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PROFESSIONAL CAREER OF WOMEN SCIENTISTS IN THE LIGHT OF GENDER STEREOTYPES[1]

Suzane Carvalho da Vitória Barros [2 3], Orcid: http://orcid.org/0000-0002-1896-6992
Luciana Mourão [4], Orcid: http://orcid.org/0000-0002-8230-3763

ABSTRACT. Science was established by men, and women work in this field has been denied for many years. Despite the reduction of gender inequalities in the research world, the late and lower female insertion still has its brands in this universe. Thus, this study aimed to analyze the discourse of Brazilian researchers about their careers with a focus on gender relations and the process of career choice. Participants were nine women, permanent teachers in stricto sensu graduate studies programs, with diverse areas of knowledge and scientific career levels. Seven interviews were conducted in person and two with audio and video interaction. We used a script with stimulus-questions and, later, reports were analyzed according to the categorical content. The overall results showed that career choices of women researchers did not go through explicit situations of prejudice or gender inequality, but their professional trajectories did. The results are discussed in the light of the literature in the area and suggested further studies that allow enlarging the reflections on the subject.

Keywords: Gender; stereotypes; scientific work.

TRAJETÓRIA PROFISSIONAL DE MULHERES CIENTISTAS À LUZ DOS ESTEREÓTIPOS DE GÊNERO

RESUMO. A ciência foi instituída por homens e a atuação feminina nesse campo foi negada por longos anos. Apesar da redução das desigualdades de gênero no mundo da pesquisa, a tardia e menor inserção feminina ainda tem suas marcas nesse universo. Assim, este estudo teve como objetivo analisar os discursos de pesquisadoras brasileiras acerca das suas trajetórias profissionais com foco nas relações de gênero e no processo de escolha de carreira. Participaram nove mulheres docentes permanentes em programas de pós-graduação *stricto sensu*, com diversidade de áreas do conhecimento e de níveis na carreira científica. Sete entrevistas foram realizadas pessoalmente e duas com interação de áudio e vídeo. Foi utilizado um roteiro com perguntas-estímulo e, posteriormente, os relatos passaram por uma análise de conteúdo categorial. Os resultados em geral apontaram que as escolhas de carreira das pesquisadoras não passaram por situações explícitas de preconceito ou desigualdade de gênero, mas suas trajetórias profissionais sim. Os resultados são discutidos à luz da literatura da área e sugeridos novos estudos que permitam ampliar as reflexões sobre a temática.

[1] Support and funding: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).
[2] Instituto Nacional de Câncer (INCA), Rio de Janeiro-RJ, Brazil.
[3] Email: suzanecarv@gmail.com
[4] Universidade Salgado de Oliveira (UNIVERSO), Universidade do Estado do Rio de Janeiro (UERJ), Rio de Janeiro-RJ, Brazil.

Palavras-chave: Gênero; estereótipos; trabalho científico.

CARRERA PROFESIONAL DE LAS MUJERES CIENTÍFICAS A LA LUZ DE LOS ESTEREOTIPOS DE GÉNERO

RESUMEN. La ciencia fue instituida por hombres y la acción femenina en este campo fue negada por muchos años. A pesar de la reducción de las desigualdades de género en el mundo de la investigación, la inserción femenina tardía y menor todavía tiene sus marcas en este universo. Este estudio analiza el discurso de los investigadores brasileños sobre su carrera con un enfoque en las relaciones de género y el proceso de elección de carrera. Participaron nueve profesoras permanentes en programas de estudios de posgrado stricto sensu de distintos niveles de carrera. Se utilizó un guion con preguntas estímulo e informes vinieron más adelante, a través de un análisis de contenido categorial. Los resultados mostraron que las opciones de carrera de los investigadores no han explicitado situaciones de desigualdad de género o el sesgo, pero sus trayectorias profesionales sí. Los resultados sugieren estudios adicionales que permiten ampliar las reflexiones sobre el tema.

Palabras clave: Género; estereotipos; trabajo científico.

Introduction

Gender-related issues still influence many of social relationships and everything produced from them, including scientific activity. In this context, we understand science as a historical-social construction marked by economic, political factors and power relations (Lino & Mayorga, 2016). Thus, since science has been historically instituted by men and for them (Andersen, 2001), it is necessary to problematize the differences between genders in academia.

