Career Development of Women in Academia: Traversing the Leaky Pipeline

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Women's experiences in academia are laden with a fundamental set of issues pertaining to gender inequalities. A model reflecting women's career development and experiences around their academic pipeline (or career in academia) is presented. This model further conveys a new perspective on the experiences of women academicians before, during and after their faculty appointments and can help in career counseling. Specifically, this model provides career counselors with a framework to conceptualize the concerns of women clients who work in academic environments. Other implications for career counseling as well as limitations and future directions also are discussed.

***Keywords*: women, academia, career development, pipeline, career counseling**

There is a documented trend of women prematurely leaving higher education and academia. In a groundbreaking contribution spearheaded by women academicians, the Massachusetts Institute of Technology (MIT) *Special Edition Newsletter* reported on the experiences of women faculty, stating that "the pipeline leaks at every stage of career" (MIT, 1999, p. 8). *Pipeline* refers to careers in academia, which often require many years of education and training prior to entry to the pipeline. More recent work has supported and deepened this assertion with empirical investigation (e.g., Goulden, Mason, & Frasch, 2011; Wang & Degol, 2013). Researchers have approached the question of *why* this is the case from a myriad of research perspectives, including sociological, psychological and cultural. The existing body of literature investigating women's experiences as academicians addresses the issue of women's struggle for equality in the institution, but does not comprehensively address how female faculty develop their career aspirations and expectations, how the essential component of career development influences their experiences within the pipeline, and how counselors and institutions might address women's career outcomes.

In this article, the authors first discuss the process of scholarly questioning, which guided the authors' choice to examine certain bodies of literature that seemed relevant to women in academia. Second, a brief literature review identifies different variables that influence how women choose careers as academicians, how they decide whether to stay in those careers and how institutions have been called to respond to women's experiences. Next, the authors present a model combining issues relevant to women in academia from the perspectives of several bodies of scholarly literature (i.e., sociology, women's studies, psychology). The authors also make predictions based on the model, and address limitations and implications for counselors.

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The idea for this article originated from a limited review of literature that addressed women as a cultural minority in a career field. Upon reviewing articles that centered on women in academia, the present authors observed that the vocational, cultural, social and psychological variables investigated in these studies focused substantially on women's present experiences in academia—a realm often referred to as *the pipeline*. The present authors wondered how women's life experiences before and after their faculty appointments influence their pipeline experiences.

The idea for the proposed model grew out of the literature review process itself. Through examining the available research on the subject of women in academia, it became clear that there were a multitude of perspectives on how and why women's experiences exist as they do in the academic world. However, it also was apparent that these perspectives were not linked systematically to the overall literature. The primary goal of creating this model was to better understand and organize constructs that explain *how* women's experiences before their career in academia, as well as how women experience that career. By organizing and linking these ideas into a model, the authors offer professional counselors a working model to refer to when helping academicians with career issues.

Method

The authors utilized a qualitative research methodology in which they combined largely quantitative data with a qualitative analysis called *grounded theory*. According to Tesch (1990), grounded theory involves the "identifying and categorizing of elements and explanation of their connections" (p. 63), wherein one sorts the data into categories, compares their content, "defines properties of the categories" and then "relates categories to each other" (p. 64). The present authors modified their grounded theory approach by using published literature comprised mostly of quantitative studies as their data. As stated in the rationale for this paper in the previous section, the authors wanted to understand *how* women's experiences leading up to and resulting in a career in academia, as well as how women experience that academic career. As is typical in qualitative research, these general questions served as their guide, and led to a generative process by which they surveyed the relevant literature of career development and gender as well as women's academic careers. More precisely, the authors conducted the initial explorations of the literature using the key search terms *women*, *academia* or *academe*, *faculty* or *professors*, *career development*, and *pipeline* in various combinations to yield the largest body of results. The review process consisted of eliminating all articles concerning the academic experiences of women outside the United States, as this paper focuses exclusively on women within U.S. institutions. Throughout this process, the authors met weekly for at least 4 months and, beyond that, met 1–2 times a month for a minimum of 1 year. Also, two graduate student researchers made the initial classifications and the faculty subject matter expert reviewed those classifications, checking for consistency and accuracy.

The authors began by engaging in the strategy of inquiry called grounded theory. When reading through the collected literature, they noticed patterns in which variables (and later, themes) tended to appear again and again. Thus, the first major critical themes emerged through an inductive process, reflecting the grounded theory methods first championed by Glaser (Kelle, 2005). Glaser's work focused on identifying similar codes whose content is gathered and organized into larger groups or concepts, and these groups or concepts form themes or categories (Kelle, 2005). Utilizing this approach in their exploration, the authors separated the articles into three groups based on their relevance to women across the career life span: early career development (preacademic appointment, which included experiences up to graduate school when some graduate students start participating in faculty and faculty-like roles), the pipeline (graduate school through academic job/career) and postpipeline (e.g., transitioning to a different career, retirement). It seemed important that these ideas present throughout the literature become more connected, and thus the present authors decided to create a model to show how person

and environment interact to mold women's expectations and experiences regarding education and career in academia. From this point forward, they carefully recorded the theoretical constructs and variables investigated by each research article and entered them into a spreadsheet. Once this process was complete, they critically reviewed the list of variables and constructs and collapsed some categories within each section together in order to capture both the broadest and the most succinct picture of the variables within the literature. Through this process, the authors were able to isolate the variables that were addressed by multiple articles (generally four or more), and these variables became the basis for the model.

Finally, the authors found that the variables tended to cluster together logically in each section. Through dialogue, critical thinking and specific knowledge within the field of vocational psychology, the authors categorized the variables into groups based on their similarity to and difference from one another, and created themes for the groups of variables within each section. These labels served to organize the variables into manageable concepts and tie the model together. In addition, these themes separated the larger social, psychological and systemic processes in ways that reflect how these concepts function for women in the world.

This literature review of over 120 articles revealed that, to the authors' knowledge, no existing model binds career development and outcomes to the concepts of women's career development and the leaky pipeline. Given the magnitude of such a project, the authors felt that it was best to create the model based on the research and resources that already exist in each area of scholarly inquiry. The variables and themes that exist in their model reflect their interpretation of the literature as well as their conceptualization of how these constructs interact with one another.

Variables Underlying Women Academicians' Career Processes

Previous researchers have identified many variables related to women academicians' career processes before, during and after their decision to pursue an academic job. The current authors reviewed and organized these variables by superordinate labels into the following three categories: career development, pipeline influences and pipeline outcomes.

