Scientific Metaphors and Female Representativeness in Leadership Positions: a Bibliometric Analysis

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Abstract

The barriers that hinder the rise of women to high leadership positions are commonly discussed with the help of metaphors that draw attention to gender inequalities. Thus, this article aims to summarize, integrate and discuss the available international literature on metaphors that illustrate barriers to the rise of women to leadership positions. Bibliometric analysis of articles found at Scopus database, on Glass Ceiling, Sticky Floor, Glass Cliff and Queen Bee Phenomenon was carried out between 1988 and 2018. The sample of 745papers is distributed through 439 journals. Brazilian production is quite low, especially when compared to production in the United States and the United Kingdom. We conclude that gender inequalities do not end when women break Glass Ceiling. The systematization of knowledge about different metaphors helps in the formulation of more assertive public policies and in the direction of future research.

Keywords: leadership, gender, metaphors, bibliometrics.

Metáforas Científicas e Representatividade Feminina em Cargos de Liderança: uma Análise Bibliométrica

Resumo

As barreiras que dificultam a ascensão de mulheres a altos cargos de liderança são comumente discutidas com o auxílio de metáforas que chamam a atenção para desigualdades de gênero. De modo que esse artigo possui como objetivo sumarizar, integrar e discutir a literatura internacional disponível sobre metáforas que ilustram barreiras para ascensão de mulheres a postos de liderança. Foi realizada análise bibliométrica de artigos encontrados na Scopus, sobre *Glass ceiling, Sticky floor, Glass Cliff* e *Queen Bee Phenomenon*, entre os anos de 1988 e 2018. Obteve-se amostra de 745 documentos distribuídos em 439 periódicos. A produção brasileira é reduzida, principalmente se comparada a dos Estados Unidos e Reino Unido. Conclui-se que as desigualdades de gênero não acabam quando a mulher quebra o *Glass Ceiling*. A sistematização do conhecimento sobre diferentes metáforas auxilia na formulação de políticas públicas mais assertivas e no direcionamento de pesquisas futuras.

Palavras-chave: liderança, gênero, metáforas, bibliometria.

Metáforas Científicas y Representatividad Femenina en Puestos de Liderazgo: un Análisis Bibliométrico

Resumen

Las barreras que dificultan el ascenso de las mujeres a altos cargos de liderazgo se discuten con la ayuda de metáforas que llaman la atención sobre las desigualdades de género. Por lo tanto, este artículo tiene como objetivo resumir, integrar y discutir la literatura internacional disponible sobre metáforas que ilustran las barreras al ascenso de las mujeres a puestos de liderazgo. El análisis bibliométrico de los artículos encontrados en Scopus, sobre *Glass Ceiling, Sticky Floor, Glass Cliff* y *Queen Bee Phenomenon* se llevó a cabo entre 1988 y 2018. Se obtuvo una muestra de 745 documentos distribuidos en 439 revistas. La producción brasileña es bastante baja, especialmente en comparación con la producción en los Estados Unidos y el Reino Unido. Concluimos que las desigualdades de género no terminan cuando las mujeres rompen el *Glass Ceiling*. La sistematización del conocimiento sobre diferentes metáforas ayuda en la formulación de políticas públicas más asertivas y en la dirección de futuras investigaciones.

Palabras clave: liderazgo, genero, metáforas, bibliometría.

Segregation experienced by women in a work context can be characterized as vertical or horizontal (Blackburn, Jarman, & Brooks, 2000). Horizontal segregation is based on the sexual division of labor and is characterized by the diminished presence of women in occupations historically dominated by men (Blackburn et al., 2000). Science, technology, engineering, and mathematics, identified by the acronym STEM, are examples of areas where there is a great resistance to the presence of women (McDaniel, 2016).

Vertical segregation indicates the low representativeness of women in high positions in an organization's hierarchy (Blackburn et al., 2000). Despite having gained space in the labor market, women continue to be the minority in positions such as director and on administrative boards in organizations (Arvate, Galilea, & Todescat, 2018). The International Labor Organization (ILO) considers gender parity when the organization has a rate between 40% to 60% of one gender in the occupation of a given position. A survey conducted by ILO with 12,940 companies from 70 different countries identified greater gender balance in lower management positions (20.5% of companies). In relation to intermediate and high-level management positions, rates of 16.7% and 14.9% for gender balance, respectively, were observed (International Labor Office, 2019). Also, according to data published by the Brazilian Institute of Geography and Statistics (IBGE, 2018), in 2016, 39.1% of public and private managerial positions were occupied by women.

Although progress towards gender parity is perceived, such data demonstrate that gender inequality at the top of the career ladder persists. Thus, within the scope of vertical segregation, the use of metaphors is an often used strategy in the scientific literature to describe the origin and consequences of gender inequalities in the work context (Smith, Caputi, & Crittenden, 2012). The use of metaphors helps to structure a basic understanding of a phenomenon, and to offer new insights on important subjects (Smith et al., 2012).

Some metaphors point to male culture in the organization as a barrier to female ascension, such as that of the *glass ceiling* (Morrison, White, White, & Van Velsor, 1987). In turn, the *queen bee* metaphor relates women who have achieved high hierarchical positions to leaders who behave in a way as to hinder, rather than assist, the professional development of women subordinate to them (Faniko, Ellemers, & Derks, 2020; Faniko, Ellemers, Derks, & Lorenzi-Cioldi, 2017). In addition to these, other metaphors classified in the scientific literature seek to explain the low representativeness of women in managerial work positions in organizations, such as the *glass cliff*, and *sticky floor* metaphors (Smith et al., 2012).

Despite the expansion of scientific production on the subject in recent years (Fraga, Gemelli, & Rocha-de-Oliveira, 2019), the studies on females' careers are fragmented over several fields (O'neil, Hopkins, & Bilimoria, 2008). Therefore, although metaphors are important to elucidate the challenges faced by women, the fragmentation of the studies on this subject can hinder the dissemination of results for the development of management and public policies. Thus, the objective of the present study is to summarize, integrate, and discuss the international literature available on metaphors that illustrate barriers to the ascension of women to leadership positions. In order to achieve the announced goal, a literature review was performed through bibliometry.

