisal support (assessment, consideration, approval, and opinion), and informational support (advice, insights, and suggestions) are essential in reducing WFC and increasing WLB (van Daalen, Willemsen, & Sanders, 2006). Understanding how these support tactics help or hinder women in leadership may facilitate additional leadership growth.

While social support is career and role bolstering (Mullet et al., 2017), research has not clarified the types of support which are perceived as most beneficial to women leadership positions within male-dominated career fields such as STEM. Dutta's (2018) research questions whether women may opt out of STEM leadership positions because of the lack of support as well as tension between their work and non-work roles. Mullet et al. (2017) argues that "future research should apply conceptual models that capture not only variation among individual women in STEM but also the effects of their social experiences and their instructional environments" (p. 283).

Role Integration versus Segregation Approaches. While some individuals prefer WLB strategies that promote better separation of their work and personal lives, other employees prefer initiatives that facilitate the integration of their work and family roles. Employees utilize various boundaries when managing the demands between work and family life (Kreiner, Hollensbe, & Sheep, 2009; Methot & LePine, 2016; Paustian-Underdahl et al., 2016; Xin, Chen, Kwan, Chiu, & Yim, 2018); considering boundary theory and role accumulation theory, employees utilize five general strategies of boundary work tactics when managing WLB issues including behavioral, temporal, physical, cognitive, and communicative boundaries across domains (Kreiner et al., 2009; Methot & LePine, 2016). These tactics help create an employee's individualized work-home style of either

segmentation or integration. Kreiner et al. (2009) and Paustian-Underdahl et al. (2016) classified segmenters as individuals who maintain WLB by segregating work and home activities through compartmentalizing cognitions, behaviors, and objects such as separate calendars for family appointments and work obligations; conversely, integrators consist of individuals who intermingle home, personal, and work activities such as sharing home and work calendars, inviting co-workers to their home, transferring tasks from one domain to the other domain, or simply keeping family photos at work.

Increasing the overlap between work and non-work domains has resulted in a spectrum of outcomes ranging from failing to manage competing work-family demands to mutually benefiting role participation within each domain (Michel & Clark, 2009; Michel, Mitchelson, Pichler, & Cullen, 2010; Phipps & Prieto, 2016; Winkel & Clayton, 2010). Poorly managed work/non-work spillover has resulted in decreased perceptions of WLB, employment satisfaction, and professional growth as well as an increased time pressure conflict and cognitive dissonance between role demands (Hilbrecht et al., 2008; McMullan, Lapierre, & Li, 2018). Work and non-work domains have increasingly overlapped as employees progressively feel the effects of conflict between personal lives, family, and work (Lazar, Osoian, & Ratiu, 2010).

Paustian-Underdahl et al. (2016) argued that the permeability (overlap, crossover, or spillover) of work and non-work domains allows for greater transferability of resources, noting that this permeability and boundary management preference can either help or hurt career success. Other researchers (van der Klis & Karsten, 2009; Xin et al., 2018) specifically have examined segregation versus integration issues and found that role integration strategies resulted in both work and family sacrifices, offered significant enrichment opportunities for both roles, and yet, intertwined destructive complexities between home and work. The integration of work and non-work roles allowed resources, support

skills, knowledge, abilities, and positive affect to be used between domains fostering productivity (Greenhaus & Powell, 2006) and career progression (Carlson, Ferguson, Kacmar, Grzywacz, & Whitten, 2011; Paustian-Underdahl et al., 2016). However, the permeability of roles and the integration of boundaries weakened perceptions of promotability, lead to increase cross domain distractions (Kreiner et al., 2009; Methot & LePine, 2016; Paustian-Underdahl et al., 2016), and promoted job/family tension and conflict (Xin et al., 2018). Despite this literature focus, understanding the effect, direction, and symmetry that work-life blurring has on work performance and progression remains underdeveloped (Methot & LePine, 2016).

