



A journey into women's managerial career development through the social cognitive career lens

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ABSTRACT

This article presents a computational literature review that aims to disentangle the themes that have marked the academic debate on women's career development in management positions through the lens of social cognitive career theory. Relying on the novel methodology of topic modeling, the research inductively conceptualizes 12 topic-based themes that have contributed to academic debate in the last decades. In interpreting the landscape that emerged, the topics have been aggregated into three main categories: individual characteristics and learning experiences, contextual factors, cognitive mechanisms, and regulation of behavior. The fine-grained conceptualization of the topics and the derived framework contribute to systematizing the literature and to emphasizing the different facets of women's career journeys in attaining leadership positions. Through a discussion of the contributions and limitations identified in each category, the study provides recommendations for future research.

1. Introduction

Despite approximately equal representation in the workforce to men, women remain far outnumbered in management positions. Only 8.2% of CEO positions at S&P 500 companies and just 10.4% at the world's largest businesses in the Fortune Global 500 are held by women (Catalyst, 2023; Fortune 500, 2024). Women are lagging not only as top executives but also in lower management positions, confirming the presence of a leaky pipeline for women in leadership (World Economic Forum, 2024). This evidence suggests that the current women's management career journey is still more complex than that of their male counterparts (Schultheiss, 2021) and made of circuitous routes portrayed in the literature as a "labyrinth" (Eagly & Carli, 2007).

The literature largely overlooked women in management positions until the 1990s. Only in recent decades has this topic of inquiry experienced a dramatic flourishing, which has led to a high level of fragmentation. Previous reviews have analyzed the relationship between gender and leadership in very specific contexts, such as schools and universities (Wang & Gao, 2022) or male-dominated organizations (Campuzano, 2019). In the same vein, other studies have formulated lists of women's barriers, enablers, limitations, and benefits in pursuing leadership roles, which are, however, poorly connected to career development issues (Kulkarni & Mishra, 2022; Mah et al., 2023).

Notwithstanding the contributions of these studies, the paucity of literature reviews on women's career development to managerial roles represents a missed opportunity for investigating the interconnections among gender, leadership, and career literatures. Specifically, gender affects leadership and career paths through a complex set of processes involving intra- and inter-individual dimensions (Hogue & Lord, 2007; Kirsch, 2018; Mah et al., 2023), which have not been discussed through a career development approach, limiting the understanding of the multiple dimensions that affect women's career pursuit of leadership positions.

Building on these considerations, we propose a literature review with the aim of addressing the following research questions: What are the themes that characterize the scholarly discussion on women's management career journey? How are these themes informative of the dynamics that characterize women's career development paths?

To address these research questions, we rely on social cognitive career theory (SCCT; Lent et al., 1994; Lent & Brown, 2019) as a guiding framework to interpret the themes emerging from the literature. In assuming reciprocity among personal, contextual, and behavioral factors that influence career-related decisions, SCCT makes it possible to adopt a multi-level perspective on the issue of female managerial career development. To offer a more comprehensive representation of the debate, we rely on recent advances in computational literature review

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(Antons et al., 2023), adopting topic modeling as a methodological approach (Hannigan et al., 2019). Considering the complexity, the volume, and the fragmentation that characterize the literature under scrutiny, topic modeling provides a valuable means of increasing the scale of the literature review and organizing the disparate contributions into major themes, uncovering previously unseen connections among prior studies and their content.

This article is structured as follows. In the next section, we motivate the adoption of SCCT as a guiding framework for the literature review. Then we illustrate the methodology, the data collection, and the analytical procedure used to conduct the computational literature mapping. The following section presents the topic landscape and the content of each topic according to a SCCT framework. Finally, suggestions for advancing future research are presented, together with the contribution to literature and the limitations of the study.

2. A theoretical framework for mapping the literature

The review adopts SCCT (Lent & Brown, 2019; Lent et al., 1994) for the interpretation of the themes emerging from the academic debate. The core of the theory lies in the cognitive–person elements that determine career development, namely self-efficacy and expected outcomes that promote career interests and subsequent goals (Lent, 2013). As highlighted by Lent et al. (1994: 89), “people form enduring interests in activities in which they view themselves to be efficacious and in which they anticipate positive outcomes.” The development of such interests leads people to express their career intentions/aspirations toward choice goals, which in turn increases the likelihood of implementing that choice behavior. The activity involvement produces performance, resulting in a feedback loop of revision of self-efficacy and outcome beliefs.

In identifying the origin of these cognitive–person elements, the theory posits that person inputs (e.g., abilities, demographic characteristics) and background (distal) contextual factors (e.g., cultural and gender role socialization, types of available career role models, skill development opportunities) influence self-efficacy beliefs and outcome expectations through individual career-relevant learning experiences (performance accomplishments, vicarious learning, social persuasion, and physiological arousal), whereas proximal contextual factors (e.g., working conditions, social support, and barriers) are conceived of as environmental opportunities and constraints close to the career choice behavior.

An extension of the original model (Lent & Brown, 2013), namely the social cognitive model of career self-management, ascribes a central role to agency (making career choices and investing effort to achieve career goals) and to its associated psychological components (self-efficacy, outcome expectations, career interests, and goal choices). The model introduces the concept of adaptive career behavior, described as those actions activated proactively and reactively by individuals to direct their career development.

SCCT represents a suitable framework for the interpretation of the results of this review for several reasons. First, the focus of the review is on career development, namely “how individual and contextual factors influence changes in people’s careers over time” (Zacher et al., 2019, p. 358). Prior studies have suggested that women’s perceived career barriers may contribute to, result from, or even represent some of the person, contextual, and experiential factors represented in SCCT (Hackett & Byars, 1996; Swanson & Woitke, 1997). Thus, SCCT may help to disentangle and systematize the major factors influencing female career development in managerial roles.

Second, SCCT, considering the interaction among individual and contextual factors, may offer a multi-level perspective on female managerial career development. With some exceptions (Kossek et al., 2017; Taser-Erdogan, 2022; Mah et al., 2023), this perspective has rarely been adopted in exploring women’s career development and, where it is considered, the focus has been primarily on individual and

organizational factors, neglecting the relevance of the societal level (Taser-Erdogan, 2022).