Although inequality between women and men has been decreasing in the world and in academia (Barros & Mourão, 2018), science has the characteristic of cumulative production and, therefore, the history of lower female insertion continues to influence the present (Kaatz, Gutierrez, & Carnes, 2014; Shen, Webster, Shoda, & Fine, 2018). Thus, studies carried out in Brazil and other countries show that women's careers in science are still affected by gender issues (Aguinis, Ji, & Joo, 2018; Andersen, 2001; Grossi, Borja, Lopes, & Andalécio, 2016; Guedes, Azevedo, & Ferreira, 2015; Lima, 2013; Silva & Ribeiro, 2014).

Men still predominate among the 'great scientists', as well as they are the winners of the main awards and the representatives of the academies of science (Aguinis et al., 2018). By the year 2018, only 51 women have won the Nobel Prize while, in the same period, 856 men were awarded (Nobel Fundation, 2018). As a consequence of the social hierarchy in the academic universe, we can highlight the stereotyped figures of scientists, the use of a 'sexed' scientific language and the little representativeness of models of women scientists in the history of science (Schiebinger, 2001). Based on these assumptions, the mechanisms for maintaining the social structure, based on the unequal relationship between genders, influence the trajectory of women, including those who opted for a scientific career. Women scientists sometimes deal with cases of harassment and discrimination in professional settings (Meyerson & Fletcher, 2000).

Given the above, this study aimed to analyze the discourses of Brazilian women researchers about their professional careers with a focus on gender relations and the career choice process. We decided to investigate women researchers since the scientific field was restricted to men, although there has always been an invisible participation of women (Andersen, 2001) and, therefore, entry of women into the academy is more recent. Thus, the study aimed to expand the reflections on the professional trajectories of this group of women, considering their contribution to the country's scientific and technological development.

Social gender roles in scientific career development

The opposition between the concepts of 'sex' and 'gender' originated in the 1960s and 1970s with the second wave of feminist movements (Louro, 2010). Subsequently, such an attempt at differentiation came to be questioned by authors such as Scott (1995), who considers that the very opposition between nature (sex) and culture (gender), can be a social product. For the author, the concept of gender and power relations are closely linked, in such a way that gender would be a way of giving meaning to such relationships.

In this perspective, gender is a dual perception of hierarchical sexual differences, establishing unequal relationships, with gender stereotypes conceived as social constructions that delimit which roles are suitable for men and women (Scott, 1995). Throughout history, stereotypes have established behaviors expected for each gender, including the spaces it should occupy and the type of education it should receive.

In relation to scientific activity, until the beginning of the 20th century, universities were hostile spaces for women (Meyerson & Fletcher, 2000). However, despite formal restrictions and discrimination, some women have pioneered the sciences, teaching at universities since the 13th century, especially in Italy and Germany (Schiebinger, 2001). The fact that these professors are described as 'exceptions' shows that the social and cultural conditions for the insertion of women in academic spaces were already very unfavorable. In Brazil, the first colleges date from the 19th century, and only in 1879, women (those from higher social classes) started to have access to the academic universe (Schiebinger, 2001). The intensification of their entry into universities came from social movements that occurred in the 1950s (Silva & Ribeiro, 2012). Finally, the rupture of the university model as a male space began in 1970. Less than 50 years later, the female contingent, at all levels of higher education, surpassed the number of men (Barros & Mourão, 2018).

Despite the occupation of this space, women still represent 29% scientists worldwide, with differences in favor of men when considering research activity (Unesco, 2018). What is verified is that, in countries of Europe, in the United States and in South Africa, although women and men complete doctoral studies in equal percentage, the difference between them appears in the teaching activity, with a female disengage, even greater in certain areas of knowledge (Mello-Carpes et al., 2019).