Work-life Balance for Women Leaders

Differences exist regarding WLB discord concerning social support and work-family blurring within working men and women (Adame, Caplliure, & Miquel, 2016; van Daalen et al., 2006). Focusing on sources of social support, current research has suggested the connection between WFC and work-life imbalance; this imbalance catalyst varies for men and women as women note a lack of social support from their peers and supervisors while men report a notable beneficial support/resources from peers and supervisors as bases of WLB (Ferguson et al., 2016; French et al., 2018; van Daalen et al., 2006). van Daalen et al. (2006) reported men in general receive greater social support from their spouse than women and women tend to receive more support from relatives and friends than men. However, even though men and women seem to differ in their sources of social support, both benefit from this support in reducing work-family imbalance and conflict (McMullan et al., 2018; van Daalen et al., 2006). While some research (Eng, Moore, Grunberg, Greenberg, & Sikora, 2010; Julien, Somerville, & Culp, 2011) has concluded that social support at work reduces WFC and social support at home reduces family-work conflict for women, other research determined that only social support at home reduce family-work conflict (Liao, 2011; van Daalen et al., 2006).

The impact of work and non-work role obligations on their success as a business leader is distinctly evident for women leaders. Recent scholarship and organizational interest in WLB initiatives and work-life interference is growing, especially considering women's desire to advance into leadership positions (Adame et al., 2016). Women in leadership roles have described the extensive personal costs associated with holding senior leadership positions (Loeffen, 2016). WLB challenges for women involve juggling conflicting priorities between job, family, and lifestyle. Loeffen (2016) suggested that women leaders can maintain successful careers but not without sacrifices and often not without a system of support. Additionally, women in leadership often feel that they must justify their leadership role contribution by demonstrating technical mastery, proving competency, and sustaining a level of work greater than their male leader counterparts (Ely et al., 2011), potentially leading to a greater need for WLB.

Because we know little about how women succeed in leadership within STEM fields or how persistence and achievement within male dominated disciplines are perceived (Mullet et al., 2017), the purpose of this study was to explore perceived social support and work-family integration/blurring within women leaders to understand the impact of these dynamics. The objective was to clarify the social support and work-family integration/blurring for women leaders within STEM fields. The study extends prior research, which have chiefly focused on the barriers and obstacles associated with women in STEM, investigated women from within one type of STEM organization, or examined gender issues of female STEM students (Halpern et al., 2007; Leaper & Brown, 2008; Loeffen, 2016; Mullet et al., 2017; Ong, Wright, Espinsoa, & Orfield, 2011; Robnett, 2016; Vial, Brescoll, Napier, Dovidio, & Tyler, 2018), by investigating the sources of support and role integration for women in diverse STEM leadership positions. Therefore, to investigate WLB constructs used by women in leadership positions, survey questions were drawn from two established scales to determine participants' perceptions regarding

social support and work-family integration/blurring. Examining sources of social support, Parasuraman's et al. (1992) social support scale content was used to assess the emotional, instrumental, appraisal, and informational types of support provided by the STEM group as well as valued by women in their STEM leadership roles. The Work-Family Integration-Blurring scale developed by Desrochers, Hilton, and Larwood (2005) was used as a basis of questions in order to examine how participants integrated leadership, work, and family roles.

Theoretical Framework: Conservation of Resources (COR) Theory

When considering WLB concerns among women leaders, COR theory provides a valuable systems perspective on the connection between work and life domains. Initially developed by Hobfoll (1989), this theory provides an innovate perspective on WLB and stress management by integrating environmental and cognitive models of stress; Hobfoll (1989; 2001) suggested goal-seeking individuals pursue positive reinforcements and strive to obtain and maintain supportive resources in their goal achievement. Additionally, COR theorists suggest impending resource forfeiture increases stress and frequently prompts individuals to act in such a way to avoid further loss (Hobfoll, 2001). This psychological model draws upon two perspectives: primarily, people instinctively seek resources that bring them pleasure and positive reinforcement, and moreover, the threat of resource loss, the net loss of resources, or the lack of resource gain leads to increased stress (Hobfoll, 1989). Hobfoll (2001) through COR predicts increased stress when individuals experience resource deficiencies. Consequently, resource acquisition is of critical importance when individuals deplete their resource assets (Hobfoll, 2001). Resource depletion and resource support has a predictive nature in stress management considering the biological, cognitive, and social stress responses (Hobfoll, 1989).