Part I: Career Development

Excellent reviews of the literature on women's general career development have been published (e.g., Betz, 2005; Fitzgerald, Fassinger, & Betz, 1995; Phillips & Imhoff, 1997). The current authors described variables important to women's career development while they avoided recreating what others have already explored. Continuing with their modified grounded theory approach detailed above, for organizational purposes, the authors created five categories of variables and gave each category a superordinate label. The categories are cognitive, coping, environmental, personality and relational.

Cognitive theme. These variables were considered to be cognitive in nature: career aspirations, career choice, career expectations, intellectual abilities and liberal gender role attitudes.

Career aspirations. Career aspirations, or one's dreams for one's career, are important in career development and choice (Astin, 1984; Farmer, 1985; Gottfredson, 1981). Women's career aspirations are affected by verbal ability, support from teachers, race, age and social class (Farmer, 1985); a desire for work–family balance and an intrinsic valuing of occupations (Frome, Alfeld, Eccles, & Barber, 2006); and parental influence (Li & Kerpelman, 2007).

Career choice. Fitzgerald et al. (1995) addressed career choice by considering how it can be limited as a result of being female, pointing out how stereotyping of occupations and women's compromised career aspirations work to limit women's career choices.

Career expectations. Brooks and Betz (1990) demonstrated that college student expectations for success in pursuing a job path, obtaining a job and advancing in that work, as well as preferences for a given type of work, explained 12%–41% of the variance in choosing a job. Men tended to have higher levels of expectations for more traditionally male occupations, whereas women tended to exhibit higher levels for more traditionally female occupations.

Intellectual abilities. Women's career development can be promoted with higher verbal and math abilities (Fassinger, 1990; O'Brien & Fassinger, 1993). Ceci, Williams, and Barnett (2009) found that women with high math abilities were more likely than men to also have high verbal abilities, resulting in a greater range of career choices.

Liberal gender role attitudes. Fassinger (1990) and O'Brien and Fassinger (1993) found that having more liberal attitudes toward one's gender role regarding one's roles in the family and in the workforce was related to and predictive of career choice. Flores and O'Brien (2002) found that liberal gender role attitudes were predictive of Mexican American adolescent women's self-efficacy for nontraditional careers. Liberal gender role attitudes can increase women's perceived career options, leading them to consider both traditional and nontraditional gender career choices.

Coping theme. The following variables involve coping: career decision-making coping, career maturity and adaptability, career self-efficacy, and self-esteem.

Career decision-making coping. Career decision-making coping can be defined as one's perceived confidence (self-efficacy) and/or coping skills when making career decisions. O'Hare and Beutell (1987) examined gender differences in career decision-making coping with undergraduate college students. Men had significantly higher scores than women on career decision-making self-efficacy behavior, or "a constructive, positive sense of control over the decision" (O'Hare & Beutell, 1987, p. 177). However, women scored significantly higher on reactive behavior, wanting "to be superorganized and do all that is expected," as well as support-seeking behavior (p. 177). Men tended to be more confident, likely because they are socialized to appear strong and confident to others. On the other hand, women tended to place importance on maintaining a relational style and reacting to situations as opposed to being proactive. Also, Betz, Hammond, and Multon (2005) found that career decision-making self-efficacy was negatively related to career indecision and positively related to career identity.

Career maturity and adaptability. Career maturity means making good career decisions during adolescence (Super, 1977). King (1989) showed that career maturity determinants can differ by gender: for girls, family cohesion, locus of control, age and cultural participation were most important; however, for boys, age, locus of control, family cohesion and parental aspirations mattered more. Career adaptability is a postadolescence extension of career maturity, and has been linked with career self-efficacy, career interests and problem-solving ability (Rottinghaus, Day, & Borgen, 2005).

Career self-efficacy. Believing in one's ability to perform career behaviors has been found to predict the number of career options considered (Betz & Hackett, 1981; Hackett, 1985), and is related to (r = .59) and predictive of career interests (Rottinghaus, Larson, & Borgen, 2003). Lower career self-efficacy beliefs predict

women's more traditional career choices (Hackett & Betz, 1981), while higher career self-efficacy beliefs predict career achievement (Betz, 2005).

Self-esteem. Self-esteem affects career development and achievement, and "increases occupational prestige . . . and income" (Kammeyer-Mueller, Judge, & Piccolo, 2008, p. 204). Self-esteem aids in persistence when one is confronted with career barriers (Richie et al., 1997).

Environmental theme. This group impacts one's environment and includes the following: availability of resources and opportunities, low status of traditionally female jobs, previous work experience, social class and socioeconomic status, and socialization influences.

Availability of resources and opportunities. Astin's (1984) career choice model describes major concepts affecting women's careers: work motivation, with the driving needs of survival, pleasure and contribution; gender role socialization; and structure of opportunity, which includes elements such as job availability, barriers to work opportunities and economic considerations. Astin suggested that differences in gender socialization produce different work expectations, ultimately limiting women's career opportunities by what is seen as appropriate women's work. However, some opportunities provide women with a greater range of work–family alternatives (e.g., reproductive technologies).

Low status of traditionally female jobs. So-called *women's work* has been devalued in terms of status and equitable pay. In paid work, there is a well-documented gap between women's and men's wages (e.g., Bielby & Bielby, 1992; Corbett & Hill, 2012). A number of authors have formed postulations about the low status of traditionally female jobs and career processes (e.g., England, 2010; Fassinger, 1990; O'Brien & Fassinger, 1993). For example, in order for women to advance socioculturally (e.g., economically), they must consider work in male-dominated fields, such as academia; higher status jobs in U.S. culture are jobs traditionally held by men (England, 2010).

Previous work experience. Previous work experience during adolescence is predictive of career aspirations and career choice (Betz & Fitzgerald, 1987).

Social class and socioeconomic status. Social class can shape career aspirations (Farmer, 1985). For example, social class privilege for European American adolescent women served to increase their perceptions of having many career options, as well as narrow the range of options they considered (Lapour & Heppner, 2009).