The relevance of this work lies in the social importance of the theme, since it resumes the discussion widely disseminated in academia and in the media upon the participation of women in the labor market, and more specifically about women who manage to reach high positions in organizations' hierarchies . In addition, bibliometry allows studies to be focused on areas where research gaps are observed, and also presents the main indicators of publications on the subject.

In an academic context, Brazilian studies which aim to analyze the state of scientific production on women in leadership positions were identified, in psychology (Rufino, Torres, & Zambroni-de-Souza, 2019), and administration (Fraga et al., 2019, Zabotti & Bertolini, 2019). However, none of them approached the metaphors that present the barriers and difficulties faced by women who occupy these positions or aspire to occupy them, which grants originality to the present article.

Women in High Leadership Positions: Why is it so Difficult to get to the Top?

The low representativeness of women in senior management positions draws attention to the presence of barriers that prevent women's development in organizations. One of the terms created to represent these barriers is "*glass ceiling*". The term arose in the 1980s to describe an invisible barrier that would prevent women from participating in managerial positions in the organizational environment (Dozier, 1988; Morrison & Von Glinow, 1990).

Glass ceiling has been the dominant metaphor when it comes to contextualizing the challenges faced by women who aim to ascend in organizations (Sabharwal, 2015). Among the factors that prevent the advancement of women to senior management positions are gender stereotypes, gender segregation of duties, lack of mentoring or role models to be followed, exclusion from informal relationship networks, and limited support of the organization for women to balance life and work (Sabharwal, 2015).

Gender diversity in executive boards is perceived as a factor that can help women overcome the *glass ceiling* effect, since the higher proportion of women in CEO positions would contribute to others ascending in their careers (Cook & Glass, 2014). In executive boards constituted mostly by men, there is a tendency for these men to promote their peers—in this case, individuals of the same sex—reducing the participation of women in these positions (Cook & Glass, 2014).

From analysis over two decades of a database of more than 20 million companies from 41 European countries, it was concluded that despite the growth in gender diversity at the top of the hierarchy, 70% of the organizations do not have female directors in the supervisory framework, and in 60% of organizations they are absent in the administrative framework (Tyrowicz, Terjesen, & Mazurek, 2020). Even though some women have broken the glass ceiling and occupied a place on the meeting table of large companies, their decision-making power is reduced compared to that of men (Field, Souther, & Yore, 2020). Although the female presence at the top of the hierarchy is considered an achievement, recognition and power are necessary for the establishment of gender equality (Olidi, Parejo, & Padilha, 2013).

In its turn, the *sticky floor* metaphor emerges to try to explain the wage disparity between men and women in the same positions (Booth, Francesconi, & Frank, 2003; Xiu & Gunderson, 2014). *Sticky floor* is a barrier that is most commonly present in underdeveloped or in countries currently in development (Faruk, 2019). In contrast, developed countries are more likely to face *glass ceilings* (Faruk, 2019). There is no consensus among the surveys on whether gender wage differences are more present in high or low-level positions. However, it is recognized that the occurrence of wage discrepancy at a given hierarchical level does not exclude that the same occurs at other hierarchical levels (Abidin, Noor, & Ngah, 2016; Arulampalam, Booth, & Bryan, 2007; Booth, 2007;

Xiu & Gunderson, 2014,).

The *sticky floor* metaphor addresses an important element in the career of women, which concerns the need for reconciliation between the professional and family spheres (Olidi et al, 2013). Family responsibilities, which in some cultures fall more significantly to women, function as sticky floors which hold them at lower management levels (Olidi et al, 2013). Organizational policies contribute to the occurrence of barriers such as that of the *sticky floor* (Booth et al., 2003). Right to maternity leave and assistance for preschool children can contribute to gender inequality if the organization faces these policies as cost increases generated by hiring a female worker (Booth, 2007).

The presence of a *sticky floor* can be responsible for the appearance and continuity of a *glass ceiling*. The existence of the glass ceiling stems not only from the barriers that women face to rise from intermediate to high positions, but also from the difficulty in obtaining promotion to medium-level positions, which means they run out of time in their careers to reach high-ranking positions (Bjerk, 2008).

The *glass cliff* metaphor was coined by Ryan and Haslam in 2005 (Kulich, Iacoviello, & Lorenzi-Cioldi, 2018; Ryan & Haslam, 2005, 2007; Sabharwal, 2015). It indicates that women are more likely to be appointed or promoted to management positions when the company is in a state of crisis (Bruckmüller, Ryan, Rink, & Haslam, 2014), and the state of weakness in which the organization is therefore increases the possibility of failure (Kulich et al., 2018; Ryan & Haslam, 2007).

Recent empirical studies have confirmed the existence of the *glass cliff* phenomenon. They point out that women have lower chances of being invited to work in large companies that achieve good results, added to the fact that companies in which women occupy high leadership positions are characterized as less stable (Sanchez & Frey, 2020). The discussion on *glass cliffs* has also been applied to the political context, where it is observed that women are chosen for political parties with less influence and number of votes (Küppers, 2020).

In the context of football, the initiatives for including women in top command positions in the international football federation (FIFA) can also be configured as a result of a *glass cliff* (Ahn & Cunningham, 2020), given that women's participation has began in a reform period at FIFA which was a result from the crisis involving acts of corruption (Ahn & Cunningham, 2020). In addition, a study involving football team coaches identified that although there was no significant difference in the performance of male and female coaches, the females were more likely to be designated as coaches when the team performed poorly (Wicker, Cunningham, & Fields, 2019).

The *queen bee* phenomenon was first referenced in scientific literature in the 1970s (Staines, Tavris, & Jayaratne, 1974). This metaphor suggests that women who reach high work positions in male-dominated workplaces can also play a negative role for the advancement of other women who are at the beginning of their careers or at lower hierarchical levels (Derks, Van Laar, Ellemers, & De Groot, 2011; Faniko Ellemers, & Derks, 2016).