Finally, since in SCCT the relationship between the individual and the environment is bidirectional, the concept of human agency plays a central role. This means that across the life span, individuals proactively influence the environment to self-manage their careers and achieve their aspirations (Lent & Brown, 2013). Although the literature on women’s career development has focused primarily on the barriers that prevent women from accessing leadership positions (e.g., Kossek et al., 2017; Taser-Erdogan, 2022), the SCCT framework could help disentangle the research themes that relate to women taking ownership of their career trajectories to advance to management roles.

3. Methods

3.1. Topic modeling

Topic modeling constitutes an “automated procedure for coding the content of a corpus of texts into a set of substantively meaningful coding categories called topics” (Mohr & Bogdanov, 2013, p. 546). Considering that in the academic debate the issue of women’s career development in leadership positions has gained attention in recent years and the literature has grown in a fragmented way, topic modeling turns out to be a particularly suitable method for finding useful structure in an otherwise extensive and unstructured collection (Blei & Lafferty, 2009). Rather than applying a preconceived taxonomy, topic modeling enables uncovering non-obvious connections between ideas (D’Ascenzo et al., 2024). Indeed, this method allows us to develop categories through an inductive reconstruction of the existing discourse on women’s career development in managerial positions, searching for topics across articles, journals, and disciplinary areas, and at the same time preserving the transparency of the classification process. We have adopted an iterative three-part process consisting of (i) selecting and pre-processing data, (ii) applying algorithms and fitting criteria to surface topics, and (iii) building theoretical artifacts (Hannigan et al., 2019).

3.2. Rendering corpora: selecting and pre-processing data

We identified candidate articles from the Scopus database, which is considered the most inclusive and widely used source of scientific literature (Ghezzi et al., 2018; Zupic & Čater, 2015), using keywords derived from other reviews in the field (e.g., Kirsch, 2018; Mah et al., 2023): (“wom*” OR “female” OR “gender”) AND (“career”) AND (“leader*” OR “manage*” OR “executive” OR “CEO” OR “board” OR “supervis*”) in the title or abstract. Thus, the keywords do not limit the analysis to upper echelon roles.

We searched for peer-reviewed articles in English in the fields of business and management and psychology without any time limit. This allowed us to identify a comprehensive pool of potentially relevant articles. The search resulted in 1065 unique items published from 1977 to July 2023.

In the screening phase, the two authors independently went through each title and abstract and applied the following exclusion criteria, discussing differences until agreement was reached (Tranfield et al., 2003). We removed those articles that (1) considered gender merely as a control variable or included gender only in the description of the sample; (2) did not address career development but focused on other career-related constructs, such as career satisfaction, or on work-related constructs such as job retention; (3) investigated the impact of board gender diversity or gender equality on organizational performance; (4) did not target women aiming at managerial positions. The final sample resulted in 549 articles, 53.4% of which were published in the last ten years. To assess their quality, we relied on the journal impact factor. The main sources were *Gender in Management* ($N = 87$), *Career Development International* ($N = 17$), *Sex Roles* ($N = 11$), *Journal of Career Development* ($N = 9$), *Frontiers in Psychology* ($N = 9$), *Advances in Developing Human*

Resources ($N = 8$), *Gender, Work and Organization* ($N = 8$), *The Leadership Quarterly* ($N = 7$), and *Employee Relations* ($N = 7$).

Unlike previous research, which relied solely on the analysis of abstracts, which may not fully reflect the range of research themes and subtopics (e.g., D'Ascenzo et al., 2024; Kurt et al., 2024), for a more comprehensive understanding of the reviewed literature, our analysis is based on the complete body of full text. In pre-processing, articles were converted into raw text files where punctuation, numbers, and stop words were removed (Schmiedel et al., 2019).

3.3. Rendering topics: applying the LDA algorithm to identify appropriate topics

The most common algorithm for topic modeling is latent Dirichlet allocation (LDA; Blei et al., 2003). To perform LDA analysis, we relied on Mallet software (Hannigan et al., 2019). LDA output consists of two matrices. One includes a topic list and a corresponding vector of words that best represent each topic. The second contains the weight that quantifies how strongly associated each topic is with each document (Antons et al., 2016). As the model requires, the number of topics is fixed in advance (Antons et al., 2016). Adopting a logic of accuracy (Hannigan et al., 2019), metrics can be used to guide the selection of the best number of topics. Semantic coherence, which “measures how often the most probable words of a given topic actually co-occur close to each other in the original texts” (Schmiedel et al., 2019, p. 950), has been often used for this purpose. Thus, we first built on quantitative evidence, generating models in steps of 10 ranging from 10 topics to 50 and calculating their average topic coherence. Results showed higher semantic coherence for the 10-topics solution. Although the quantitative

approach can provide some guidance in determining the number of topics, scholars agree that there are no commonly accepted rules and no statistical test that ensures the optimal number of topics or the quality of a solution (Schmiedel et al., 2019). Thus, we complemented the quantitative analysis by examining the interpretability of the models close to the 10-topics solution that presented higher coherence scores, namely models with 10, 12, and 13 topics.

First, we performed an intrusion task analysis (Doldor et al., 2019), asking two researchers familiar with the topic to identify intruding words-words considered out of place in each model. A smaller percentage of intruding words and higher interrater agreement were found in the 12-topic model ($M = 4.00$, $SD = 2.45$, $\kappa = 0.54$) than in the 10-topic model ($M = 4.90$, $SD = 1.45$, $\kappa = 0.39$) or the 13-topic model ($M = 4.92$, $SD = 1.14$, $\kappa = 0.49$). This suggested that in the 12-topic model the meanings of topics were clearer, as intruders were easier to identify, and a larger number of top words were considered consistent with each other.

Second, we qualitatively assessed the 10-, 12-, and 13-topic models and identified their similarities and differences (Doldor et al., 2019). The two authors independently read the top 20 words and the abstract of 10 articles per topic with the highest weight to derive a tentative label for each topic model. The three models share many similarities; more than 70% of the top words of a model are included in the other two models. Nevertheless, the 10-topic model is less detailed than the 12-topic model, while in the 13-topic model redundant topics were found. Thus, the analyses confirmed the choice of the 12-topic model.