Socialization influences. Exposure to environmental learning, or socialization, can shape an individual's career processes. For instance, Gottfredson's (1981) model of circumscription and compromise in career development describes how one's environment and heredity impact his or her career. Leung, Ivey, and Suzuki (1994) found Asian American women more likely than European American women to consider nontraditional gender role careers in order to pursue higher prestige occupations—that is, prestige was most important to these women, as opposed to compromising based on gender role fit or perceived gender typing of certain jobs. For example, an Asian American woman might choose a career in engineering over a career in teaching, as the engineering career would have greater prestige but would be a less traditional career for women than teaching.

Personality theme. Personality variables include achievement motivation, career interests, instrumentality and other personality variables, and valuing graduate education.

Achievement motivation. Achievement motivation refers to the impetus toward seeking career attainments and accomplishments. Two major models of women's career development address achievement. In explaining

gender differences in achievement by focusing on women's decision making, Eccles (1987) proposed that the decisions women make regarding the work–family balance may be based on the subjective valuing of tasks as per socialization and stereotypes. Eccles suggested that some women may choose to focus more on family than work because other work is less satisfying to them than nurturing a family. In a different, empirically supported model, Farmer (1985) considered achievement motivation in career development to be influenced by cultural, personality and environmental factors. Achievement motivation culminates in the creation of career aspirations, motivation to pursue mastery experiences, and commitment to a career (Farmer, 1985).

Career interests. Women are more likely to have higher career interest scores for artistic and social domains and lower scores for realistic and investigative domains, when compared with men (Betz, 2005; Fitzgerald et al., 1995). Additionally, Evans and Diekman (2009) investigated how the presence of gendered beliefs about careers predicted differences in career goals and career interests along traditional gender lines. Women and men who thought about careers in a gender-stereotypical manner were less likely to endorse career interests in gender-atypical fields (Evans & Diekman, 2009).

Instrumentality and other personality variables. Instrumentality, which is defined as the ability to make decisions with confidence, was examined by O'Brien and Fassinger (1993) in their test of the Fassinger (1990) career model. The authors concluded that "young women who possess liberal gender role attitudes, are instrumental and efficacious with regard to math and careers, and exhibit moderate degrees of attachment and independence from their mothers tend to value their career pursuits" (O'Brien & Fassinger, 1993, p. 466).

Valuing graduate education. Battle and Wigfield (2002) found that college women with a strong career orientation had more positive views of graduate education, evidencing that the perceived usefulness of attending graduate school, a sense of attainment, and intrinsic motivation to pursue graduate studies were major reasons behind women's graduate school plans.

Relational theme. The following variables have a central relationship component: dual roles of marital and parental status, perceived encouragement, psychosocial needs, relationships with parents and presence of role models, and rewards and costs of career and parenthood.

Dual roles of marital and parental status. As Fassinger (1990) pointed out, past research has supported a negative relationship between being both a wife and mother and developing one's career. However, having liberal gender role attitudes helps women engage more fully in their own career development as opposed to more traditional attitudes (Betz & Fitzgerald, 1987; Fassinger, 1990; Flores & O'Brien, 2002). Morrison, Rudd, and Nerad (2011) found that parenting young children was a barrier at all levels of the pipeline for women, and that married men advanced faster through the tenure process than married women.

Perceived encouragement. Parents, role models, teachers and supportive others may offer women perceived encouragement regarding their career options (e.g., Fassinger, 1990; Leslie, 1986), ultimately facilitating women's choice and attainment of both traditional and nontraditional careers (e.g., Hackett, Esposito, & O'Halloran, 1989). Perceived encouragement is especially important for the educational expectations and work identity of African American and Mexican American college students (Fisher & Padmawidjaja, 1999).

Psychosocial needs. Although psychosocial needs may be individually defined, women share needs for survival, satisfaction and pleasure (see Eccles, 1987; Farmer, 1985). Work can provide important sources of satisfaction and pleasure as well as meet survival needs, and underutilization of abilities has been associated with lower levels of mental health (Betz, 2005).

Relationships with parents and presence of role models. For college women, the positive influence of female teachers and high performance self-esteem (i.e., agency, or a feeling of being able to be autonomous) was most predictive of career salience (i.e., the importance of one's career relative to one's other roles) and educational aspirations (i.e., aspirations to pursue different levels of education). Also, having the positive influences of fathers and male teachers, as well as high performance self-esteem, predicted women wanting to pursue less traditional careers (Hackett et al., 1989).

Rewards and costs of career and parenthood. Leslie (1986) found that the daughters of homemakers had more positive feelings toward employment when mothers were not satisfied with homemaking and the children helped more with housework. Daughters of employed mothers viewed employment more positively when they perceived their mothers as happy and busy with their work. Daughters of homemakers indicated most concern with the costs of work and the costs of having children in the future, whereas the daughters of employed mothers also were concerned with the rewards of work. Also, Campione (2008) found that depression stemmed from family issues (e.g., caring for a disabled family member) and work issues (e.g., working irregular hours at a job), and working shifts during odd hours was associated with marital stress and family difficulties.

Conclusion of Part I: Career Development. In Part I, the current authors reviewed evidence on variables pertinent to a woman developing her career as an academician, or having access to developing a job or career as an academician. The next section focuses on the pipeline.

Part II: Pipeline Influences

The present authors conceptualize the pipeline, or the route to an academic career and the academic career itself, as beginning in graduate school and extending through all stages of a career in academia. The career development literature focuses heavily on undergraduates, whose experiences the present authors consider to be separate from graduate student experiences, which are conceptually more proximal to and overlap with the concerns of academic careers. Thus, for the authors' purposes, once a woman decides to pursue a graduate-level degree, her experiences are characterized as part of the pipeline. Again, the authors have grouped variables using superordinate labels. The themes include academic duties, academic environment, individually centered, resources and social variables.

Academic duties theme. In this section the authors describe variables associated with women's status within the academic institution, including administrative-level representation, institutional housekeeping and service-oriented activities, teaching and research productivity, and tenure-track versus nontenure-track status.

Administrative-level representation. Quite simply, women are not represented at the administrative level of academic institutions as frequently as men (Kimball, Watson, Canning, & Brady, 2001). Women's underrepresentation can be associated with the amount of effort they have invested in teaching, mentoring and service, along with an inability to decline projects, which may compromise women's career trajectory toward higher levels of authority within the institution. Kimball et al. (2001) suggested that women may not understand how to effectively negotiate the male-dominated and hierarchical structure of academia in order to fulfill broader career advancement desires.