There are three characteristic behaviors for the *queen bee* metaphor (Faniko et al ., 2017). The first one is the psychological distance from other women, because those who hold managerial positions consider themselves more ambitious and more committed to their careers than women who hold hierarchically lower positions (Derks, Van Laar, et al., 2011) or who are in the early stages of their careers (Faniko et al., 2017). The second one addresses the assimilation of male characteristics. Thus, women seek to embrace the male stereotype, which consists of characteristics that are more valued in the spheres of high professional hierarchy (Faniko, Chipeaux, & Lorenzi-Cioldi, 2018). The third behavior relates to the legitimization of the *status quo*, where women in positions of high responsibility tend to widen professional inequalities between men and women. They do this by denying that there is discrimination against women at the workplace, reinforcing meritocracy for professional success, and expressing hostility towards public or organizational policies that aim to support the professional careers of women (Faniko et al., 2016).

Empirical studies have evidenced the presence of the *queen bee* phenomenon among women holding leadership positions in companies in the Netherlands (Derks et al., 2011), Albania, and Switzerland (Faniko et al ., 2016, 2017); among senior police officers in the Netherlands (Derks, Ellemers, Van Laar , & De Groot, 2011); and researchers in Italy, the Netherlands, and Switzerland (Faniko et al ., 2020). In these studies, women assessed themselves as more committed, more masculine, and more ambitious than those at the beginning of their careers or in lower-level positions. It has been identified that male self-description is characterized by sacrifice. Female managers claim to have made efforts in their careers' favor, in order to achieve success, which makes them different from women lower down the hierarchy (Faniko et al., 2017). In the academic environment, efforts and choices in favor of careers also seem to prevail, since female teachers who ascended in scientific careers are predominantly single and childless, while almost all male teachers are married and have children (Faniko et al., 2020).

Despite the *queen bee* metaphor being a term appropriated from biology to try to explain the low representativeness of women in high hierarchical positions, researchers studying the phenomenon claim that its origin has no relation to characteristics intrinsic to women. On the contrary, these behaviors are a consequence of the difficulties experienced by them throughout their career (Faniko et al., 2018). The emergence of the *queen bee* phenomenon is also linked to characteristics of the organizational context in which women are inserted (Derks, Ellemers, et al., 2011; Derks, Van Laar, et al., 2011). A summary of characteristics from the four metaphors are presented in Table 1.

Table 1

Summaries of the features of the glass ceiling, sticky floor, glass cliff, and queen bee metaphors

Criteria	Glass ceiling	Sticky floor	Glass cliff	Queen bee
Year of term's origin in the scientific field	1987	2003	2005	1974
Authors responsible for defining the term scientifically	Morrison, White, and Velsor	Booth, Francesconi, and Frank	Ryan and Haslam	Staines, Tavris, and Jayaratne
Nature of the inequality	Vertical	Vertical	Vertical	Vertical
"Origin" of the inequality	Men (high-ranking)	Men (male organizational culture)	Men (male organizational culture)	High-ranking women (seniors)
To whom the inequality is directed	Women and/or other minority groups seeking hierarchical advancement	Women in management positions (low-level)	Women in high-ranking positions	Women in early career or low-level positions

Among the metaphors addressed, *sticky floor* and *glass cliff* are the most recent. The term whose use was first identified in the scientific literature was the *queen bee* phenomenon. When it comes to female barriers to hierarchical rise, the term most addressed in scientific research is *glass ceiling* (Sabharwal, 2015).

Method

In order to fulfill the objective of this article, the international scientific production was mapped on the metaphors of *glass ceiling*, *sticky floor*, *glass cliff*, and the *queen bee phenomenon*, which discuss the low female representativeness at the top of the organizational hierarchy, in journals available in the Scopus database. Bibliometry was used due to its potential to contribute to the systematization of studies previously conducted in certain areas, in addition to showing gaps that can be investigated in future studies (Chueke & Amatucci, 2015).

Scopus was chosen because it has a higher number of journals compared to other databases, such as the Web of Science (Mongeon & Paul-Haus, 2016), which results in higher coverage of publications. Also, the use of the Scopus database allowed the development of collaboration networks between authors and co-occurrence of keywords,which are presented in the results section of this article (Van Eck & Waltman, 2010).

The first stage in the development of this research was the definition of the keywords that were entered in the search engines, namely: ("*glass ceiling*" or "*sticky floor*" or "*glass cliff*" or "*queen bee phenomenon*"). Towards the metaphors used to explain the barriers to the female rise in high positions, *glass ceiling*, *queen bee phenomenon*, *glass cliff*, and *sticky floor* were chosen due to the large scientific production built on them and as they facilitate a wide perception of gender inequalities in an organizational context. They include barriers to the rise to higher management positions imposed by the male organizational culture (*glass ceiling*), precarious working conditions for women who have reached the high-level positions (*glass cliff*), difficulties for the professional development of women in early career imposed by senior women (*queen bee phenomenon*), and obstacles to the movement from low to medium management levels (*sticky floor*) (Faniko et al., 2018, Smith et al., 2012).

The criteria used for the inclusion of the documents were year of publication (until 2018), texts to be written in English, and for the document type to be articles. The choice of the English language is in line with the objective of evaluating international production on the subject, as research on metaphors that indicate gender discrimination is more explored in English language. In addition, Scopus is a database that groups journals with a significant level of internationalization, so they present English versions of the published articles, despite retaining versions in the journal's original language. The exclusive screening of articles results from the fact that these documents are evaluated in pairs, which increases the quality assurance, and relevance of the presented results. In order to reduce the number of articles outside the research scope, the publications were filtered for the following areas: social sciences; business, management, and accounting; economics, econometrics, and finance; arts and humanities; and psychology, in which articles related to these metaphors are mostly published (c. f. Faniko et al., 2016; Morrison & Von Glinow, 1990; Ryan & Haslam, 2005; Ryan & Haslam, 2007).

The extraction of the articles from the database was carried out in March 2019, including all existing research on the subject uploaded to Scopus by the end of December 2018. In the initial search, 1065 documents were identified. After the application of the first delimitation, which restricted the documents to articles in the english language, 747 papers remained. The database was then transferred and adjusted to a Microsoft Excel© file in order to identify if there were articles that were not available. In this step, two documents were deleted, because they were not well configured and did not present all information necessary to proceed with the research. After this final cleaning, 745 articles were obtained for data analysis.