Table 1

Women's leadership careers: Topics and SCCT categories.

SCCT category	Topic Number	Topic Label	Top Words	Example Articles	Topic Weight		
					Std Mean ^a	Min	Max
Individual characteristics and learning experiences	1	Personal resources and expertise	Level, difference, top, position, characteristics, style	Darouei & Pluut, 2018; Fietze et al., 2011; Georgellis & Sankae, 2016; Ingersoll et al., 2023	1.85	0.001	0.81
	8	Longitudinal influence of women's abilities and interests	School, student, difference, college, years	Lubinski et al., 2014; McCabe et al., 2020; Sánchez et al., 2018; Zuckerman, 1985	0.68	0.001	0.55
Contextual factors: Organizational	2	Organizational support	Mentoring, relationship, support, development, trust	Barhate & Hirudayaraj, 2021; Francis & Michielsens, 2021; Leck & Orser, 2013; Steele et al., 2024	0.54	0.001	0.53
	4	Assessment of potential	Behavior, rating, interpersonal, bias, derailment	Bono et al., 2017; Braddy et al., 2020; Gentry et al., 2015; Lyness & Thompson, 2000; Merluzzi & Philipps, 2022	0.68	0.001	0.65
	7	Organizational design of competing hierarchies	Academic, university, position, faculty, senior	Acker & Millerson, 2018; Bird, 2011; Chance, 2021; Maheshwari et al., 2023; Shepherd, 2017	0.56	0.001	0.46
Contextual factors: Socio-cultural	3	Sexism and media representation of women	Stereotypes, sexism, minority, representation, culture	Cadaret et al., 2017; Georgeac & Rattan, 2019; Hideg & Shen, 2019; Hindman & Walker, 2020; Reynolds-Dobbs et al., 2008	0.41	0.001	0.61
	5	Family influence	Family, children, culture, home, balance	Agrawal & Singh, 2022; Abalkhail, 2017; Luo et al., 2022; Naidoo & Jano, 2003; Omair, 2010	0.80	0.001	0.55
	6	Social in-groups	Social, role, change, implicit, perceived	Asgari et al., 2010; Asgari et al., 2012; Diekman et al., 2013; Simpson, 2004; Topić, 2023	0.65	0.001	0.76
Cognitive mechanisms and regulation of behavior	9	Cognitive mechanisms of career aspirations	Self-efficacy, measure, outcome, aspiration, goal	Lips, 2000; Lopez-Zafra et al., 2021; Singer, 1990; Yeagley et al., 2010; Weidenfeller, 2012	1.10	0.001	0.76
	0	Construction and negotiation of identity	Role, professional, identity, personal, change	Bullock, 2019; Choi, 2013; Meister et al., 2017; Olsson & Walker, 2004; Swann et al., 2009	2.49	0.002	0.72
	10	Copying behavior in the workplace	Advancement, barriers, support, network, strategies	Athanasopoulou et al., 2018; Glass & Cook, 2016; Hegarty et al., 2023; de Klerk & Verreynne, 2017; Laud et al., 2013	1.79	0.001	0.70
	11	Women's voice	Public, social, government, executive, media	Drury et al., 2022; Horsley, 2009; Leopold et al., 2019; Pocock, 1995; Grant & Taylor, 2014	0.47	0.001	0.66

^a The standardized mean weight was computed by dividing the mean weights by their mean. Values above (below) 1 indicate mean weights above (below) the mean of all mean weights.

3.4. Rendering of theoretical artifacts: Crafting topics into labels

Each author improved the previous analysis by iteratively reading the most representative 20 words and articles per topic, along with their weight. The authors assigned a label to each topic and subsequently compared them to determine the level of agreement. Table 1 presents all 12 topics, top words, and exemplary articles. Analyzing the vectors of the weights of topics in each document, we identified the standardized mean weight for each topic (Table 1; Antons et al., 2016).

4. Results

Inductive analysis of the 12 topics revealed that the academic debate has evolved across different factors and levels of analysis. The complexity of the topic landscape has been interpreted, relying on SCCT. Using SCCT as guiding framework and following prior literature review classification based on it (Zacher et al., 2019), we classified the topics into three main categories that represent the main components of SCCT's model: individual characteristics and personal learning experiences, contextual factors, and cognitive mechanisms and regulation of behavior (Table 1).

In the following sections we will discuss the insights offered by the related topics, being conscious that, due to the dynamic nature of the framework, the different components interact with each other.

4.1. Individual characteristics and learning experiences

The topics included in this category (Topics 1 and 8) refer to personal factors that shape the course of career development. The analysis of personal resources in women's management careers has a long tradition and encloses most articles in the sample.

Topic 1 (*Personal resources and expertise*) addresses individual characteristics of women pursuing leadership positions, considering both relatively stable psychological dispositions and accumulated professional expertise. To predict women's managerial role occupancy, these studies rely on the trait and skills perspectives, including different qualities that range from personality attributes to motives, competencies, and expertise (Zaccaro, 2007).

Most studies within this topic assume that differences between male and female individual characteristics may exist, but whether they account for the variability in advancing to leadership positions is still under scrutiny. For instance, looking at personality traits, Fietze et al. (2011) and Georgellis and Sankae (2016) found that female leaders show higher Conscientiousness, Extraversion, and Openness than men; however, mixed results were found on the extent to which this predicts women's career development.

Similarly, studies conceptualizing risk-taking as a trait produced mixed results on whether women are more risk-averse than men (Ingersoll et al., 2023). Risk-taking has frequently been scrutinized when linked to the "glass cliff phenomenon" (Ryan & Haslam, 2005), which is the danger faced by women in being promoted to risky leadership positions where the chances of failure are higher (Hunt-Earle, 2012). In this regard, more critical perspectives started to conceptualize risk-taking as situational rather than a long-term personal characteristic, revealing that career barriers and discriminatory hiring practices may influence women's evaluation of a risky managerial position as a promotional opportunity (Darouei & Pluut, 2018), but also that women who aspire to reach leadership positions are willing to take calculated risks to enhance their probability of being successful. In their doing so, risk management becomes a strategic mechanism to exercise agency, overcoming stereotypes and demonstrating capabilities (Ingersoll et al., 2023).