In the Brazilian stricto sensu graduate teaching, reality is no different. Women are still in a smaller proportion, reaching 42%, in spite of exceeding men in the percentage of doctorate degrees completed year by year (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior [CAPES], 20188). Different studies show the presence and confrontation of issues related to gender stereotypes in the career of women scientists (Lima, Braga, & Tavares, 2015; Rodrigues & Guimarães, 2016). Such questions would be supported by the conception that scientific work, especially in the areas of exact and earth sciences, requires

long hours of dedication, hard work and the need to present objective results, attributing the capacity for these achievements to men (Lima, 2013; Pinto, Amorim, & Carvalho, 2016).

In Brazil, the composition of the committees and working groups of the National Council for Scientific and Technological Development – CNPq points to gender discrepancies. Data available on the institution's website show that of the 18 members who currently participate in the advisory committees, only three are women. Other compositions that attract attention refer to the position of Coordinator of Research Programs, in which only 78 women (36%) make up the board of effective members; and the Director of Research Programs, in which the four directors are men.

The male predominance in management positions is also evidenced in the Coordination for the Improvement of Higher Education Personnel – CAPES. Among Area Coordinators, indicated by the scientific community and appointed to carry out their activities over a four-year period (2018-2022), women occupy only 13 (27%) of the 49 Coordinator positions (list of coordinators available on the institution's website). The CNPq research productivity grant (PQ) also shows gender inequality. Women are 38% at the PQ2 level (initial), already indicating a gap in access to the scholarship and, in the following levels, these percentages are decreasing even more. Thus, they are 36% of the PQ fellows at level 1D, 32% at level 1C, and only 25% and 24%, respectively, at levels 1B and 1A (Conselho Nacional de Desenvolvimento Científico e Tecnológico [CNPq], 2019).

Nevertheless, it cannot be disregarded that many women overcome the adversities throughout the scientific career and reach positions of prominence and prestige. This fact raises questions about the relevance of the 'glass ceiling' concept, widespread in gender studies as a kind of vertical exclusion of women in the world of work due to the difficulties they face in reaching more prestigious positions, despite the growth in occupying managerial positions at different levels and spheres (Eagly, Johannesen-Schmidt, & Van Engen, 2003; Stelter, 2002).

In the case of the researchers, there is evidence that the problem is no longer in the formal impossibility of occupying more prestigious positions in the scientific career. However, the gender discrepancies that still exist point to the presence of a set of obstacles along the woman trajectory to reach the top. In this sense, the concept of the crystal labyrinth arises, which no longer indicates the existence of a rigid barrier to occupy certain hierarchical levels, but a succession of difficulties, often abstract and socially unexplained, with which women have to deal with (Lima, 2013; Silva & Ribeiro, 2014).

In addition to vertical gender asymmetries, there are studies devoted to investigating the fact that women work in lower numbers in areas traditionally linked to the male figure, signaling the persistence of values linked to the sexual division of labor (horizontal exclusion) (Carli, Alawa, Lee, & Zhao, 2016; Grossi et al., 2016). Thus, women would show greater interest in areas involving care and social assistance, as if it were an extension of their 'natural' functions (Lima, Voig, Feijó, Camargo, & Cardoso, 2017). This phenomenon leads to questions about personal, contextual and stereotypical interests and values that can influence career decisions made by women and men (Leslie, Cimpian, Meyer, & Freeland, 2015).

These asymmetries in career paths are possibly supported by the theory known as Archway Model proposed by Super (1990), who considers that the different stages of people's lives, with their respective role transitions, influence the choices and paths adopted along the career. Thus, career decisions and processes do not occur in a social vacuum, they are constructed and influenced by the environment in which the person is inserted through beliefs, values and opinions throughout the life cycle (Super, 1990).

Another theoretical support for such asymmetries is the Trans-occupational Model of Professional Development by Fernandes, Mourão and Gondim (2019), which analyzes the elements present in the evolution of professional carriers in different occupational categories. The model shows that professional development is anchored in five central elements, namely: Motivation, Training/learning, Relational elements, Experiences lived and Work context. Such elements confirm the importance of relationships, experiences and the work environment, which reinforces the possibility of influencing aspects related to social norms and stereotypes.

Therefore, the institutionalization of science, with a set of norms and methods, combined with a stereotype of the women role more focused on the household chores and motherhood duties, restricted, for decades, the participation of women in science. Given the above, this study aimed to analyze the life trajectories of women in the scientific space, considering the social roles played, the processes of choosing the areas of activity and their development in the scientific career.