Data analysis was initially performed using Microsoft Excel©software. At that time, the quantitative evolution of production in the field; more productive authors; journals that publish more; and works of greater impact were evaluated. Then, sociometric analysis of the selected studies in the database was performed, using the software Vosviewer© (Van Eck & Waltman, 2010). In this step, the network analysis of co-authorship and co-occurrence of keywords were performed. The results of the data analysis are presented in the following section.

Results

The results are presented in two stages. The first indicates the quantitative analysis of annual production, authorship, nationality, authors, and most cited articles. The second step exposes the networks established between authors and keywords.

Quantitative Analysis of Production Featuring Metaphors

The first work on the subject in Scopus dates from 1988, under the title "*Breaking Public Relations 'Glass Ceiling'*". It was written by Davi M. Dozier and published in the Public Relations Review. The study indicates that women should incorporate research into public relations as a way to make it more effective. It is a precursory study in the discussion of women's participation in decision-making positions within organizations.

Regarding evolution of production, when the first five years of publication (1988 to 1992) were analyzed, an average of 3.8 articles per year were identified. While the average number of publications in the last five years examined (2014 to 2018) corresponds to 52.2 articles per year. The production from the 31 years analyzed is shown in Figure 1.

Regarding the nationality of publications, it was possible to identify 65 countries where at least one article on the subject was produced. The largest amount of articles produced was concentrated in the United States of America (*n*= 252), followed by the United Kingdom (*n*=115), and Australia (*n*=53), as shown in Figure 2.

Together, the five most productive countries account for 66.6% of the total mapped production of articles. The presented values indicate that the international production on the addressed topic is still mainly concentrated in english-speaking countries.

For analysis of the most productive authors, only those to have published at least four documents were considered, as presented in Table 2.

Regarding the most productive authors, eight are women and three are men. The two most productive authors are also the most cited. Thus, Michelle K. Ryan (professor at the University of Exeter) and S. Alexander Haslam (professor at the University of Queensland) have 1,218 and 1,126 citations, respectively, distributed between the 16 (Ryan) and 13 (Haslam S. A.) articles that they produced, of which 13 were co-authored. It is worth noting that the most productive author comes from the country considered the second in number of publications on the subject. The United States and the Netherlands are the countries that concentrate the most productive authors, both with three authors among the most productive.

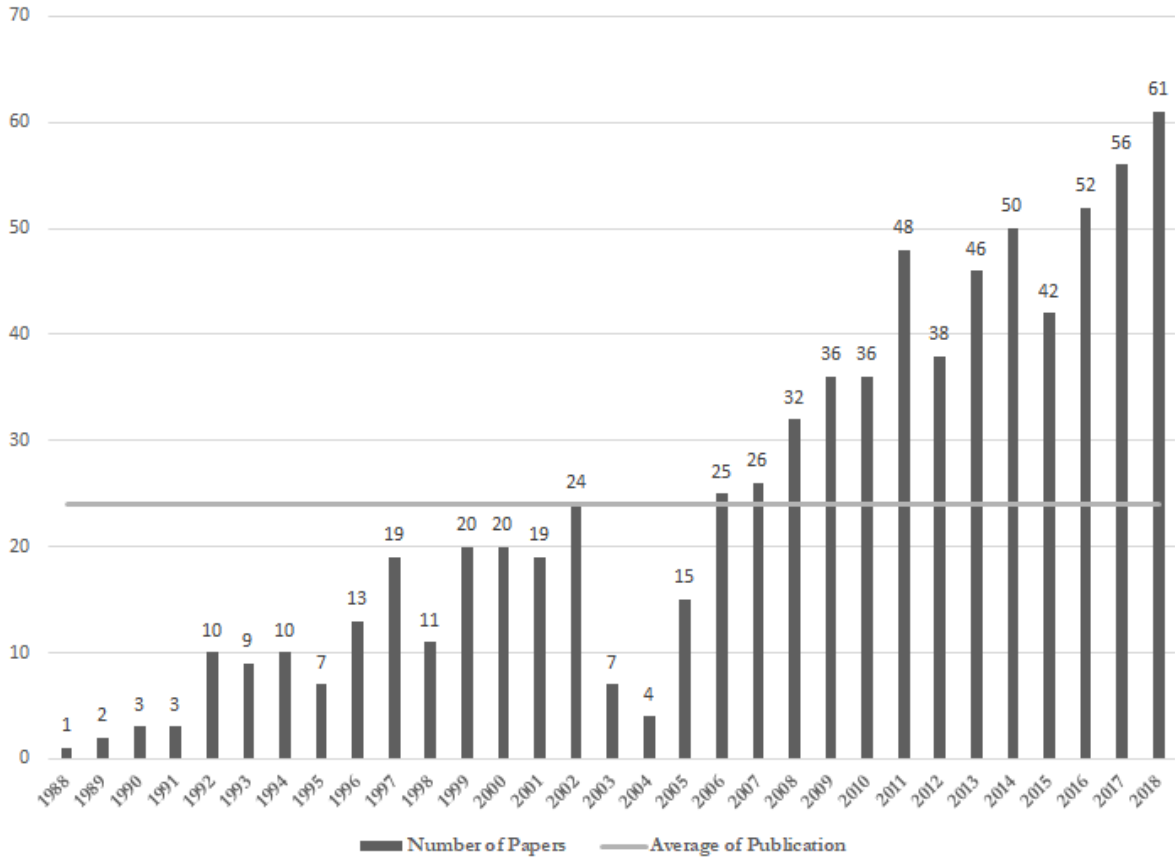It was possible to observe that the amount of citations