Another set of personal factors relate to the use of socio-emotional intelligence competencies that seem both to facilitate and hamper women's career advancement (Singh et al., 2023). Specifically, resilience has gained attention as a core factor helping women to reach and succeed in leadership positions. For instance, Duchek et al. (2022) draw

attention to the dynamic process and specific factors that nurture women's resilience across management career stages.

The last predominant factor emerging from these studies is women's work and educational experience. From this topic it emerged that professional expertise and qualification have been considered one of the most important power bases for female executives. The stereotypical belief that women are less capable than men has driven women who aspire to climb the leadership ladder to take countermeasures to the extent that they show "impressive" expertise compared with their male counterparts (Adams et al., 2007). Women seem to rely on sound educational achievements and past mastery experiences to perceive themselves as efficacious in leadership roles even in the face of self-criticism and gender bias. In the SCCT, among the four types of learning experiences, personal performance accomplishments turned out to have the greatest influence on self-efficacy (Lent, 2013).

Adopting a temporal perspective, Topic 8 (*Longitudinal influence of women's abilities and interests*) presents a set of longitudinal studies that relate personal characteristics at a young age to subsequent management career choices. Topic 8, in contrast to Topic 1, measures individual characteristics at a very young age (from adolescence to college) and focuses on high-potential students' samples (Lubinski et al., 2014; McCabe et al., 2020). These studies show few gender differences in cognitive abilities, while observing that women differ in preferences in work-related and life domains (with broader career interests and stronger focus on the family and community), and in commitment to career outcomes (Lubinski et al., 2014). This pattern seems to dissolve when women have high self-efficacy in abilities that are traditionally related to male-dominated job environments, such as the economic and scientific fields. In this case, Zuckerman (1985) shows that women tend to rank the importance of career and the commitment to it higher.

A small set of articles in this topic also look at factors influencing career interests at a young age, which the SCCT refers to as background contextual factors that interact with the person's input and directly influence learning experiences, shaping self-efficacy, outcome expectations, and hence interests. At the family level, role models and transmitted values are considered (Zuckerman, 1985). At the educational level, the development of pre-college interventions and access to mentors provide adequate information to shape one's interests. Moreover, Sánchez et al. (2018) highlight the importance of career counselors in helping young women maximize their full potential free of psychological constraints associated with dispelling stereotypes.

4.2. Contextual factors

SCCT describes two broad categories of contextual factors: distal, background elements that occur early in the career development process, and proximal determinants that are influential at crucial decision-making points. Apart from Topic 8, discussed above, which partially incorporates background factors in analyzing women at a young age to predict their career choices, the review reveals that most topics relate to proximal determinants that we distinguish in organizational and social factors.

4.2.1. Organizational factors

Women's career development in middle and upper management is influenced by collective dynamics that occur in organizational settings both in dyadic and group relationships. Into this category fall Topics 2, 4, and 7.

Topic 2 (*Organizational support*) draws on the mentor's role theory (Kram, 1983) and the development network model (Higgins & Kram, 2001) to investigate the role of developmental relationships, including mentoring and internal and external networks, in favoring women's career development. Since women aspiring to leadership positions are often mentored by men, one critical issue in this discussion refers to cross-gender mentoring relationships, the quality of these relationships, and their impact on the mentee's development (Leck & Orser, 2013).

This topic also contemplates studies on multiple networks of people who actively pursue the advancement of the protégé's career by providing developmental assistance (Higgins & Kram, 2001). These networks can be internal to one's organization, or external, encompassing members of a professional community. Less attention has been devoted to the latter. In this regard, a recent study explores the benefits women derive from their membership in women's professional organizations (Steele et al., 2024). The study shows that external role models and training capabilities help women form their identities as leaders, increase their confidence and leadership aspirations, and promote career transitions. Fewer contributions are devoted to the exploration of other organizational support factors. Among those, Barhate and Hirudayaraj (2021) discuss how companies implementing flexible work arrangements can create opportunities for women to continue their careers without having to choose between family and work. Francis and Michielsens (2021) find that companies that promote an inclusive work environment have more female leaders.

Topic 4 (*Assessment of potential*) introduces career potential evaluation as proximal contextual factor. These studies show that the assessment ratings female leaders receive on their career potential are often subject to implicit gender bias (Kossek et al., 2017), which ultimately influences decisions about their promotions. Primarily drawing on role congruity theory (Eagly & Johannesen-Schmidt, 2001) and social role theory (Eagly & Karau, 2002), these works contend that when women demonstrate behavior in contrast to gender-stereotypic perceptions and inconsistent with the attributes believed to be relevant for a leader, they are more likely to experience career derailment than their male counterparts. For instance, Gentry et al. (2015) observed that both empathic concern and overconfidence, when shown by women, lead to greater career derailment. These results reveal that organizational members in charge of evaluating their collaborators and colleagues are still anchored to a simplistic and biased representation of what effective leaders' behaviors are. Thus, the risk is that women will be asked, more than men, to incorporate this behavior into their signaling processes to ensure their future promotion to leadership positions.

Topic 7 (*Organizational design of competing hierarchies*) deals with the peculiarities of bureaucratic work structures in hampering women's career development in leadership, which represents another set of proximal contextual factors concerning organizational culture and design. Most of these studies are conducted in the higher educational setting, characterized by potentially competing institutional hierarchies, one based on excellence in research and teaching, and another related to increasing managerial responsibilities (Acker & Millerson, 2018). This dual career ladder is regulated by different promotion criteria. If the climbing of the research and teaching hierarchy may rely on meritocratic rules based on objective measures (such as the impact of scientific publications or the quality of teaching evaluation), the promotion process to managerial positions appears less transparent. The qualitative evidence seems to support the idea that universities are "incongruous, gendered bureaucratic structures" (Bird, 2011, p. 202) in which structural factors in the selection process, such as mobility and external career capital, conservatism and homosociability represent institutionalized barriers that limit women's aspirations and their career advancement (Shepherd, 2017).