Institutional housekeeping and service-oriented activities. Bird, Litt, and Wang (2004) defined *institutional housekeeping* as "the invisible and supportive labor of women to improve women's situation within the institution" (p. 195), based on Valian's (1998) work. Valian (2005) described these activities as "low-visibility, low-power, low-reward, and labor-intensive" (p. 205). Women may often be called upon to participate on committees or in groups that bolster the department or institution with regard to advising and teaching, or even issues pertinent to women in the academy. Providing service work may detract from time performing

research, which is often the most heavily weighted criterion for tenure decisions (Misra, Lundquist, Holmes, & Agiomavritis, 2011). On the other hand, service activities are recently gaining more recognition as an important component of tenure decisions (Sampson, Driscoll, Foulk, & Carroll, 2010).

Teaching and research productivity. Data gathered for the MIT (1999) report on women faculty members revealed "inequitable distributions" regarding "teaching assignments" (p. 8). Women, by cultural standard, bear the weight of the more relational processes involved in academia (e.g., teaching, advising, mentoring), so research and administration are areas still disproportionately male dominated. A more recent study of university deans focused on what was considered important in achieving tenure, and supported the salience of research productivity above other faculty contributions such as service and, to some extent, teaching (Balogun, Sloan, & Germain, 2007). Furthermore, "heavy teaching workloads may be detrimental to the chances of obtaining tenure" (Balogun, Sloan, & Germain, 2006, p. 532).

Tenure track versus nontenure track. Harper, Baldwin, Gansneder, and Chronister (2001) found stark differences between men and women faculty members in both the tenure-track and nontenure-track categories. Generally, they found that men spent the fewest number of hours teaching, with more time spent on administrative, research and other activities, while women in all categories spent a slightly larger percentage of their time teaching. Differences also were found between the tenure-track categories and the relative amounts of time spent teaching undergraduate courses, with nontenure-track faculty spending a majority of their time teaching undergraduate courses versus tenure-track faculty who are teaching graduate courses more (Harper et al., 2001). Generally speaking, women make up a much larger percentage of nontenure-track faculty (e.g., August & Waltman, 2004; Equal Rights Advocates [ERA], 2003). Often the issue of tenure is complicated for women due to role conflict related to childcare and its incompatibility with the demands of the tenure process (Comer & Stites-Doe, 2006; O'Laughlin & Bischoff, 2005; Stinchfield & Trepal, 2010). In addition, there are other complex processes that influence women's ability to gain tenure, an overview of which is outside the scope of this article (see American Association of University Women [AAUW], 2004; Marchant, Bhattacharya, & Carnes, 2007; Park, 2007; Rudd, Morrison, Sadrozinski, Nerad, & Cerny, 2008).

Academic environment theme. This theme focuses on variables that pertain to the college or university environment, and the literature is reviewed regarding departmental climate, isolation and invisibility, and transparency of departmental decision making (including tenure).

Departmental climate. Various authors have described departmental climates within institutions as "hostile" (ERA, 2003, p. 3), "challenging and chilly" (August & Waltman, 2004, p. 179), and "toxic" (Hill, Leinbaugh, Bradley, & Hazler, 2005, p. 377). These authors also pointed out how the lack of a supportive departmental climate contributes to other issues women face as academicians, such as having less access to resources or feeling isolated.

Isolation and invisibility. Winkler (2000) asserted that women faculty themselves define the limits of their productivity (which tends to be the largest factor in salary increase and tenure decisions) based on "feelings of exclusion, disconnectedness, marginalization, intellectual and social isolation, and limited access to resources" (p. 740). She also argued that women more than men tend to have more rigid and higher standards for quality over quantity in research, and that women may be more perfectionistic in research activities, which leads to a lower overall rate of publication.

Transparency of departmental decision making (including tenure). August and Waltman (2004) investigated job satisfaction of faculty members and found that women at different levels of the tenure process were influenced by different job satisfaction criteria. All faculty women surveyed reported being impacted by

the following: having a supportive relationship with the head or chair of the department, having a perceived ability to influence decisions made within their department and receiving an equitable salary as compared to others within the department. Tenured women rated the equitable salary and departmental influence variables as more significant. For nontenured women, level of influence was also significant.

Individually centered theme. These psychosociocultural variables pertain to women as individuals, and include academic self-concept, age, and race and ethnicity, as well as gender schemas and feminism, and personal power and self-promoting behavior.

Academic self-concept. Guidelines for mentorship posed by Williams-Nickelson (2009) include specific action components aimed at bolstering a woman graduate student's academic self-concept, or an individual's conception of herself as a student. Mentors should "facilitate independent thinking" and encourage mentees to "develop self-assurance," "be mentored" and "be receptive to autonomy and divergence" (Williams-Nickelson, 2009, p. 289). Ülkü-Steiner, Kurtz-Costes, and Kinlaw (2000) found that women's academic self-concept and mentor support (regardless of the mentor's gender) in graduate programs best predicted women graduate students' career commitment. In addition, women and men who were attending graduate school in a male-dominated department reported lower levels of academic self-concept than those in more gender-balanced programs (Ülkü-Steiner et al., 2000).

Age. For women entering the academy 20 or more years ago, being an older student (after having children or supporting a partner through his or her career) could be a barrier to entrance into graduate school; some women, however, reported positive effects of being leaders and mentors as older graduate students (Bronstein, 2001). In addition, women reported feeling marginalized, being overlooked, being seen as a *mom*, and being overtly discriminated against in academia (Bronstein, 2001). Junior and senior women faculty also may experience rifts with one another based on different feelings about discrimination and inclusion (MIT, 1999). Furthermore, Jacobs and Winslow (2004) compiled data on faculty ages, tenure track, tenure status and job satisfaction, and found that the high-end child-bearing years for women (late 30s through early 40s) are spent working toward tenure, which complicates the work–family balance.

Race and Ethnicity. There has been "no growth in the percentage of minority students receiving doctoral degrees since 1999" (Maton, Kohout, Wicherski, Leary, & Vinokurov, 2006, p. 126). Women of color are at a disadvantage before the pipeline even begins, a problem that persists through the academic career level, where they may experience marginalization, discrimination and microaggressions (Marbley, Wong, Santos-Hatchett, Pratt, & Jaddo, 2011). Thomas, Mack, Williams, and Perkins (1999) studied the effects of personal fulfillment (or an individual's sense of meaning and/or satisfaction in life) on the research agendas of academicians who are women of color. Often, women of color who assume an *outsider within* stance (a professional orientation toward using one's personal experiences and interests to fuel one's research) may be disadvantaged for scholarly recognition and promotion, though researching topics of personal multicultural concern can increase one's level of personal fulfillment (Thomas et al., 1999).