Method

This research was based on a self-report of the life trajectories of researchers with a focus on academic choices and professional development strategies, under the aegis of gender stereotypes. The historical narrative of women proves to be useful for the present study, since they make it possible to understand the behaviors and attitudes of individuals from the social context in which they are inserted (Silva & Ribeiro, 2014).

Participants and selection criteria

The sample consisted of nine women researchers working at public universities in the states of Rio de Janeiro, São Paulo and the Federal District. The choice of participants had the condition of being a permanent teacher in a *stricto sensu* graduate program. In addition, diversity was sought in terms of the areas of knowledge in which they work and the level in the scientific career, with a view to analyzing the trajectories from different experiences, contexts and generations.

Sampling in different areas of knowledge aimed to analyze the similarities and differences in career trajectories based on personal experiences in different contexts. Thus, based on the distribution of men and women researchers in the different areas of activity (CAPES, 2018), three participants should work in an area with low female representation (we opted for Mathematics, here identified with the pseudonyms Moema – 39 years, Márcia – 41 and Michele – 36), another three should be inserted in an area in which women were the majority (Psychology – named in this study by Patrícia – 42 years, Paula – 46 and Priscila – 61) and, another three should work in an area in which the number of women and men was equitable (Biology, pseudonyms Bárbara 40 years, Beatriz – 42, and Bruna – 54).

Data collection

We decided to make use of unstructured interviews as oral histories (Bryman, 2012), with some guiding questions, which allowed a more free speech. Thus, a script was prepared with stimulus-questions for the participant to talk about her life trajectory since childhood, going through adolescence, choosing the area of expertise, difficulties faced along the way until reaching the scientific career as a profession. Examples of questions are: (i) Tell me a

little about your parents and siblings; (ii) To what do you attribute your academic choice?; (iii) What are the main barriers you encountered during your professional career?. Although the questions were presented in a chronological order during the interviews, this does not necessarily mean that the interviewees followed that order, since the act of telling stories is a discontinuous process of coming and going in facts, events and experiences (Bryman, 2012; Silva & Ribeiro, 2014).

Nine interviews were conducted, six in person and three with the help of Skype software with video and audio interaction. In all cases, the interviews were previously scheduled, with presentation of the research objective and information of estimated time for the duration of the conversation. The average interview time was one hour.

The research was approved by a Research Ethics Committee (CAEE: 55958816.6.0000.5289) and all ethical precepts were followed guaranteeing the confidentiality of personal information. All participants agreed to use the data collected for research and scientific publication purposes, with the interviews recorded and transcribed in full, generating, on average, 6,346 words per interview.

Data analysis

Data were analyzed using the Categorical Content Analysis, with the selection of testimonies based on the criteria of adherence and relevance to the proposed objective. We focused on thematic emergence and the contextualization of the speeches given. Therefore, the categories of analysis were limited to the established subject.

Results and discussion

In view of the objective of the present study, the floating reading and the detailed reading of the set of speeches, the nine interviews carried out gave rise to two axes of analysis, namely: (i) the career choice; and (ii) gender stereotypes in science. Each of them generated categories with consensus and disagreement from the speeches of those surveyed. These speeches were discussed in the light of the literature in the area.

The choice for the working area of operation

Corroborating the theory of Super (1990) for careers, the narratives of those surveyed showed that professional choices were built by socialization throughout their lives and integrate personal interests and the influences experienced. Such results are also in line with the theoretical model of Fernandes et al. (2019), which reveals the importance of personal experiences, relational elements and the work context as decisive factors for professional development. This model therefore reinforces the influence of stereotypes and social norms on people's professional trajectories. The categories related to the choice for the area of activity (Relational influences and Family support) demonstrate such influences, as will be shown below.

Relational influences

The analysis of the data identified that the participants report clarity, from a very young age or even children, of the activities they would like to develop in adulthood. The reports oscillated for different activities, but generally, within the same great area of science or

between related areas. There was also, for some of them, prior identification with the role of teacher and/or scientist.