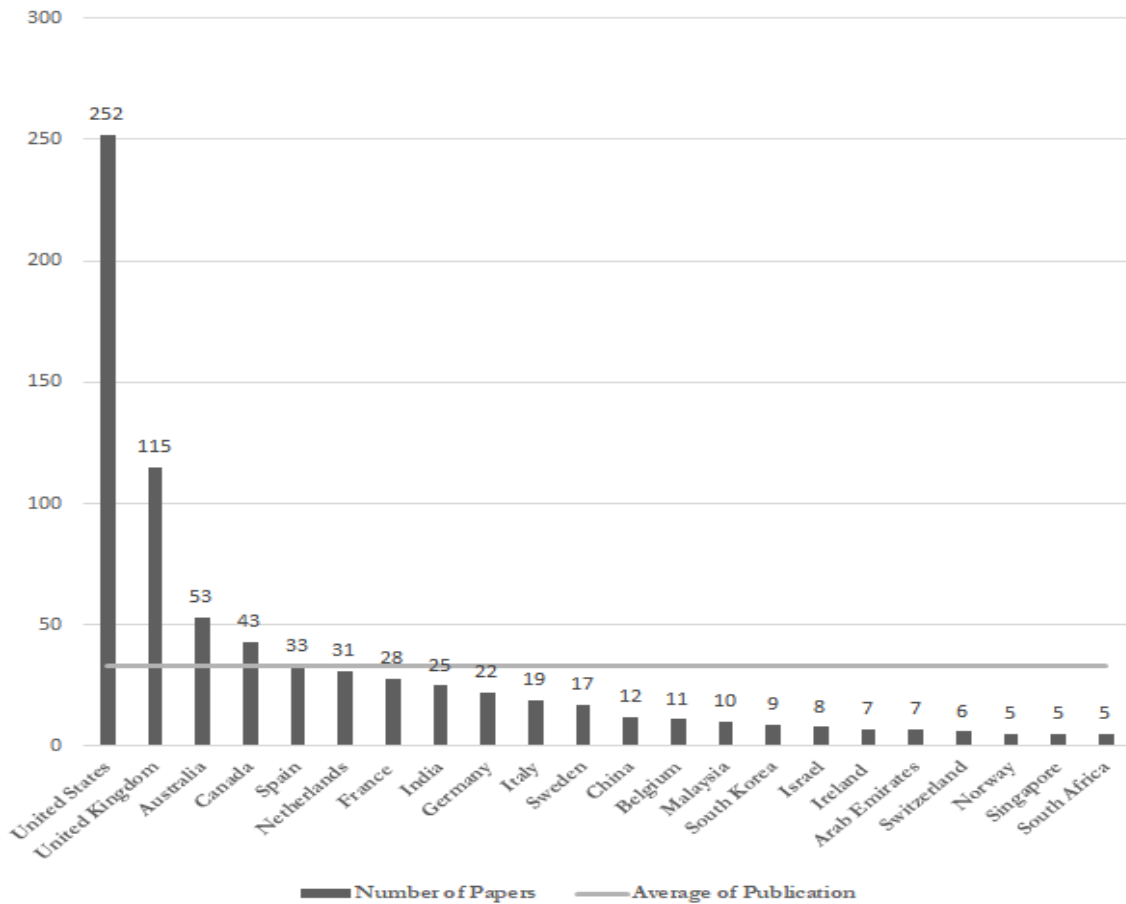*Figure 1.* Historical evolution of publications (1988 to 2018)

Figure 2. Most productive countries.

Table 2
Most Productive Authors

Authors	Number of Papers	Citation Count	University	Country
Ryan M. K.	16	1218	University of Exeter	United Kingdom
Haslam	13	1126	University of Queensland	Australia
Cook A.	5	179	Utah State University	United States
Kulich C.	5	164	University of Geneva	Switzerland
Ellemers N..	5	162	Utrecht University	Netherlands
Booth A. L.	4	494	University of Essex	United Kingdom
Glass C.	4	177	Utah State University	United States
Derks B.	4	138	Utrecht University	Netherlands
Rink F.	4	75	University of Groningen	Netherlands
Gibelman M.	4	52	Yeshiva University	United States
Deschacht N.	4	22	University of Leuven	Belgium

does not necessarily correspond to a larger number of studies produced by the author. The author Lyness K. S. for example, has three documents published in the analyzed database, and 557 citations; while the authors Ellemers N. and Kulich C. have five published articles, but were less often cited, with 162 and 164 citations, respectively.

Another relevant aspect in the bibliometric evaluation is the influence of a publication, which is measured by the amount of citations that it receives. A minimum of 200 citations was taken as a criteria for examining the most influential articles on the subject, from which 12 documents were identified, presented in Table 3.

The most impactful article was "*Gender, Status, and Leadership (2011)*" by Ridgeway C. L., published in the *Journal of Social Issues*. This study has 466 citations and discusses gender status, which according to the author is one of the main causes of the *glass ceiling* effect. Ridgeway (2001) addresses that such beliefs are socially

shared, which would reflect obstacles faced by women in holding leadership positions similar to those of men.

The second most impactful article, "*Women and Minorities in Management (1990)*", has 452 citations. The text, authored by Morrison A. M. and Von Glinow M. A., was published in the American Psychologist journal, which aims to discuss the existence of the *glass ceiling* effect and the reasons that generate this barrier.

Third place belongs to the article authored by Ryan M. K., and Haslam S. A. titled "*The Glass Cliff: Evidence that Women are Over-Represented in Precarious Leadership Positions (2005)*", which obtained 317 citations, published in the *British Journal of Management*. This research aims to analyze the moment in which women occupy leadership positions, raising the hypothesis that they are most often promoted in periods of market decline; which can, consequently, generate poor performance for the organization.

The articles in this research database are distributed over 439 journals. For the analysis, those which had at least five publications in the analyzed period were considered. Table 4 shows the most relevant journals to the topic.

The journal that presents the largest number of publications on the topic is *Women in Management Review*, which has 35 publications. It was found that the journal changed its name in 2008, becoming *Gender in Management: an International Journal*, totalling 62 publications when considering its two nomenclatures. Among the presented journals, six of them are focused on gender studies. The other journals are divided between career and leadership (*n*=2) and generic ones on business management and psychology (*n*=4). It is noted that the 12 presented journals hold 19% of all publications performed.

Network Analysis

The analysis of co-authoring networks allows identification of how authors relate to each other, with the amount of documents they publish together being analyzed (Van Eck & Waltman, 2010). Using the criterion of at least two documents produced and five citations, the map presented in Figure 3 was obtained .