Gender schemas and feminism. Gender schemas exist that work against women in male-dominated professional environments (Valian, 2005). Lynch (2008) touched on clashing life roles for women in the early pipeline. One recurring theme for the participants was women graduate students' feeling that they had traded off their feminist ideals and independence by getting married and/or having children, and by being financially dependent on their husbands during their time in graduate school. Krefting (2003) discussed ambivalent sexism, which essentially contrasts the concepts of having "perceived competence" (i.e., masculine) and being "likeable" (i.e., feminine; p. 269). The intersection of these two concepts for women in competitive academic

environments can be a conundrum: How does a woman garner respect for her competence when likability is the trait with which students and colleagues are most concerned?

Personal power and self-promoting behavior. Kimball et al. (2001) posited that previous research has shown that women place more emphasis on "external attributions" than men (p. 136). That is, although men and women both believe that internal attributes such as intelligence and ambition contribute to one's career success in academia, women place much greater weight on their social capital—for instance, the people they know and the prestige of their educating institution. These authors also discussed the fact that many women feel uncomfortable with the self-promoting behavior that may facilitate advancement in academia.

Resources theme. This theme includes variables related to resources within institutions that impact women's career paths as academicians, including access to resources; financial issues; and salary, rewards, and recognition.

Access to resources. Krefting (2003) conceptualized women's access to resources as an uphill climb. Whereas men are included in the network of those expected to succeed within academia, women are fighting for both inclusion and the resources to make them worthy of inclusion. Winkler (2000) also echoed Krefting's (2003) notion that resources (and subsequently, productivity) flow from being included in "the networks in which ideas are generated and evaluated, in which human and material resources circulate, and in which advantages are exchanged" (2000, p. 740). MIT's (1999) seminal report on women's experiences as academics in its own School of Science uncovered "inequitable distributions . . . involving space, amount of 9-month salary paid from individual research grants, teaching assignments, awards and distinctions, inclusion on important committees and assignments within the department" (p. 7).

Financial issues. Students in psychology doctoral programs tend to graduate with student loan amounts that exceed $75,000 (Williams-Nickelson, 2009). Springer, Parker, & Leviten-Reid (2009) discussed a multitude of stressors for graduate student parents, including lack of financial support, a struggle to afford childcare and FMLA leave issues. Lynch (2008) reported that the most common complaint of women graduate student mothers is a lack of financial support from their academic departments.

Salary, rewards and recognition. August and Waltman's (2004) survey uncovered that tenured women faculty's career satisfaction was heavily influenced by their "salary comparable to similar peers" (p. 188). Harper et al. (2001) conducted a cross-discipline analysis of men's and women's experiences in academia and reported that "overall, men's salaries appear to be more related to their disciplines and responsibilities while women's salaries are more related to their tenure status and the degree they hold" (p. 248). In addition, Harper et al. (2001) noted that women tend to earn less because they are often employed in academic positions that pay less (e.g., nontenure track, assistant professor).

Social theme. This theme subsumes the influence of family, work and peer relationship variables, including peer and mentor relationships; presence of women in the field and the decision to pursue a doctorate; and work and family issues such as parenthood, marriage and the division of responsibility.

Peer and mentor relationships. Several articles review or note the positive impact of supportive peer relationships on female graduate student success (Lynch, 2008; Ülkü-Steiner et al., 2000; Williams-Nickelson, 2009). Also, mentoring and advising relationships provide essential resources to women graduate students, including elements such as emotional support and professional guidance (Williams-Nickelson, 2009). Hill et al. (2005) outlined the importance of supportive peers and social/teaching environments as a factor of satisfaction

in their study of women faculty members in counselor education. Also, Pruitt, Johnson, Catlin, and Knox (2010) found that women counseling psychology associate professors who were seeking promotion to full professor indicated that having the support of a current mentor was helpful. Compared to men, women typically place a higher value on a supportive work environment and may often find these types of relationships through service-oriented work in the institution (Bird et al., 2004; Kimball et al., 2001).

Presence of women in the field and the decision to pursue a doctorate. Women are more likely to leak from the educational pipeline before doctoral completion, and they still earn less than men in the world of work (Ülkü-Steiner et al., 2000; Winkler, 2000). Ülkü-Steiner et al. (2000) found that the mere presence of women faculty in any academic department bolstered career commitment and academic self-concept for men and women doctoral students. Similarly, Winkler (2000) reported that women academicians benefit from relationships with female students and that female students tend to graduate more quickly when female faculty are present within the department. However, because women tend to be underrepresented as faculty members in general, there is an overall shortage of role models for women wishing to pursue doctoral education and become academicians themselves (August & Waltman, 2004; Harper et al., 2001).

Work and family issues: Parenthood, marriage and division of responsibility. Springer et al. (2009) and Lynch (2008) discussed the unique role conflicts that occur early in the pipeline for women graduate students who also are mothers. These women often find themselves caught between their desire to excel in graduate school and to be a mother, and also experience challenges with respect to finding peer support from their non-mother peers.

Wolfinger, Mason, and Goulden (2008) conceptualized family and marriage as having a direct effect on the leaky pipeline when women are trying to earn tenure. Generally speaking, when family issues and domestic responsibilities are at stake, women academics receive less support from their male partners than men academics do from their female partners (Bird et al., 2004). However, evidence for the effect that children and marriage have on scholarly productivity paints a different picture. Winkler (2000) reviewed the literature and found that though women on the whole publish less than men, single women are less productive in publication than married women. Krefting (2003) reported that "neither marriage nor parenthood seems to affect women's productivity (or men's, Valian, 1998)" (p. 264).

Conclusion of Part II: Pipeline Influences. This section discussed the themes and variables that are relevant to women's experiences in the pipeline as graduate students and as academicians. The final section addresses key outcomes.

Part III: Pipeline Outcomes

The following section examines academic women's career outcomes and satisfaction as well as institutional responses to women's issues. The literature search for this section included the search terms *women's career satisfaction*, *women in academia*, and *university (or college) response*.