4.2.2. Socio-cultural factors

Society represents the main field where gender stereotypes are constructed and modified (Fitzsimmons & Callan, 2016). Indeed, the role of society in contributing to women's leadership journey encompasses a bi-directional relationship in which culture deeply influences female leadership perception and opportunities, but can also be influenced by female leaders' activities (Kossek et al., 2017; Taser-Erdogan, 2022).

The review emphasizes three topics pertaining to societal issues, namely Topics 3, 5, and 6.

Topic 3 (*Sexism and media representation of women*) addresses how people's sexist attitudes and media messages influence the ideologies that permeate the society and in turn affect the development of women's careers. In their theoretical model, Hideg and Shen (2019) rely on the concept of benevolent sexism, namely subjectively positive feelings (e. g., liking and warmth) toward women and the tendency to idealize and protect them, as a social factor hampering female advancement to leadership positions. Specifically, these authors maintain that benevolent sexism negatively affects women's ability to seek out social support to pursue career advancement. Similarly, Cadaret et al. (2017) observed that awareness of sexism is negatively related to women's confidence in their abilities.

Other contributions investigate the role of media in influencing the cognitive representation of women's leadership in society. For instance, Reynolds-Dobbs et al. (2008) explore historical and emerging media images of women and how these images reinforce negative stereotypes, with implications for women's career development. Even when media messages are publicizing women's social advancement in top leadership positions, studies showed they can generate counterintuitive drawbacks. For instance, an experimental study conducted by Georgeac and Rattan (2019) shows that perceiving progress for women in leadership may lead to overgeneralizing the opportunities for women to get access to equal opportunities, thus reducing concern with gender inequality, which persists in other domains.

Topic 5 (*Family influence*) addresses the role of family as a limiting and enhancing force in shaping women's leadership careers. Family has been conceived both as a background and a proximal factor, depending on the main SCCT components involved.

Concerning the former, articles look at contexts in which culture plays a dominant role in defining the role of family. Most of the research on female career and leadership has been conducted in Western cultures (Abalkhail, 2017), but the experience of family, household, and patriarchy are all contingent on local cultural and historical contexts. Indeed, in some societal contexts, female leadership is still constrained by institutional factors such as religion and patriarchal culture (Abalkhail, 2017), which influence perceptions of what constitutes an appropriate gender division between the family and public spheres. Women are induced to comply with social roles by prioritizing marital obligations over any aspiration for management careers, and consequently career choice turns out to be conditioned by parental acceptance and economic conditions at home.

However, research shows that family does not represent only a constraint but also an enabling factor for women's career development in patriarchal cultural contexts. Familial prestige and support are broadly recognized as the main contributors to women's career development. For instance, family connections are consistently related to access to leadership roles and career advancement and family name has been shown to be important in overriding the gender disadvantage (Omair, 2010).

Concerning family as a proximal contextual variable, studies investigated the support from the employer and the spouse a woman may benefit from in managing work-life balance. Luo et al. (2022) emphasize the role of family-supportive supervisor behavior in favoring self-efficacy, which in turn stimulates women to maintain interest and motivation in work and make their careers sustainable, whereas Naidoo and Jano (2003) show that partners' involvement in household chores is significantly correlated with the career aspirations of women.

Finally, Topic 6 (*Social in-groups*) focuses on gender group memberships as an important basis of collective identity. These studies try to understand how women modify their leadership self-conceptions when the characteristics of the gender in-group change (Asgari et al., 2012). Diekman et al. (2013) provide experimental evidence that social change in women's collective identity leads women to modify their self-perception. This topic emphasizes the importance for women of being exposed to women exemplars who challenge the stereotypes

associated with the gender in-group. Interaction between the self-concept and the social collective identity not only changes self-beliefs about leadership but also influences women's behavioral intentions, goals, and ultimately choices about their leadership careers.

4.3. Cognitive mechanisms and regulation of behavior

The topics included in this category (0, 9, 10, and 11) refer to women's manifestation of adaptive career behavior in terms of internal beliefs and behavioral strategies implemented to respond to or modify an environment that challenges their desired leadership career paths.

Contributions to Topic 9 (*Cognitive mechanisms to career aspirations*) are rooted in career and self-efficacy theory (Bandura, 1977) and provide an understanding of the antecedents of women's career aspirations, thus addressing the underlying cognitive mechanisms that explain the formulation of career interests in the SCCT. Scholars have recognized a strong relationship between self-efficacy and people's occupational preferences and aspirational levels (Hackett & Betz, 1981). Self-efficacy predicts the range of career options that people consider feasible for themselves, so that low self-efficacy may prevent people from undertaking activities that could boost their careers toward responsible roles (Dickerson & Taylor, 2000). Past research has established that women tend to have lower self-efficacy than men, especially in career areas that are typically seen as male-oriented (Bandura et al., 2001). Scholars provide different theoretical explanations for why this is the case, ranging from the internalization of stereotypical beliefs (Dickerson & Taylor, 2000) to identification with gender roles (Eagly & Karau, 2002).

Together with self-efficacy, outcome expectations recurrently emerge as an antecedent of career aspirations. Expected positive outcomes related to leadership positions predict higher levels of interest in managerial roles (Yeagley et al., 2010); however, women are more likely to associate leadership with negative outcomes such as relationship problems (Lips, 2000).

In this category also fall three topics that are more closely associated with the SCCT's dimensions of agency and adaptive career behaviors. Specifically, Topic 0 (*Construction and negotiation of identity*) conceives identity construction and negotiation as mechanisms that women use to modify their perception as leaders and respond to barriers to their career progression. Empirical findings reveal that women's identities at work frequently follow contradictory discursive constructions (Bullock, 2019), because females in leadership positions experience a tension between the identities that are salient for them and the identities that are incorrectly ascribed by others. This internal asymmetry affects women's ability to identify themselves as leaders (Meister et al., 2017). Moreover, personal transitions such as getting into a stable relationship or motherhood can amplify others' perception of the saliency of women's gender sub-identity, enhancing the formation of asymmetries. Due to the discomfort of holding conflicting cognitions about the self, women continuously feel the need to renegotiate their self-identities during social interactions (Swann et al., 2009).