The co-authorship network exposes 80 authors, divided into

Table 3
Most Relevant Papers

Article	Author/Year	Journal	Citation Count	Impact Factor
Gender, status, and leadership	Ridgeway C.L.(2001)	Journal of Social Issues	466	2.419
Women and minorities in management	Morrison A.M.; Von Glinow M.A.(1990)	American Psychologist	452	5.094
The glass cliff: Evidence that women are over-represented in precarious leadership positions	Ryan M.K., Haslam S.A. (2005)	British Journal of Management	317	2.750
Is there a glass ceiling over Europe? Exploring the gender pay gap across the wage distribution	Arulampalam W., Booth A.L., Bryan M.L. (2007)	Industrial and Labor Relations Review	313	2.701
Gender gap in the executive suite: CEOs and female executives report on breaking the glass ceiling	Ragins B.R., Townsend B., Mattis M. (1998)	Academy of Management Executive	274	-
Women in the legislatures and executives of the world: Knocking at the highest glass ceiling	Reynolds A. (1999)	World Politics	270	3.368
The glass cliff: Exploring the dynamics surrounding the appointment of women to precarious leadership positions	Ryan M.K., Haslam S.A. (2007)	Academy of Management Review	269	10.632
When fit is fundamental: Performance evaluations and promotions of upper-level female and male managers	Lyness K.S., Heilman M.E. (2006)	Journal of Applied Psychology	249	5.067
Glass ceilings and glass escalators: Occupational segregation and race and sex differences in managerial promotions	Maume Jr. D.J.(1999)	Work and Occupations	240	2.655
Above the glass ceiling? A comparison of matched samples of female and male executives	Lyness K.S., Thompson D.E. (1997)	Journal of Applied Psychology	233	5.067
Social Identity and Leadership Processes in Groups	Hogg M.A., Knippenberg D.V (2003)	Advances in Experimental Social Psychology	226	-
A decade of corporate women: Some progress in the boardroom, none in the executive suite	Daily C.M., Certo S.T., Dalton D.R. (1999)	Strategic Management Journal	201	5.572

Table 4
Journals with the highest number of papers

Journal	Number of Articles	Impact Factor
Women in Management Review	35	1.206
Gender in Management: An International Journal	27	
Gender, Work and Organization	12	2.273
International Journal of Manpower	9	0.882
British Journal of Management	8	2.75
Journal of Business Ethics	8	3.796
Leadership Quarterly	8	5.631
Equality, Diversity and Inclusion	6	-
Gender and Education	6	1.170
Gender and Society	6	3.058
Journal of Applied Psychology	6	5.067
Labour Economics	6	1.327
Career Development International	5	1.561

cluster are responsible for the development of research on the *queen bee phenomenon*. The articles discuss how the phenomenon works, how the distancing from other women occurs, and also bring considerations about how sexist culture influences the existence of this metaphor within organizations. *Clusters* one and two are the only ones where authors from a cluster interact with authors from another cluster. *Clusters* consisting of one, two, or three authors remain isolated. It was possible to identify that the most productive authors belong to one of the two main *clusters*.

The keyword network was built with words that appeared in titles, keywords, and summaries of the 745 documents that make up the sample used in this study. They have at least ten occurrences, resulting in 46 nodes, distributed in three *clusters*, as shown in Figure 4.

The first *cluster*(green) has 16 nodes, ordered with the most frequent first, as follows: *glass ceiling, gender, women, leadership, and glass cliff*. The studies address the relationship between gender and leadership, also emphasizing the barriers that women face to reach these jobs, and verify the probabilities and conditions in which women are more likely to be promoted, suggesting the existence of the *glass cliff* effect.
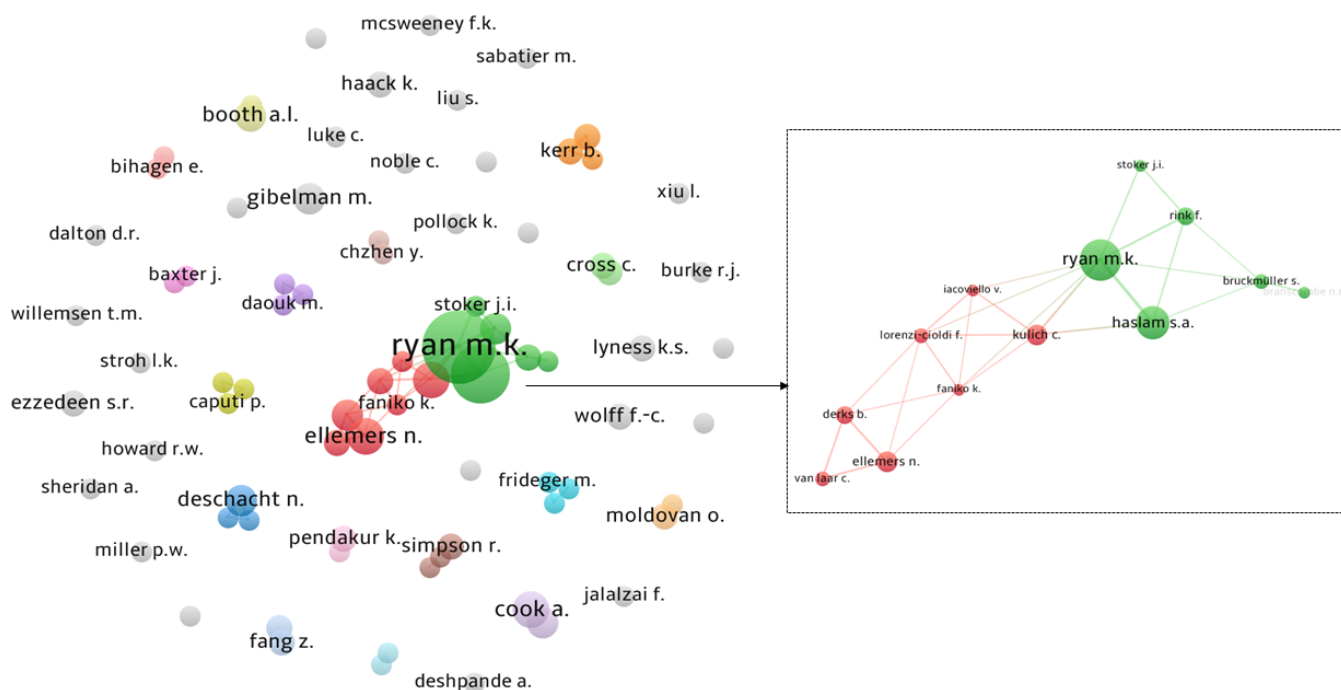

Figure 3. Co-authoring network. Note. For the construction of this figure, a minimum of two documents and five citations were used in the VOSviewer© software.