Women's career outcomes and satisfaction. As discussed previously, fewer women are granted tenure than their male counterparts. As one travels through the pipeline, chances of leaking out are greater for women at all stages of their career than for men (Mason & Goulden, 2004; Winkler, 2000; Wolfinger et al., 2008). In August and Waltman's (2004) study, women's career satisfaction was predicted by "departmental climate; the quality of student relationships and such related activities as mentoring and advising students . . . ; a supportive relationship with the unit chairperson; and the level of influence within the department or unit" (p. 187). In addition, for tenured women faculty, "comparable salary and the importance of departmental influence" rose to the forefront (p. 187). Harper et al. (2001) found that both tenured and tenure-track women were "least satisfied

with their authority to make other job decisions . . . and the time they have available to advise students. . . . Non-tenure-track women as a group were the least satisfied with their authority to decide which courses they teach" (p. 251).

Institutional response. The call for institutional change to address the needs of women academicians is a direct result of research conducted on this topic in the past several decades. Although a full review of institutional initiatives on behalf of changing women's experiences in academia is beyond the scope of this article, the current authors have highlighted some recommendations for change that exist in the literature.

Many authors have called for higher education institutions to implement initiatives to address the issues that women academics face (e.g., AAUW, 2004; ERA, 2003; MIT, 1999; Stinchfield & Trepal, 2010). Generally speaking, these initiatives include, but are not limited to the following: (a) changing hiring practices to seek out women and people of color for all faculty positions, especially tenure-track positions; (b) encouraging mentorship programs for faculty; (c) instituting policies in which the tenure clock may be stopped and restarted; (d) adjusting views on career commitment to accommodate academicians' family and other responsibilities; (e) promoting women to higher-level administrative positions; (f) eliminating gender discrimination regarding salary and access to resources; (g) revising the tenure review process to include merits for service-oriented work; (h) making evaluation standards for tenure clear and transparent; (i) expanding understanding of the psychosociocultural variables that influence academicians differently; (j) conducting research on institutional policy and its effects on faculty members; (k) being active beyond hiring practices by encouraging women and people of color to pursue careers as academicians; and (l) being vigilant of and punitive toward gender discrimination taking place within the institution (Bird et al., 2004; Bronstein, 2001; ERA, 2003; Harper et al., 2001; Jacobs & Winslow, 2004; MIT, 1999; Thomas et al., 1999; Valian, 2005; Winkler, 2000).

Conclusion of Part III: Pipeline Outcomes. This section provided an overview of career outcomes and satisfaction among women academicians and how institutions have been called to respond to these issues. The following section reviews the authors' model for women's career processes in academia.

A Model for the Career Process of Women in Academia

Women's career development is related to a variety of psychological, social and cultural influences. Researchers have studied many of these influences with girls and women, demonstrating the powerful effects shaping women's career aspirations, choices and development. In the present authors' model, career development influences, pipeline influences (factors affecting entry into academia), and pipeline outcomes (outcomes of a career in academia) are addressed. Here, the authors explain the structure of and rationales behind each section of the model (see Figure 1 and Table 1).

Overview of the Model

To promote parsimony of the literature and model coherence, the authors organized women's career development influences into five major groups of variables: cognitive, coping, environmental, personality and relational. Each of these major themes is present within the top portion of Figure 1. These five domains of career development lead up to a decision to pursue a graduate degree, labeled "pursue terminal degree" in the model. The authors used the phrase "terminal degree" for the sake of simplicity, even though some employers and fields do not require a doctorate (e.g., school psychology).

While previous collegiate accomplishments certainly facilitate matriculation into a graduate program, the authors consider the pipeline as beginning in graduate school and continuing with women taking academic

positions. The numerous variables affecting women's experiences in academia are grouped into the following categories: academic duties, academic environments, individually centered, resources and social.

The pipeline is considered to be one piece, since the literature seemed to indicate this understanding and it resulted in the most parsimonious interpretation. However, future evidence may lead to consideration of the pipeline in two pieces, in which there is an early pipeline that focuses on graduate students and a midpipeline that pertains to women in academic positions. For example, some variables may not be relevant to graduate students (e.g., tenure-track versus nontenure-track), which lends support to the idea of breaking the pipeline into two groups. However, many variables have been found to be a consideration for both graduate students and academicians (e.g., age, work, family issues). Also, some variables that are currently considered part of one group may actually show evidence of salience with the other group (e.g., academic self-concept, financial issues). For now, since the themes seem interwoven with the experiences of both graduate students and academicians, the current authors have considered them together as one group.

Once a woman decides to pursue a graduate degree, a host of psychosociocultural factors begin to influence both her educational experiences and her experiences in academia. As the model shows, women may leak out of the pipeline at different points of their academic careers (i.e., early, mid- or late career), with early leaking meaning that one might never enter academe. The final section of the model indicates two major outcomes of women's career development and the academic pipeline. First, women may report different levels of career satisfaction. Second, institutional responses to women's issues within the academy may vary.