Moema for example, before deciding on mathematics, claimed to dream of being an astronaut since she was 10 years old, but, as an adult, she opted for mathematics. Michele, also from mathematics, said that as a teenager she had doubts whether she wanted to study physics, engineering or mathematics. Although she still did not have a definition of the area she was going to pursue, there was already an identification with a large area, as did one of the Biology researchers, who as a child already liked medicine. Along the same lines, Bruna already knew she wanted to be a scientist, find a cure for diseases, use a microscope and be in the laboratory environment. Beatriz was driven to her course due to the experience she had with her father suffering from a disease, which had an impact on her history and her professional choice. One of the psychology professionals, Paula, said that she always wanted to defend minorities and thought that she would have to do law and psychology to work with this. Priscila, on the other hand, had the model of a teacher in her children's games, whether with dolls or friends who played the role of 'students'.

In addition to prior identification with teaching activity and/or with science, we perceive the influence exerted by high school and college professors in the statements of part of the interviewed women researchers, either by the model of the way of teaching, or by the invitations to exercise various scientific activities. In both situations, women researchers from different areas of activity saw their career decisions being influenced by these teachers, as evidenced in some excerpts from the statements.

> In my school there was a biology teacher who became my model and then, when I graduated, they gave me a honorable mention and he handed over the award and said: 'you can't leave science, I don't know if you're going to do biology, but I really wanted you to know that you have to be a scientist'. I said: 'but why professor?' 'Because you have a concern and a very important discipline that a scientist has to have' (Priscila, emphasis added).

These researchers attribute to teachers the milestone for deciding for areas of expertise, as well as the incentive for scientific activities. It is necessary to note that most of these influences occurred in high school and not only during undergraduate courses, corroborating the idea that young people experience and observe reality, interrogating it, building their knowledge and making their decisions. In the case of the interviewees, the context and reality in which they were inserted was a relevant factor in their choices, as they had contact with the scientific world while still in their teens.

Although part of those surveyed has had some influence on the scientific career since the time of high school, some report that they only started to consider this possibility when they were in undergraduate courses, even reporting the lack of models as a probable cause for not previously considering the scientific career. But, in one case or another, the professional choice and the option for scientific activity were influenced by people who crossed their academic careers, as can be seen in the statements of the participants.

> It was only when I was at college that I became aware of the possibility of a scientific career, so for me it was an unknown thing. Perhaps for lack of models. And then, when in college, I came across this possibility, it was quite quick and natural for me, this choice (Márcia).

Family support

Although most of the respondents received family support in their academic and professional choice, two faced family opposition, either because the parents were afraid that

the course would not guarantee financial support in the future, or because they considered that their daughter had potential for a program of greater social prestige. In both cases, the argument used by parents corroborates the idea that certain activities are valued more than others, according to discussions by Lima (2013) and Velho and León (1998). In both cases, family members did not support the undergraduate courses chosen by their daughters (Psychology and Biology), as they are areas with less prestige in terms of the hierarchy of sciences (Lima, 2013).

It is necessary to analyze the context to better understand the behavior of these parents, since the two researchers who did not find support in the process of academic and professional choice had a father and mother who studied until elementary school. This may indicate that a higher education is able to contribute to clarify the different careers and support for the training of a young person. On the other hand, some parents who did not have a chance to study, even though they did not know how to talk about the area chosen by their daughters, wanted them to study, take a higher education course and differentiate themselves from the suffering history they faced because they did not have a college education.

> Before I started my undergraduate course, I said that I wanted to be a biologist and everyone said that I was crazy, that I was going to starve. And I was like, 'No, I don't believe that. I may not be a millionaire as a biomedical, but I like that', I was sure that I would put myself well and I did everything to be a good professional (Bruna, emphasis added).

The analysis of the careers of the researchers who were not supported by their parents makes it clear that, despite the lack of this support in the family context, they persisted in their dreams and, interestingly, both became productivity fellow at the highest level of their careers. Possibly, this lack of family support influenced the achievement of these researchers' professional goals, since the responsibility for a successful career outcome seems to be greater when challenging family criticisms and recommendations.