With a desire to obtain, preserve, and develop cherished resources (Ferguson et al, 2016;

Halbesleben, 2010; Hobfoll, 1989, 2001; Seiger & Wiese, 2009), individuals frequently devote efforts to safeguard against resource loss and seek opportunities to promote resource attainment (Hobfoll, 2001). All individuals are affected by the scarcity paradigm, meaning the availability of personal energy, stamina, and resources operate under limited confines (Schneider, Macey, Barbera, & Martin, 2009; Wiley, 2014). Furthermore, individuals who expend a substantial amount of drive, effort, energy, and resources at work are left with a limited or depleted supply of resources or energy at home while individuals who are supported at home possessed greater resources and stamina to perform better at work (Bolino, Harvey, Hsiung, & LePine, 2015; Halbesleben, Harvey, & Bolino, 2009).

Posited from a scarcity of resources as well as COR theory, Odle-Dusseau, Britt, and Greene-Shortridge (2012) and Odle-Dusseau, Hammer, Crain, & Bodner (2016) suggested perceived stressors forecasted increased strain while social support resources indirectly predicted improved organizational outcomes and reduced WFC. Conversely, Greenhaus and Powell's (2006) Work-Family Enrichment theory submitted that work and family roles directly influenced organizational outcomes, however, not through reduced WFC as suggested by Odle-Dusseau et al. (2012) but through amplified perceptions of work-family enrichment. Despite these varied perceptual lenses, a linkage exists between organizational and family resources and subsequent employment success (McNall, Scott, & Nicklin, 2015; Odle-Dusseau et al., 2016). Odle-Dusseau et al.'s research indicated that organizational support, such as a supportive supervisor, was a more significant predictor of improved organizational outcomes rather than family supportive organizational perceptions. Irrespective of the dynamic or the support type, COR provides an established model regarding the impact of work-family integration/blurring and social support and offered an operational framework as to how women in leadership managed work-life stress, bolster support, and prevent resource loss.

Within the COR theory, social support and social-capital resources offers key components to working individuals aimed at reducing role stressors and buffering the relationship between family and work (Ferguson et al, 2016; Greenhaus & Powell, 2006; Michel et al., 2010). Social support frequently acts as a moderator by directly influencing WFC (Seiger & Wiese, 2009). Spousal support acts as social support often providing emotional backing to the working professional (Paustian-Underdahl et al., 2016; Werbel & Danes, 2010). Conversely, spousal demands, family constraints, and the inability to manage work and family responsibilities may also act as a resource drain on the professional (Paustian-Underdahl et al., 2016; Werbel & Danes, 2010).

Research Questions

Despite research which has focused on gender and STEM (Blackburn, 2017; Buzzanell, Long, Anderson, Kokini, & Batra, 2015) as well as literature which has focused on women and leadership (Ely et al., 2011; Ibarra, Ely, & Kolb, 2013), the scholarship examining women's leadership in STEM career fields is lacking (Dutta, 2018; McCullough, 2011). The intent of this study was to explore perceived social support and work-family integration/blurring of women leaders in STEM to determine how women perceived these WLB dynamics. Three generalized research queries were used to guide this study. Firstly, who provides social support to positively affect women leaders? Secondly, what type of social support impacts women leaders? And thirdly, how do women leaders integrate/segregate their roles? Discerning the integral relationship between social support and WLB with women leaders can provide greater insights for women leadership education and coaching.

Many women view themselves in relation to their family (Emslie & Hunt, 2009) and benefit from supportive relational connections regarding their leadership development (Brue & Brue, 2018; Mullet et al., 2017). Additionally women tend to receive more social support from relatives and friends helping them succeed within their work roles (van Daalen et al., 2006). Based on related and foundational

research, the following hypotheses guided this study

> Hypothesis 1: Relatives and friends provide women in STEM leadership roles with the most perceived support.

Mullet et al. (2017) noted that emotional support aided in the talent development of women in STEM careers and French et al. (2018) maintained that emotional and instrumental social support was perceived as the most valuable source of social.

> Hypothesis 2a: Emotional support is perceived as the most value type of social support for women in STEM leadership positions.

> Hypothesis 2b: Emotional support is perceived as the most value type of social support for women within their STEM professional group.

Paustian-Underdahl et al. (2016) determined that the permeability of work and non-work domains allows for greater transferability of resources. The integration of work and non-work roles permits resources to be shared between roles, mutually benefiting role domains, and positively impacting work productivity (Greenhaus & Powell, 2006) and perceived promotability (Carlson et al., 2011; Paustian-Underdahl et al., 2016).