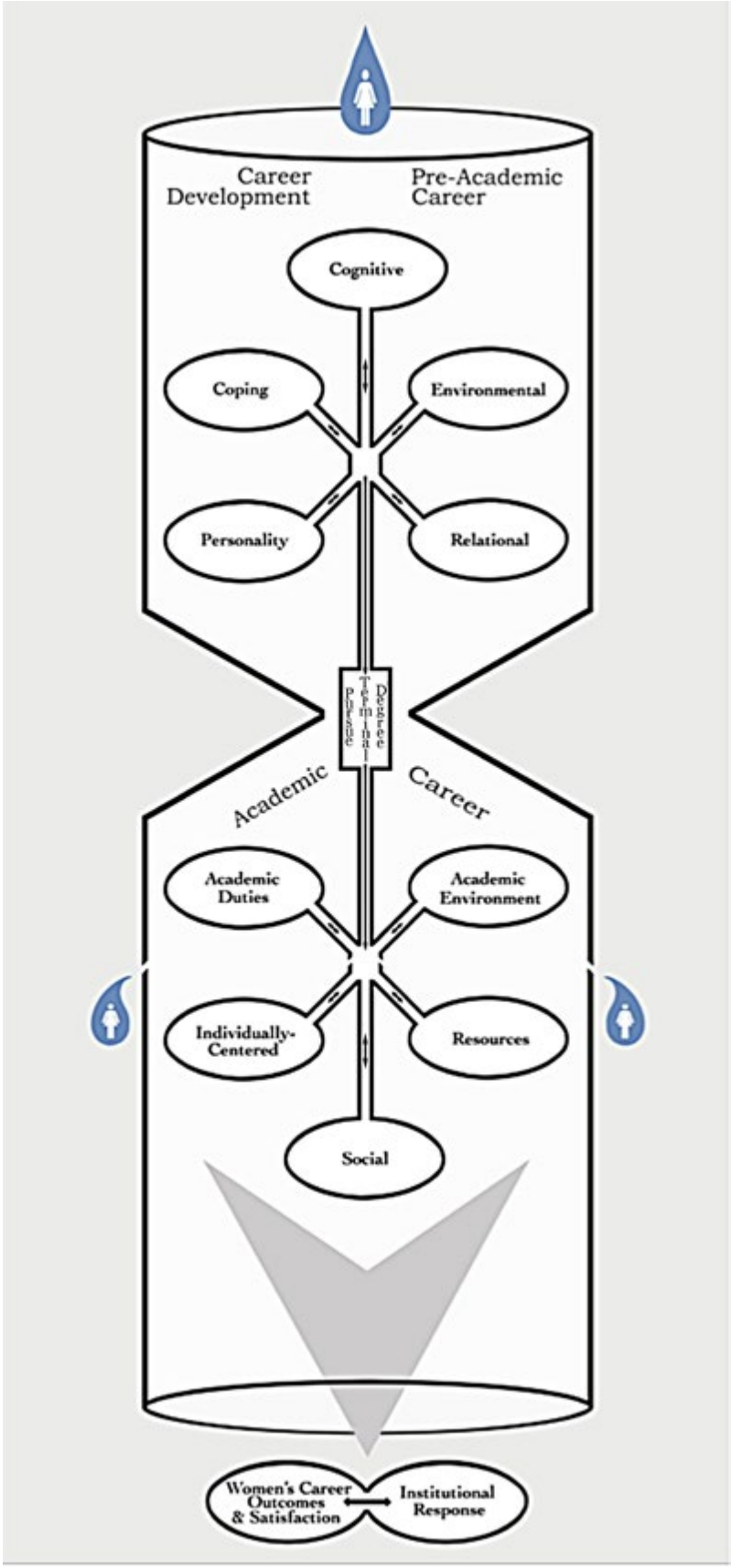

Figure 1. The Leaky Pipeline: Career Development of Women in Academia Before, During, and After Careers in Academia

Table 1

Themes and Variables Comprising the Career Development and Leaky Pipeline Experiences of Women in Academia

Career Development	Pipeline Experiences
Cognitive theme	Academic duties theme
Career aspirations	Administrative-level representation
Career choice	Institutional housekeeping and service-oriented activities
Career expectations	Teaching and research productivity
Intellectual abilities	Tenure track versus nontenure track
Liberal gender role attitudes	Academic environment theme
Coping theme	Departmental climate
Career decision-making coping	Isolation and invisibility
Career maturity and adaptability	Transparency of departmental decision making (including tenure)
Career self-efficacy	Individually centered theme
Self-esteem	Academic self-concept
Environmental theme	Age
Availability of resources and opportunities	Race and ethnicity
Low status of traditionally female jobs	Gender schemas and feminism
Previous work experience	Personal power and self-promoting behavior
Social class and socioeconomic status	Resources theme
Socialization influences	Access to resources
Personality theme	Financial issues
Achievement motivation	Salary, rewards and recognition
Career interests	Social theme
Instrumentality and other personality variables	Peer and mentor relationships
Valuing graduate education	Presence of women in the field and the decision to pursue a doctorate
Relational theme	Work and family issues: Parenthood, marriage and division of responsibility
Dual roles of marital and parental status	
Perceived encouragement	
Psychosocial needs	
Relationships with parents and presence of role models	
Rewards and costs of career and parenthood	

Model Predictions

Based on the literature review and the resulting model, the authors can make several predictions to describe the processes involved in women entering, traversing and exiting the pipeline.

Entry into the Pipeline. As women begin their careers as faculty members they bring their career development history with them, which in turn influences their education and career. The interaction of these factors creates a unique experience for women in faculty positions. Specifically, the career development variables are relevant to entry into the pipeline. First, the authors predict that the cognitive theme affects career trajectory in that women must have career aspirations, career choices and career expectations that are compatible with an academic career, as well as sufficient intellectual abilities and liberal gender role attitudes to endure and succeed in graduate school and beyond. Second, the coping theme also facilitates pipeline entrance, as women must have career decision-making coping, career maturity and adaptability, career self-efficacy, and self-esteem to transition effectively from graduate school into academic careers. Third, the authors predict that lower social class and socioeconomic status diminish the likelihood that a woman will enter an academic career (environmental theme), because lower social class and socioeconomic status tend to be associated with less access to opportunity structures such as those afforded by the educational attainment required for many

academic careers. Fourth, the authors predict that having high achievement motivation, possessing career interests that complement an academic path, exhibiting high instrumentality and valuing graduate education facilitate an academic career (personality theme). Fifth, the authors hypothesize that the presence of perceived encouragement and supportive relationships with parents and role models facilitate these career paths (relational theme).

In addition, pipeline variables like feminism, personal power and self-promoting behavior have been evidenced as beneficial to women, and the present authors predict that these trends will likely remain consistent. For instance, academic self-concept can be a facilitative variable for women's futures as academicians when that self-concept is consistent with an academic career and when women attend graduate programs that are more gender balanced than male dominated.

Traversing and Exiting the Pipeline. Once a woman enters graduate school, she is officially in the pipeline, and must maintain a level of teaching and research productivity commensurate with the expectations of the institution. Women academicians may leak out of the pipeline if they are denied tenure due to a lack of research productivity as a result of spending a disproportionate amount of time performing unrecognized service-oriented activities, particularly in research-intensive institutions (Misra et al., 2011). However, there is some evidence that institutions are recognizing service activities more frequently (Sampson et al., 2010). The current authors predict that experiencing a hostile departmental climate, feeling isolated and invisible, and encountering little or no transparency in departmental decision making facilitate conditions that increase the likelihood of a woman leaking from the pipeline before, during and after tenure decisions are made.

In addition, the authors predict that women leave their academic careers behind due to feeling stuck in positions with little hope for meaningful promotion, having restricted access to resources, dealing with financial issues or feeling dissatisfied with their salaries, rewards or level of recognition. Posttenure, the authors predict that a lack of administrative-level representation leads some women to leave academia because they are not able to realize administrative-level career goals, or because they may have less support (e.g., lack of available mentors) and more career challenges (e.g., greater isolation and invisibility) within institutions that lack women in these positions.