47 *clusters*. *Clusters* on the map are formed following the rule of collaboration between authors, and the size of the node represents each author, based on the amount of documents produced. There are six *clusters* that have three authors collaborating with each other, nine *clusters* that have two authors, and 29 *clusters* composed by one author.

The first *cluster* (green) consists of six authors, namely Ryan, M., Haslam, S., Rink F., Stoker, J., Bruckmüller, S., and Branscombe, N. These studies mainly deal with the evidence of the existence of the *glass cliff* for women, address the precariousness that involves the leadership position assumed, evaluate the social and financial resources available in times of crisis, and discuss the importance of organizational policies and practices to deal with gender inequalities at the top of the organizational hierarchy.

The second *cluster* (red) consists of seven authors. They are Derks B., Ellemers N., Faniko K., Iacoviello V., Kulich C., Lorenzi-Cioldi F., and Van Laar C. The authors present in this

The second *cluster* (red), has a total of 19 items, in which the expressions *discrimination, women's status, wage gap, gender disparities, gender inequality, and sticky floor* stand out. The articles in this *cluster* seek to analyze gender inequality within organizations and possible barriers faced by women to occupy leadership positions. Difficulties and barriers are illustrated by the *sticky floor metaphor* (found in the *cluster*), where poor working conditions, such as gender pay differences, keep women at the base of the organizational hierarchy. Formed by11 nodes, the third *cluster* (blue) shows *human, female, article, feminism, women working* and *social psychology* to be prominent keywords. The papers discuss low female participation in senior management positions, based on a theoretical apparatus of social psychology and feminist theories.

The term "*gender*" appears in allclusters. "*Gender*" in *Cluster* 1, "*gender disparity*" in *Cluster* 2, and "*gender identity*" in *Cluster* 3. The occurrence of country names being cited is also an observed
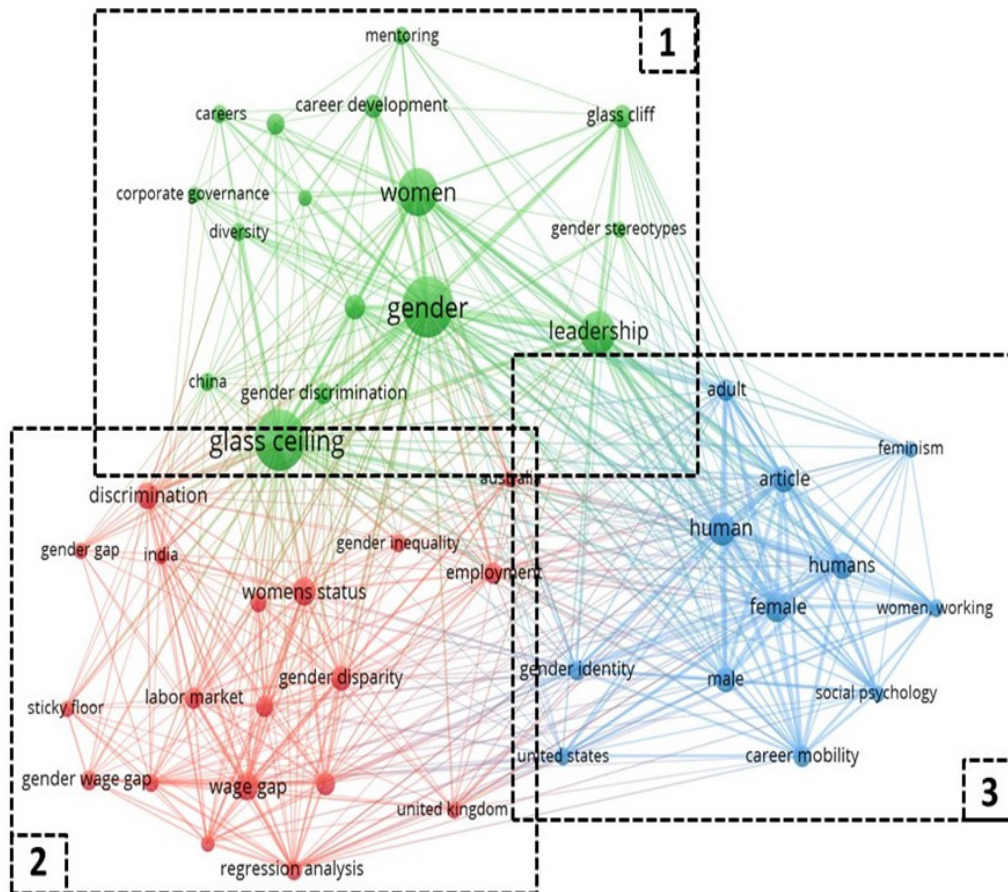
Figure 4. Keyword co-occurrence network. Note. For the construction of this figure, the minimum number of ten occurrences was used in the VOSviewer© software.

factor in the keyword network, being able to verify the existence of terms such as China, United Kingdom, and United States.

Discussion

The increase in productions on the present theme suggests an expansion of researchers' interest in the theme. Regarding the publication country of origin, United States, United Kingdom, and Australia, despite being the most profitable and influential countries to the present study, do not have similar performance when evaluated in the ranking of countries with less gender inequality, occupying 53rd, 21st, and 34th positions (World Economic Forum, 2020). Among the countries well ranked are Norway in second place (five publications and 25 citations), Sweden in fourth (17 publications, 399 citations), and Ireland in seventh (seven publications, 93 citations). These countries are not among the ten most productive on the theme, but it is possible to infer that they develop policies to combat inequality, and that they work progressively to expand their research in the area.