> Hypothesis 3: Women in STEM leadership integrate their work and non-work roles.

Research Methods and Design

Participants. For this research, 39 women leaders from various organizations who were a part of a STEM initiative group in the south-central United States were identified as potential respondents in the study. The STEM group consisted of women STEM practitioners, educators, and industry leaders, whose mission was to expand the growth of young women in science, technology, engineering, and mathematics fields.

Measures.

Social Support. Social support within the STEM professional group was measured based on a scale developed by Parasuraman et al. (1992); this scale focused on the four categories of support initially conceptualized by House (1981) including emotional, instrumental, appraisal, and informational. Social support of the women leaders was measured with the following questions: (a) To what extent are members of the STEM team willing to listen to your work problems (instrumental support), (b) To what extent is the STEM team concerned about your welfare (emotional support), (c) To what extent does the team provide you information regarding work (informational support); and (d) To what extent does the STEM team provide you praise for your accomplishments (appraisal support)? For this research, scores were considered continuous interval variables; responses from individual questions ranged from 1=A great deal, 2= A lot, 3=A moderate amount, 4=A little, and 5=none at all.

Additionally, participants were asked two ranking questions: (a) rank order the individuals who provided you the most support in your role as a women leader and (b) rank order the types of social support in which you perceived as most helpful as a leader within STEM. Options of individuals who provide support included spouse, significant other, family member, children, women supervisor, male supervisor, mentor within the organization, mentor outside the organization, women co-worker, male co-worker, professional friend, and other. Rank order types of support, which aided in their leadership development included Parasuraman et al.'s (1992) types of support including emotional, instrumental, appraisal, and

informational support.

Work-Family Integration/Blurring. The Work-Family Integration-Blurring Scale of Desrochers et al. (2005) was utilized to evaluate the integration of work and family roles. This four-question assessment allowed participants to compare the separation or integration of work and family domains. Questions included: (a) It is difficult to tell where my work life ends and my family/non-work life begins; (b) I tend to integrate my work and family/non-work duties at home; (c) I tend to integrate my work and family/non-work work duties at work; and (d) In my life, there is a clear boundary between my career and my non-work roles. Responses from a 5-point Likert scale were evaluated where 1=strongly agree, 2=somewhat agree, 3=neither agree nor disagree, 4=somewhat disagree, and 5=strongly disagree.

A final open-ended question was asked to allow participants the opportunity to provide additional feedback regarding support and work-family integration/blurring within the STEM group or within roles of women leaders. This question allowed participants to clarify or elaborate on dynamics that were meaningful to them.

Procedures. The intent of this derivation study was to utilize established survey instruments to gather data on women leaders. Self-reporting surveys were used to seek information regarding WLB constructs and analyze the nature of the relationship among social support and work-family integration/blurring within women leaders. Utilizing COR theory (Hobfoll, 1989) as a foundational theoretical framework as well as drawing from Parasuraman et al.'s (1992) social support scale and Desrochers' et al. (2005) Work-Family Integration-Blurring scale, this study analyzed survey results from women in STEM leadership roles.

After obtaining research approval, participants were electronically directed to a Qualtrics website to complete the survey. The first two questions of the assessment were designed to establish the respondent's participant criteria and document their willingness to participate in the study. Narrow demographic information was captured including group membership role and longevity with the STEM group; 10 quantitative questions were asked regarding types of perceived social support and work-life integration/blurring strategies. A final qualitative question was asked regarding perceived support and role integrations. The survey was available for four weeks during December of 2017.

Results

Of the 39 group members who were invited to participate, 21 opened and voluntarily completed the survey, indicating a response rate of 54%.

Social Support. Respondents were asked four questions using Parasuraman et al.'s (1992) support scale, which addressed the extent other STEM group members were willing to listen, concerned about their welfare, provided helpful information, and praised their accomplishments. The mean scores for each support category include: emotional support 2.14, instrumental support 2.19, appraisal support 2.19, and informational support 2.29, indicating that each type of support was provided within the STEM professional organization, but emotional support was perceived as slightly stronger and informational support was perceived as the least recognized with the group.