Discussion

As the authors have shown through the model and its explanation, women academicians experience a unique set of personal and career challenges. Socialization and educational and career development processes stack the deck early, especially against women entering traditionally male-dominated fields. When one adds these processes to the existing structure of the academic system, it becomes clear that there are inherent systemic disadvantages for women in academic fields, which contribute to the leaks during each stage of the academic pipeline. The influences that women experience as children and young adults, and the discrepancies between women in different positions within academia, point to the necessity of a more holistic understanding of how women choose and navigate the complex path that leads them to and through academia.

It is the authors' contention that each section of the model builds the groundwork for the next stage of the model in such a way that women in later stages of their careers have a multiplicity of additive strains that inhibit their career and personal satisfaction. To be sure, there are women who feel happy and fulfilled in their academic careers. At the same time, the present authors believe that this picture of satisfaction or dissatisfaction is supported by achievements and growth that occurs in different ways and for different reasons than it does for men. The authors hope to understand these influences and encourage responses at individual, societal and

systemic levels. There exist numerous implications of this model, and here the authors highlight a few key points.

Implications

Barriers for women. Women receive opportunities in the work world in ways that constrain their choices from a young age (e.g., Gottfredson, 1981; Gottfredson & Lapan, 1997; Mello, 2008; Riegle-Crumb, Moore, & Ramos-Wada, 2011). Factors such as low self-efficacy, little perceived encouragement and few role models can create barriers for career choice. However, some women do pursue academic careers, succeeding in their efforts and finding the work enjoyable and satisfying. Identifying a combination of protective factors that help women to succeed in academia could help offset some of these barriers. Also, career and mental health counselors can help women to develop these strategies and traits for themselves.

Women seem to struggle throughout the lifespan with perfectionism that inhibits their ability to feel fulfilled by their endeavors as well as their ability to produce academic work at the same rates as their male peers. It may be that women decide to leave the pressure of the academic environment because they experience burnout, working tirelessly and too meticulously toward a goal that men may reach more easily since they may be less influenced by perfectionistic tendencies. It is the authors' hope that graduate training programs, mentors, counselors and academic institutions will continue to work together to provide women with guidance, support and psychoeducation in order to cultivate new perspectives on achievement in academia.

Gender role socialization. How women glean messages from the dominant U.S. culture regarding what types of jobs are suitable for women and gendered expectations for behavior influence and constrain young women's career interests, self-efficacy, view of parenthood and achievement motivation. Should a woman find herself with the resources necessary to enter graduate school with aspirations of an academic career, these socialization processes could potentially continue to restrain her because she may find herself with fewer female than male mentors and professors. If she has children, she also may find that the role strain between graduate student and mother is exhausting. If she is successful and becomes an academic, she may find herself balancing feelings of marginalization, isolation and frustration regarding her work and collegial relationships with the expectation that she be more "likeable" than "competent" (Krefting, 2003, p. 269). Often she may be called upon to perform activities in service of the institution that reinforce the gendered nature of "housework" for the institution (Valian, 2005, p. 205). Depending on the institution, performing service-oriented activities for the institution may help (Sampson et al., 2010) or hurt (Misra et al., 2011) her progress toward promotion and tenure. Hence, women may leak from the pipeline. For those women who do not leak, there are lingering discriminatory practices and beliefs that may flavor each day they spend pursuing their career goals and navigating the male-dominated terrain of the U.S. academic institution. The authors hope that this model will inspire others to consider the tangible reality of gender discrimination and combat its very specific effects on women academicians.

Role models and mentors. Women's experiences with role models in early life affect how these women aspire to and place importance upon career success (Hackett et al., 1989). In addition, girls' decisions about work and family are influenced in part by their perception of their mothers' work behavior, both inside and outside the home; by their emerging gender role attitudes; and by sociocultural messages regarding the gendered nature of careers and opportunities that exist. The work–family issue does not dissipate as women age, but is consistently present throughout women's lives in the pipeline. It seems logical to conclude that some women with doctoral degrees and families decide to leave the pipeline due to the strain that academic jobs place on them. Providing more modern and family-friendly practices within institutions, such as daycare services and paternity leave, might well encourage women to enter or remain in academia.

Limitations

One limitation to the model presented here pertains to its broad overview of some of the variables relevant to women's career development in academia and job satisfaction. The variables in this model are by no means the only contributing variables, and thus the authors welcome feedback, extensions and rearrangement of this model based on other scholarly bodies of knowledge and research findings.

Also, an important consideration for future researchers and scholars is the question of how best to represent the model itself, specifically regarding the academic pipeline. Two major issues that arose for the authors involved (a) the troublesome nature of conceptualizing women's academic career paths as linear in the form of this pipeline, and (b) whether to conceptualize women graduate students and women academicians as representing different phases of pipeline processes. With more study, conceptualization of these variables and how they fit together may lead to shifts in the current model. Finally, the authors' review has been limited in that a comprehensive survey of this voluminous literature was not possible given the realities of publication space limitations.

Implications for Counselors and Other Future Directions

The model has many potential applications for counselors. First, counselors can utilize the model to conceptualize women academicians' career development issues, using Figure 1 and Table 1 as quick reference tools. Also, counselors can assist women with career decision making and coping with their academic careers, which may help alleviate leaks in the pipeline. For example, expanding this model may help to guide the development of career counseling interventions for girls and young women during their career development and college or graduate school years. In addition, women academicians can benefit from interventions designed to explicate their experiences in a male-dominated career field, help them find support and challenge institutions for policy changes. In addition, the model can guide further research and interventions. Expanding, reframing or finding supportive or contradictory evidence for the model and its variables can be informative for academicians who conduct research in vocational psychology, women's issues or other areas, as this information can guide future research, theory, and clinical practice. Finally, career counselors can act as advocates working in partnership with academic institution administrators, who may benefit from this model by looking critically at their own practices and policies and working with departments and faculty members to address critical issues that influence women's decisions to pursue, remain in or leave academic careers.

Conclusion

The authors have merged and organized several bodies of literature regarding women in academia before, during and after their faculty appointments. Women's unique career development and socialization experiences are the foundation for understanding how women navigate careers in academia. Barriers do exist for women that constrain career development, yet resources such as counseling and mentoring can counteract these barriers. In addition to highlighting the obstacles within the leaky pipeline, the authors hope to encourage the adjustment and repair of the pipeline itself.

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