As for the Brazilian production, in the Scopus database, it was identified that it is mainly carried out by researchers in the business administration area (three articles). No study was found in the organizational psychology of labor (POT) area. In reviews of Brazilian research, it is possible to identify that production on gender and work in POT is reduced (Rufino et al., 2019). Reviews that seek to contemplate all previous POT production do not mention gender issues in broad categories, not even in subcategories of publication classifications (Gondim, Borges-Andrade, & Bastos, 2018; Oliveira, da Silva, & Sticca, 2018).

The review on gender and work, in the POT area, analyzed 59 articles produced between 1997 and 2017 (Rufino et al., 2019). According to the authors, the articles examined often address domestic work and women's dual role of housework in addition to paid work outside of the home. Companies are places where

different levels of gender discriminations occur on a daily basis. The subtlety of the discrimination lies in the fact that they are commonly associated to meritocratic discourse, subjective criteria of competence, and employee engagement in their career and with the organization. In these terms, gender and the barriers experienced by women who want to ascend professionally configure a relevant field of action and research in POT.

The most cited articles help to understand the fundamental theoretical basis for studies on gender metaphors. Thus, it is possible to divide the main papers into three groups: gender and management (5); *glass ceiling* (5); *glass cliff* (2). Gender and management studies discusses, more comprehensively, the role of gender in management and the low female participation in high-level positions. On the other hand, studies on *glass ceiling* and *glass cliff* use these metaphors to explain the participation of women in management work positions. It is noteworthy that no studies on the *sticky floor* metaphor—which has more than 200 citations—were found, which may indicate that the metaphor is still recent and still strengthening its theory.

When analyzing journals with the highest number of publications on the topic, it was identified that approximately 71% of them have gender as their central scope. On the other hand, journals that focus on other areas (such as management, career, and leadership) had lower production volume. This data expresses the authors' preferences to submit their manuscripts to journals with a focus on gender matters, and/or that these journals are more favorable to publications on metaphors that illustrate the existing barriers to the advancement of women to leadership positions.

Regarding the researchers' co-authorship relationship, it is noted that, in general, they establish few relationships among themselves, although they use similar theoretical contributions—a factor that should result in approximation of the authors. Only in clusters 1 and 2 is there a greater volume of interaction between

researchers who are affiliated to different universities of various nationalities. This however is not common in other *clusters*, where there is a tendency of relationship between researchers from the same university.

Regarding the co-occurrence of keywords, it was identified that the *queen bee phenomenon* was the only metaphor, among those addressed in this article, that did not appear in the co-occurrence of keywords network. This fact can be justified by the use of other terms in the research, such as *women*, *gender*, and *women's status*, which are terms connected to the *queen bee* metaphor, but without necessarily using the metaphor's name.

The results found in this study reflect a maturity in this research area, and growing concern about problems faced by women in relation to leadership. Gender inequalities, and consequently, the difficulties faced by women seeking to achieve leadership work positions, are even greater in less developed countries. Thus, the need for more research in this area in less developed countries— where this field of study is not yet explored—is highlighted, so the discussions and reflections generated by it can stimulate and support public and organizational policies that will favor gender equality in positions of all hierarchical levels.

In its results, this article shows the increase in volume of studies over the decades analyzed. It was also clear that some women managed to break the *glass ceiling* effect and inserted themselves in predominantly male spaces. It is certain that gender inequality—historically and strongly rooted in society and organizations—takes on new forms of manifesting itself within the changes in the world of work. Therefore, the presence of women in high-level leadership positions does not guarantee that their voices are heard with the same importance as those of men, or even that women are given similar decision-making power. Given the nuances of gender inequalities and their metamorphoses— even when women reach high-level positions, they often do not have power to make decisions, meaning that when one barrier is broken, another appears—science assumes an important role in investigating these phenomena and their transformations, as well as making them public for society and governing powers to see. This way, the actions to combat gender inequality can adapt to new forms that manifestations of gender barriers could assume.

Final Considerations

This study aimed to summarize, integrate, and discuss the available international literature on metaphors that illustrate barriers to the advancement of women to leadership positions, using the Scopus database. It was noted that research on the topic has been developed over three decades and that there is an increasing interest in the area. Although women were able to break the *glass ceiling* effect, other barriers presented themselves to women who occupied leadership positions, as illustrated in the metaphors addressed in this article.

Although important results have been reported in this study, limitations inherent to scientific research, especially literature reviews, need to be explained. One of them concerns the choice of four metaphors. This choice, in a way, establishes limits to the comprehension of metaphors in their entirety. However, it is noteworthy that a) the four metaphors chosen broadly represent the barriers that women face to achieve high leadership positions; and b) the topic has received considerable attention by researchers in the area, which reinforces the quality of the findings presented in this literature review. Also, the choice for articles written in english was fundamental to investigate international production. However, it made it impossible to produce research about how these metaphors are addressed in Brazilian productions in the

areas of management and POT. Finally, despite the advantages of the Scopus database, some journals may have been excluded because they are not indexed in it.

Thus, a research agenda should include the following: a) metaphors not explored in this study, such as the *labyrinth* and *firewall*, or even metaphors used in specific contexts, such as *hurdles in pipeline*, which addresses the difficulties faced by women pursuing careers in technology, and *celluloid ceiling* which can be observed in the film industry; b) state of the art discussion of these metaphors in brazilian journals; and c) conducting systematic reviews through the exploitation of other databases, in order to broaden the understanding about how the metaphors are present in women's lives.

The complexity involved in researching metaphors and labels—used to elucidate barriers to women's professional development—means it is not possible for the discussions on this topic to be exhausted in a single article. Despite this, it is believed that this study can contribute to the development of further studies on the representativeness of women in senior management positions, since it discusses the subject from the perspective of barriers, which together, allow a comprehensive explanation of gender inequalities that hinder women's rise in organizational hierarchy.

The using of the results presented in this review helps the development and expansion of this research field in Brazil, since studies developed in other countries are important to guide Brazilian researchers to deepen these discussions in a national context. The information addressed is useful for the development of research on the subject, also favoring the broadening of the debate on gender and diversity in the labor market—a discussion that is so important for today's society.

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