Participants were also asked to rank order individuals who provided them the most support within their leadership position. Figure 1 displays participant data from perceived sources of social support.
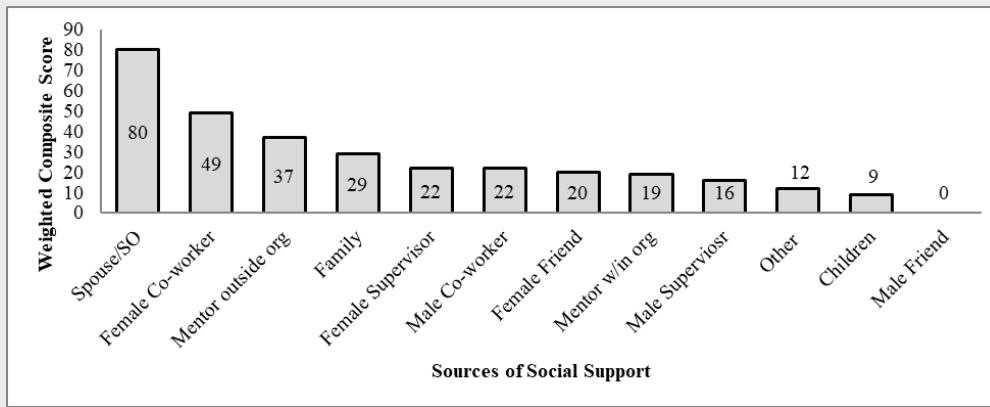
Figure 1. Sources of Social Support in Women Leaders.

Regarding sources of support, spouse (62 combined weighted score) and significant other (18 combined weighted score) were merged to establish a weighted composite score of 80. Thirteen of the 21 respondents indicated that their spouse or significant other was their primary source of support. Female co-workers were the second highest score with a composite weighted score of 49; however, no respondent selected female co-workers as their primary source of support. Seven respondents listed female co-workers as second highest, three listed this as third highest, and six listed this as 4th highest. Female coworkers outranked male coworkers 49 to 22. Female supervisors outranked male supervisors 22 to 16. Mentors outside the organization outranked mentors within the organization 37 to 19. Female co-workers outranked female supervisors 49 to 22. Four participants ranked "other" as one of their sources of leadership support and provided a description of this

option. Three of the four options were associated with a religious individual, including priest and pastor, and one participant indicated a fellow professional volunteer as a source.

Rank order the type of support that was of most value as they progressed in their leadership capacities also included Parasuraman et al.'s (1992) emotional, instrumental, appraisal, and informational support types. An average composite ranking was calculated for each type of support (first choice was weighted 4, second choice was weighted 3, etc.). Figure 2 displays participant data from perceived helpfulness of social support types. Composite weighted scores demonstrated that informational support (n=61) as the most valuable and appraisal support (n=42) as the least valuable. Informational and emotional support was noted as the most constructive while instrumental and appraisal was noted as the least beneficial.
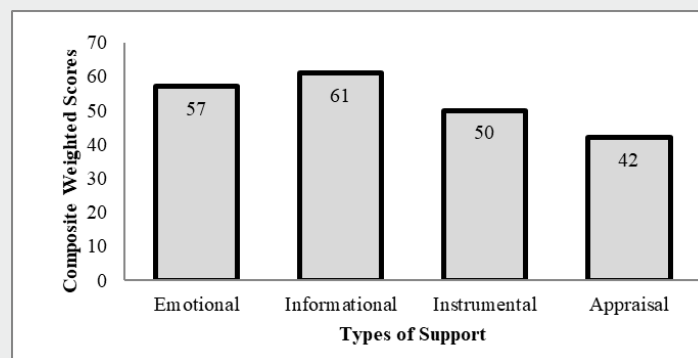

Figure 2. Value of Social Support in Women Leaders.

In order to verify the distinctness of support types and sources and to ensure that findings were not due to chance, chi-square tests were conducted to determine the null hypotheses of independence. When comparing types of support (emotional, informational, instrumental, and appraisal), $\chi 2$ (9) = 38.6667, p = 0.000013. When comparing sources of support (spouse/significant other, female coworker, mentor outside the organization, family member, female supervisor, and male coworkers), $\chi 2$ (20) = 73.6342, p = 0.000000046. Both chi-square tests indicated that the difference between leaders' perception of types of support and sources of social support were not due to randomness. The null hypothesis of independence was rejected as there was a statistically significant difference in the four types of support as well as the recognized sources of support.