Women respond to identity asymmetry through several strategies that include the attempt to resolve the asymmetry (finding a sponsor, active self-presentation, or overemphasizing work identities over other identities, such as being a mother or being a partner), enduring the asymmetry (reframing, blaming, searching social support, and ignoring), and escaping the asymmetry through opting out (Meister et al., 2017).

Women's agency is also represented in Topic 10 (*Coping behaviors in the workplace*). These studies illustrate how women self-regulate behavior that enables them to seize opportunities successfully and manage gender-related challenges, increasing their visibility as future leaders. For instance, Hegarty et al. (2023), identify three coping behaviors, namely capitalizing on opportunity, demonstrating capability, and surface tolerance, which favor confidence, respect, and acceptance and enhance career development. Other contributions illustrate how women can gain social capital through networking, consciously framing

their social interactions to pursue influence and diversity (e.g., de Klerk & Verreynne, 2017).

The last topic (11, *Women's voice*) describes women's difficulties and achievements in having a voice in society. These qualitative studies provide stories of female leaders who made determinant contributions to political, business, and social activities and offer a better understanding of the important role they played, as well as the difficulties of having their leadership roles recognized. The main trend that emerges from these studies is that women in managerial positions have received little public notice throughout the last century (Horsley, 2009). This further intensifies the lack of public role models that have been offered to younger generations and also deprives women of their voice in society. Today, by taking back power from silent organizations and top managers, women have greater freedom to speak out and make their voices heard by the public. For instance, by analyzing the role of women in the #MeToo movement, Leopold et al. (2019) discuss the social influence women were able to achieve in changing societal beliefs and behavior to restrain phenomena such as sexual harassment that have an impact on women's careers.

5. Discussion

The aim of this review is first to delineate the themes that characterize the scholarly debate at the intersection between gender, career, and leadership studies. To answer this research question, we identified 12 topics in the extant literature (personal resources and expertise; longitudinal influence of women's abilities and interests; organizational support; assessment of potential; organizational design of competing hierarchies; sexism and media representation of women; family influence; social in-groups; cognitive mechanisms of career aspirations; construction and negotiation of identity; copying behavior in the workplace; women's voice) connected with women's managerial career development.

The second aim is to provide a better understanding of how these topics are informative of the dynamic and multi-level career development path to leadership roles for women. To do so, we interpreted the 12 topics and their interrelationships using SCCT as a theoretical framework. A visual representation is provided in Fig. 1.

Our findings complement SCCT studies by specifying and integrating factors emerging from the literature under scrutiny that are relevant to career development. Moreover, they add to female leadership studies, providing a complex and dynamic representation of women's career development, in which personal characteristics, contextual factors, and agency intervene in the definition and pursuit of career goals.

Specifically, as far as personal resources and learning experiences are concerned, SCCT offers a broad interpretation of individual characteristics, lacking specificity as to which ones should be considered (Zacher et al., 2019). Prior studies generally acknowledged the role of human capital in women's career development (Mah et al., 2023; O'Neil et al., 2008) without distinguishing its different components. The current review contributes to identifying the main human capital components that are investigated in the literature on women's career journeys, namely personality traits, cognitive abilities, socio-emotional intelligence, and expertise. If the investigation of personality traits and cognitive abilities has produced inconclusive findings, with limited evidence of their influence on career development, the role of socio-emotional intelligence competencies represents a research area that needs further attention, in order to understand how specific competencies might influence women's self-efficacy via performance accomplishments and social persuasion. Finally, the tension to acquire and demonstrate an impressive qualification and professional expertise emerges as a relevant human capital component, which women often adopt as a countermeasure to gender stereotypes. Through performance accomplishments, educational achievements and the development of professional expertise reinforce women's self-efficacy and increase their power base for their career aspirations.

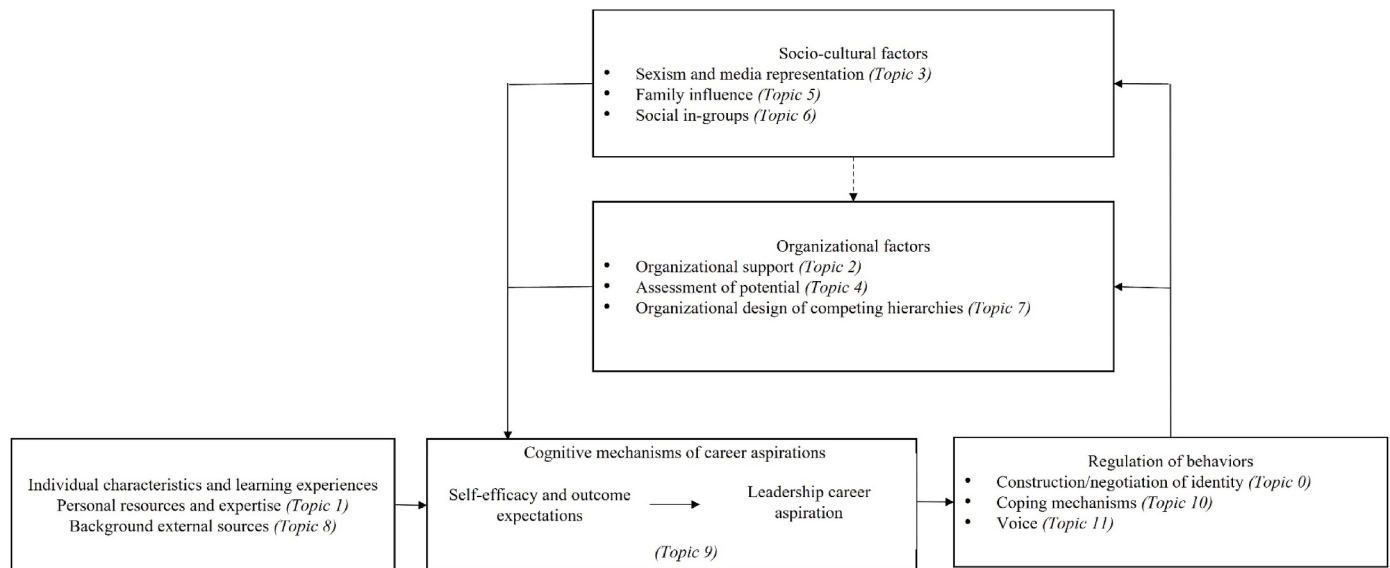


Fig. 1. Conceptual model.