Based on results, Hypothesis 1 was partially accepted as relatives (spouses) did provide the greatest source of support; however, female coworkers and mentors outside the organization rather than friends were perceived as providing the second and third greatest source of support. Regarding Hypotheses 2a and 2b, 2a was rejected and 2b was accepted. While emotional support was present, informational support was indicated as the most valuable source of support for women developing in their leadership roles. Additionally, even though all source types were apparent within the STEM professional group, emotional support was recognized as the support type which was provided the most, resulting in the acceptance of Hypothesis 2b.

Work-Family Integration/Blurring. The Work-Family Integration-Blurring Scale of Desrochers et al. (2005) was used to evaluate the integration of work and family roles. When asked if it is difficult to tell when work ended and non-work began, a mean of 2.8 indicated that 52% of respondents strongly/somewhat agreed and 38% somewhat/strongly disagreed. When asked if they tended to integrate work and non-work duties at home, the mean was 2.71, with 52% of respondents strongly/somewhat agreeing and 33% somewhat/strongly disagreeing. When asked if they tended to integrate work and non-work duties at work, the mean was 2.71, with 52% of respondents indicating they strongly/somewhat agree and 33% indicating they somewhat/strongly disagree. When asked if there was a clear boundary between their work and non-work roles, participants indicated a mean of 2.81, with 48% of respondents strongly/somewhat agreeing and 38% somewhat/strongly disagreeing. Based on survey results, Hypotheses 3 was accepted.

The final qualitative question allowed follow-up information to be collected; seven participants included additional comments regarding support received and role integration. Statements focused on personal experiences regarding a lack of female mentors, an absence of safe environments in which to share, and trust deficits which resulted in women not receiving peer support. Women felt that sharing with others about their "business" without a safe environment made them feel vulnerable and overly exposed. Additional comments focused on the difficulty of managing a busy workload which included caring for their personal life, work, and family while still supporting other women. One participant wrote that she "struggles with WLB a lot," unable to find a place where she manages home and work well, confirming the need for this topic of discussion.

Evaluation of Findings

This research adds to women in leadership literature by investigating unique dynamics of women in STEM leadership positions, clarifying how they balance their work and life roles though segregation and integration and how they perceive support for their work roles. This research also brings a comprehensive framework closer for the leadership development of women. The current research study adds to theory and offers perspectives and insights for practical development of women into leadership positions. Understanding WLB dynamics for women

in leadership provides greater potential to aid in the future development of women leaders.

Social Support Implications

Participants perceived all support types within the STEM group, which indicate that each mode of support was present within this professional organization; however, emotional support was slightly more recognized than other types of support. As participants were associated through diverse professional fields and organizations, yet connected through the common goal of developing women in STEM careers, they recognized the care, concern, responsiveness, and camaraderie felt under their joint mission.

Additionally, participants received support from a variety of sources; weighted composite rankings indicated that spouses/significant others, female coworkers, mentors outside the organization, and family members were the most significant sources ranked in order of importance. With the exception of female coworkers, the top sources of social support were individuals based outside of their current employment. Additionally, informational and emotional support was the most valuable support to participants, respectively. Appraisal support, including agreement, approval, and praise was the type of support least valued by the participants. Indicating a desire for guidance, insights, and counsel as well as care, compassion, and concern, participants acknowledge the informational and emotional support needed in their development as a women leader in STEM. Spouses/significant others, female coworkers, mentors outside the organization, and family members have created safe and functioning spaces to address the informational and emotional needs of participants within this research. Qualitative responses confirmed this importance by indicating "trust is always a big issue" and "I had to find someone who I could share with who would not put my business out there for everyone to know."

Findings from this research extends COR theory and confirms DiRenzo, Greenhaus, and Weer's (2011), Hecht and Boies's (2009), Matthews, Bulger, and Barnes-Farrell's (2010), and Paustian-Underdahl et al.'s (2018) research by suggesting that individuals value the perceive support and encouragement from spouses, co-workers, and mentors regarding their work. Deepening van Daalen et al.'s (2006) and Loeffen's (2016) research, findings from this study suggest that women's self-confidence and role identify benefit from informational, emotional, instrumental, and appraisal support when managing various role obligations. Martin and Phillips (2017) noted that confidence drives the attainment of leadership positions for women. This confidence communicates competence and occurs in domains where masculine, agentic qualities such as assertiveness and dominance are more highly valued than typical feminine, relational qualities (Martin & Phillips, 2017).

Where Mullet et al. (2017) noted women's success in STEM was impelled by emotional social support and French et al. (2018) argued that emotional and instrumental social support has been the most empirically researched and operationalized support type, this study established that informational and emotional support were perceived as the paramount social support and were bolstered by key relational connections. This research also suggested that coworkers and supervisors did not provide the primary sources of support for these women. Rather, individuals outside their employment, including spouses/significant others, mentors outside the organization, and family members provide the greatest perceived support. Additionally, while female coworkers provide an acknowledged source of support, no participant indicated any coworker (male or female) or female supervisor as their primary source of social support. Considering the competitive environment for women leaders in STEM careers and the low number of internal peer women of whom may also be vying for promotion, finding external colleagues to share information and seek guidance allows for more of

nonthreatening and supportive environment.

Work-Family Integration/Blurring Implications. Within this sample, women in STEM leadership positions appeared bimodal in their integration or segregation of roles. Of the respondents, an average of 52% indicated they had difficulty delineating between where their work life ended and their personal life began, and 38% indicated they had clear and established boundaries between work and non-work role obligations. As a probable motivational factor for women leaders and an innate desire to appear competent within their leadership role, women may seek validation and opportunities to demonstrate their positive work ethic (Ely et al., 2011). Relying on "'substance rather than form' as a more 'authentic' strategy than their male counterparts," women in leadership roles seek to prove their technical and business acumen over the long term (Ely et al., 2011, p. 478), which may impact how they integrate or segregate their role obligations.

Extending Halbesleben, Zellars, Carlson, Perrewe, and Rotondo's (2010) findings that suggest role integration and spousal instrumental support reduced emotional exhaustion, as well as COR theorists who suggest cross-domain support and integration improve success in both domains (Odle-Dusseau et al., 2012), the highly integrated work and family roles of women in leadership may allow for easier and repeated resource support and transmissions between domains; however, when boundaries are permeable, domains can become blurred. Winkel and Clayton (2010) suggested that when boundaries are permeable, individuals who have less control over work demand increases often experience greater WFC. While women in leadership may have notably greater control over their work environment, they often may not utilize or have analogous access to resources available to male leaders. Thus, women in leadership may appear to juggle multiple tasks and integrate their roles. Halbesleben et al. (2010) alternatively suggested that role integration and permeable boundaries facilitated trans-role support and assistance. Within

this research, women in leadership presented as integrators of work and family roles. This integration of work and family roles could result in increased WFC; however, social support may act as mitigating resource reducing work-life imbalance.

Practical Implications. Results from this research provide insights to the development of women leaders. Findings highlight the importance of developing and strengthening social support networks for women in male dominated occupations such as STEM. While successful women in STEM often perceive themselves as autonomous and self-sufficient, they value relational connections with supportive resources (Mullet et al., 2017). Social support resources, especially informational and emotional support, can help promote leadership development, solidify leadership role identity for women (Brue & Brue, 2018), and reduce WFC (French et al., 2018).

While other researchers have acknowledged that social support can come from supervisors (Vial et al., 2018) and coworkers (McMullan et al., 2018), this study demonstrated social support flowed from a variety of sources including spouses, peers, supervisors, mentors inside and outside of the organizations, friends, children, and religious associates. As female supervisors ranked fifth and male supervisors ranked ninth in providing social support within this study, organizations who provide women leadership training programs or businesses that want to promote cultures supportive of women in leadership roles should (a) design training and management strategies which enhance relationship qualities with emerging women leaders, (b) train senior supervisors, mentors, and sponsors to provide improved social support, and (c) indorse initiatives and interventions aimed at providing emerging women leaders with helpful advice, insights, and suggestions (informational support) as well as empathy, care, concern, and trust (emotional support). While informational and emotional support was perceived as most valuable, all support types were present. Whether providing subject matter expertise, advice,perspective, learning

communities, or suggestions for work, leadership, or WLB issues, the benefits of social support is apparent. Additionally, for leadership coaches and educational institutions, results validate the importance for women to develop social support contacts outside of their organization. Training emergent women leaders to intentionally seek networking contacts outside of their organization provides a broader context of support resources and allows women to find other safe individuals who can take on the role of expert, advisor, confidant, mentor, coach, and counselor.