When looking at contextual factors, this study distinguishes between those related to the organizational environment and those related to social dynamics. For the organizational factors, on one hand, results highlight the positive role of developmental relationships and organizational support interventions in facilitating women's progression. This corroborates the propositions of O'Neil et al. (2008), who describe mentoring and networking opportunities as a critical factor in women's career development. On the other hand, results also highlight that supervisors' evaluations and bureaucratic work structures may be subject to gendered bias, which tends to jeopardize women's career aspirations.

Socio-cultural factors have been poorly addressed in prior reviews in the field of women's leadership careers. Even the recent review of Mah et al. (2023) focusing on top executive roles has scantily considered the external environmental level, limited to the role of legislation, gendered industries, and macro-level gender discrimination. Thus, this review adds to the call to overcome the tendency to de-contextualize research on women's career advancement (Taser-Erdogan, 2022), linking what happens inside organizations at career level to the external environment through the discussion of the socio-cultural factors that act as both distal and proximal influences. Our findings encompass the facilitating or hampering role of family relationships (not only the parenting relationship, as traditionally considered in the SCCT), the role of media in representing women in managerial positions, and the reframing of women's collective identity.

Given the increased importance of agency in career development (Hirschi & Koen, 2021), the findings have also advanced the understanding of the behavior activated by women to respond to and modify environmental conditions to pursue their leadership career goals. Our work has pointed out that women activate cognitive and behavioral processes to increase and demonstrate self-efficacy and shape their career trajectories. Through agentic forms of self-regulation, expressed by showing persistence in their career aspirations, resolving identity asymmetry by means of negotiation, enacting coping behaviors, and using voice, women influence their own managerial careers. These forms of adaptive career behavior were not previously identified in the literature (Lent & Brown, 2013) and seem specific to women's managerial progression.

Interpreting each topic through the lens of SCCT helped us represent the phenomenon with a process perspective on women's career development. Differently from prior reviews, which focused on specific personal or organizational factors that hamper or enable women's leadership adopting a static approach, our results show a complex and

dynamic representation of the phenomenon in which personal characteristics, contextual factors, and agency intervene in the definition and pursuit of career goals.

5.1. Theoretical implications and limitations

This article offers a representation of the topics that have marked the literature on women's management career development during the past decades through the interpretative lens of the SCCT. The review contributes to the literature in different ways.

First, we have addressed a gap in the current debate on women in managerial positions, focusing on their career development paths. The review has addressed how women navigate their career labyrinths to pursue managerial positions, providing a better understanding of the mechanisms that either facilitate or undermine their self-efficacy, career choice, and subsequent development toward leadership positions. We have summarized and critically discussed the research topics emerging from the literature elucidating the core personal, environmental, and behavioral dimensions that influence women's leadership career development.

A second contribution lies in the multi-level perspective offered by SCCT on the women's management career field. This study provides preliminary insights into the fact that although women's managerial career development is marked by a complex interplay between personal, contextual, and behavioral factors, most topics are characterized by mono-level studies, missing the opportunity to represent possible interrelationships between personal resources and contextual elements. The review highlights the saliency of adopting theoretical frameworks with a multi-level approach and considers the interactions among levels and their effect on the career self-efficacy model.

Finally, we contribute to the recent advances in the computational review approach (Antons et al., 2023). The use of topic modeling techniques in mapping the literature on women's career development has provided a perspective complementary to the systematic manual review. Specifically, it has offered a more dynamic and comprehensive representation of the factors intervening in the personal, contextual, and behavioral processes related to women's leadership career development. The strengths of topic modeling in comparison with traditional methods for textual analysis have been discussed previously in the literature (Hannigan et al., 2019). Considering the rapid growth and the increasing complexity of the literature under scrutiny, topic modeling provides a valuable means of organizing the disparate contributions to the field and

generating a structured description of the state of the art. Then, contrasting the inductive topics with the SCCT model, the review has refined and better specified existing components of the framework, in order to understand existing relationships among them further. This technique has allowed us to uncover new categorizations to advance the SCCT framework, thus addressing the call for expanding categories included in the components of the SCCT (Lent & Brown, 2019).

Despite these advances, our work is also characterized by some limitations. The first is potential overlooking of relevant papers due to our reliance on a single database (Hiebl, 2023), although Scopus is considered more inclusive than other sources (Ghezzi et al., 2018).

Second, although scholars have recently argued that computational reviews represent an advantageous technique for management research (Hannigan et al., 2019), they cannot provide the same level of depth offered by systematic literature reviews (Dana et al., 2023). A follow-up study could possibly look at each topic individually through a systematic approach or combine topic modeling with alternative review methods (Anton et al., 2023).

Finally, this review has not distinguished the articles analyzed based on the geographical contexts in which they were carried out. However, the cultural issue represents a relevant variable that should be considered in future research on women's career advancement.

5.2. Research agenda for revisiting the SCCT model in gender career research

Delineating the major insights provided by the analysis of the existing literature, the review has also revealed that there is room to inform the understanding of the different components of the SCCT framework further in the domain of women's career development. The main areas of improvement are summarized in Table 2 and discussed in this section.

As for individual characteristics, extant studies tend to concentrate on a limited set of characteristics (i.e., traits, abilities, interests) that are analyzed in isolation. This restricted perspective provides little insight into how these variables may influence each other and into their relationships with contingent factors. Moreover, most of this literature assumes and tests gender differences without accounting for the psychological mechanisms that make these differences observed and influential for women's career development outcomes.