Participants within the study acknowledged that they had difficulty recognizing when work ended and non-work began; while 52% indicated that they integrated work into their home domains and home into their work domains, only 33% indicated that their roles/domains were segregated. Prior research confirms that as the lines between work and family become more permeable, balance struggles are more likely to occur (McMullan et al., 2018). The blurring of work and non-work roles can result in work-life imbalance, reduced mental and physical health, diminished productivity and satisfaction, as well as increased turnover and absenteeism; however, supportive resources have been found to ameliorate these potential negative outcomes (Al-Qutop & Harrim, 2011; French et al., 2018). As participants within this study varied in their approach to segregation/integration, having open conversations with emerging women leaders regarding the benefits and challenges associated with blurring roles is imperative within leadership development training.

Limitations, Recommendations, and Future Research

Limitations within this study may influence research findings. While the response rate was 54%, the sample size of 21 participants was small and could affect the generalizability of findings to other women leaders. While the nature of the study was investigatory, a more expansive

investigation of types and sources of support could provide additional insights to this dynamic. Respondents represented a variety of STEM fields and organizations yet were all part of a STEM professional group. While respondents were asked to consider the support sources and types which bolstered their individual leadership development, participation within the group could have skewed results, overly representing the benefits of social support outside of a leader's organization. Further research on this topic is recommended to confirm this study's findings.

Additionally, data were self-reported and perceptions can be subjective. Examining this dynamic within a longitudinal research would provide clarity as to the benefits of social support dynamics and WLB initiatives to women in STEM leadership roles. Also, this study did not focus on the types of information with which women in STEM perceive as of value, nor how the specific function of social support affects women in STEM leadership roles. Additionally, organizational-level support was not investigated within this study as having a potential impact on an individual leader's WLB. Future research should examine how organizational supportive cultures (e.g. work-family friendly cultures and organizational mentorship/sponsorship programs) impact women in leadership. Further exploration regarding how knowledge of support providers, similarity to support resources, relationship between support providers and recipients, and perceived value of support received in leadership roles should also be examined (McMullan et al., 2018). Additionally, determining the criteria used by women leaders when evaluating the value of support sources and types could further enhance researchers' understanding.

Findings from this research suggested that role integration can result in cross-domain support as women leaders attempt to manage multiple role obligations. Women leaders should be aware of WLB dynamics including support and role integration and acknowledge that sources of social support provide valuable resources in their

development as organizational leaders. Seeking informational and emotional supportive resources can help in leadership education and development as well as an individual's efforts as leaders. Finding individuals who can provide trusted, supportive, and functional connections is a critical element within leadership development. Future research should also determine if the desire for informational support is a dynamic unique to women leaders in STEM occupations or if the desire for advice, information, and suggestions is highly desired for other women leaders.

Whether formally discussed in leadership education or considered as a part of leadership coaching, the impact of WLB within leadership development is a necessary conversation. Women in leadership must be aware of the effect of boundaries between roles and the generative influence of supportive resources on their success. Future research should examine other WLB dynamics including WFC and work-life initiatives in order to further understand this dynamic.

Conclusion

The relationships between women within STEM leadership, WLB initiatives, and career success are incompletely understood. The purpose of this study was to provide a deeper examination of how women perceive social support in their leadership roles within the STEM field and how they integrate/segregate their roles between work and non-work domains. By examining WLB initiatives through the lens of social support and work-family blurring, researchers and practitioners can better understand how these dynamics impact the leadership development of women within STEM fields. While women varied on how they integrate or segregate their work and non-work roles, participants acknowledged the difficulty faced in delineating between work and non-work domains. Additionally, informational and emotional support was perceived as most beneficial to women leaders in STEM. Findings also demonstrated the value

of women in seeking safe, diverse, and instructive social supportive resources outside of their organization, providing assistance and validation in their leadership development.

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