SCCT also postulates that self-efficacy and outcome expectations are determined by experiential sources, such as performance accomplishments, vicarious learning, social persuasion, and affective states (Lent et al., 1994). Although previous studies have acknowledged that to overcome stereotypes, women build extraordinary professional experience, according to Bandura (1986), only when this experience is linked to outcomes, strong self-efficacy beliefs produce positive outcome

expectations. Future research should address this relationship, providing a better understanding of the experiences that mostly contribute to creating positive career expectations for women. For instance, as for vicarious learning, extant studies have proposed various forms of role modeling, but failed to show the characteristics of role models and the way in which they are processed to enhance self-efficacy. Moreover, contributions on the role of social persuasion and affective states are rare. As for the former, studies could investigate the effect that external encouragement has on self-efficacy and career development. As for the latter, future studies should look at affective states as mediation mechanisms that explain the effect of discrimination on self-efficacy development.

Besides the four experiential sources postulated by Bandura, Maddux (2013) adds that self-efficacy could be enhanced through “imaginal experiences,” that is, visualizing oneself behaving effectively or successfully in a given situation. Little research has tested the roles of prospective self-image in self-efficacy mechanisms, especially in the context of women's career development.

Concerning the organizational contextual environment, future research should disentangle the influence of the different types of developmental support, namely internal relationships, external networking, and dedicated organizational practices for promoting an inclusive environment. The literature lacks clear evidence on how mentoring programs should be designed (such as content, effectiveness, and biases of cross-gender mentoring relationships). Moreover, little attention has been devoted to professional organizations as mechanisms of external networking and to inclusive organizational practices for improving self-efficacy. Additionally, across topics pertaining to the organizational factors, the empirical contributions are primarily qualitative, the recommendations remain speculative, and little effort has been devoted to measuring the effects on women's leadership career choices quantitatively. Future studies should enrich the debate, integrating descriptive and interpretive approaches with deductive and theory-testing research designs.

Another critical factor pertaining to the organizational category concerns subtle gender bias affecting evaluations of managerial potential and subsequent promotion decisions. If extant literature has provided evidence of the manifestation of distortive evaluation in assessing women's potential, less clear are the mechanisms that can be adopted at individual and organizational levels (for instance, using artificial intelligence technologies) to mitigate or reverse these effects.

Socio-cultural factors are the least discussed and are poorly grounded in empirical analysis and theoretical frameworks. This review has pointed out that benevolent sexism reinforces harmful belief about women's representation in managerial roles, comprising their career interest and choices. Since the endorsement of these beliefs causes women to be assigned to less challenging roles and opportunities in the

Table 2
Agenda for future research on Women's career development.

Individual characteristics and learning experiences:
- Consider a combination of individual characteristics and their relationship with contextual factors.
-Unpack the psychological mechanisms that explain gender differences and their influence on career development.
-Provide understanding of the learning experiences that promote self-efficacy and positive outcome expectations.
-Investigate the characteristics of role models and how they are perceived, to predict self-efficacy.
-Explain the role of external encouragement and affective states predicting self-efficacy.
-Look at the role of imaginal experiences.
Contextual factors:
-Unpack the different types of organizational support practices. Empirically investigate the mechanisms through which organizational support practices influence the different components of the SCCT's model. Analyze the overlooked role of external professional organizations in nurturing women's self-efficacy and career interest.
-Identify the individual and organizational strategies that can overcome the subtle gender bias in the assessment of managerial potential.
-Adopt cross-cultural perspectives.
-Delineate the role of (social) media communication in shaping positive/negative social role models.
-Understand how policy interventions at the societal level may affect benevolent sexism attitude in the workplace.
Cognitive mechanisms and regulation of behavior:
-Describe the cognitive mechanisms and the individual characteristics that contribute to increasing women's persistence in pursuing managerial aspirations.
-Define a typology of identity negotiation strategies contingent on the different contextual situations when faced in the pursuit of their career choice.
-Investigate women's behavioral adaptive responses to contextual factors.

workplace, future studies may investigate the effects of specific policy interventions that aim at pursuing gender equality and at revisiting the traditional concept of the career path for men and women (Mainiero & Sullivan, 2005). For instance, interventions about childcare and parental leave that encourage both men and women to take care of newborn children may change the gendered perceptions of caregiving, reducing the paternalistic attitude toward women. Likewise, this could be a route to advance the current limited cross-cultural comparative research, to shed light on the peculiarities pertaining to Western and Eastern contexts. Moreover, media, and especially social media, play a significant role in shaping public perception and consciousness and represent a useful tool for giving female leaders a voice and the possibility of playing an active part in shaping social role models. This process deserves to be further investigated.

As for the adaptive cognitive-behavioral strategies of women, most studies adopt an identity negotiation perspective. However, they do not provide a systematization of the different identity construction and negotiation strategies depending on the contextual factors that permeate the work environment. Finally, scant attention has been devoted to behavioral strategies that women consciously adopt to attain their career choices and overcome possible barriers. In this regard, future studies could integrate the construct of career adaptability, and specifically adaptive responses (Savickas, 2002), both as translation of individual resources into behavior and as response to contextual factors.

6. Conclusions

Studies addressing the issue of women's advancement in managerial roles have gained momentum in the last decades. However, this body of research has developed in a fragmented way, limiting the understanding of the dimensions that may explain why, for women, the attainment of leadership positions is still a complex journey. Adopting a career development approach, the review has inductively mapped the main topic-based themes that emerged from the literature and systematized them through the lens of Social Cognitive Career Theory. The findings contribute to the academic debate delineating the career dimensions (personal characteristics, contextual factors, and agency) that intervene at different levels of analysis in the definition and pursuit of women's attainment of leadership roles. Moreover, the review offers a dynamic and multilevel representation of the phenomenon, which broadens the research agenda on SCCT's components applied to the gender issue. Future research is required to deepen the understanding of the complexity of the multi-level interrelationship among the different factors and help women succeed in navigating their managerial career paths.

CRedit authorship contribution statement

Sara Bonesso: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Laura Cortellazzo:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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Declaration of competing interest

No conflict of interest was declared.

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