The life story narrated by these researchers refers to the model of Reis (2005) model for professional achievement, in which skills, personality and personal perception act as mobilizers of the desire to persist in the career. At the same time, it is appropriate to analyze whether, on the one hand, parents' education has an effect on supporting their children's professional choice; on the other, the path of the offspring can also influence the parental trajectories. This is evidenced in the story of the father of one of the interviewees who did not support the choice of the daughter, but later took a higher education course under her influence.

Bearing these arguments in mind, the results of the academic choice process category corroborate the Archway Model proposed by Super (1990). According to this model, the choices made during the career trajectory are influenced by both contextual variables (environment, family, opportunities) and personal variables (personality, interests, values). And, in addition to the processes of choice, the environment in which people are inserted and their personal characteristics continue to influence their career trajectories, as will be seen in the section on gender stereotypes in science.

Gender stereotypes in science

Questions related to gender stereotypes arose at various times during the interviews, either in questions that referred to the professional experiences lived, or in moments of reports on personal trajectories. The testimonies of those surveyed find support in the theoretical discussions brought by Scott (1995) about gender stereotypes and the

constitution of identity as social constructions that delimit appropriate roles for men and women. And they also reinforce the debate by Louro (2010) that history of education highlights the differences experienced by boys and girls, whether in formal education, or in the social processes that divided work for women and for men. Next, the categories of analysis from such discourses and perceptions will be presented.

Low representativeness and sense of belonging

The lower participation of women in positions with political and decision-making power in the academy emerged in the discourse of several research participants. The narrative of one of them, who occupied a management function, serves as a starting point for gender discussions, for expressing, in an open way, issues related to male and female stereotypes.

> I have always been in management. I was head of the development area, department, I was director of an institute and later dean of people management. And in this context, there is only men's representatives. You will very rarely find, for example, at CAPES evaluation committee, I don't remember that there was any woman chairing that committee. They make up everything, but nobody sees woman in presidency. In the CNPq area coordination, I don't remember many women coordinators (Priscila).

In this discourse, two central gender issues are perceived. The first refers to the low representation of women in management positions in the academy, corroborating national and foreign studies (Andersen, 2001; Barros & Mourão, 2018; Ginther & Kahn, 2009; Lima, 2013, Lima & Costa, 2016). Despite the observations by Grossi et al. (2016) on the policies for women inclusion in the sciences that boosted the participation of women at all levels of education, they do not occupy, in the same proportion as men, positions of political decision in the higher levels of the academy, nor in the highest positions of scientific career, as evidenced by the study by Aguinis et al. (2018).

In this regard, Guedes et al. (2015) discussed that educational opportunities may not necessarily translate into professional opportunities. The authors point out that the gap between training opportunities and the exercise of the profession, in the case of a scientific career, reinforces gender inequalities that originate from the combination of meritocratic and political-institutional criteria. This reality is not restricted to Brazil. In several nations, with multiple cultures and different socioeconomic realities, the percentage decrease of women teachers in relation to the percentage of PhD women is higher than the decrease among men (Unesco, 2018).

The analysis of the composition of CAPES and CNPq committees and working groups, presented in this study, highlights what the interviewee says about the lack of gender equity in the occupation of decision-making positions. Another indicator is the difference in the distribution by gender of the CNPq productivity grants, which confirm the lower number of women as the level of the grant increases. The researchers are able to perceive such inequality and make it explicit, as occurred in the following statements:

> If we are going to think of 1A women scholarship in mathematics, they have very few and are sensational women. But there are other very sensational ones that are not there and I think there are several factors and I don't think it is due to the lack of women, I think there is also a much more rooted sexism in the sense that it is men who decide (Moema).

These statements make clear the relevance of women being represented in positions of greater prestige in science, as well as showing the lack of female models. The fact that they are not represented, combined with the androcentric bias in science, leads to a

questioning by the interviewees about their own capabilities. They even doubt if that place belongs to them, if they are able to occupy it and, at times, they lack a male validation to feel safe. In fact, in Brazil, only 14% of the members of the Brazilian Academy of Sciences are women and none was elected president of the institution (Mello-Carpes et al., 2019).

> It took me a while to think that I was in a position to be a graduate program coordinator. I think that women exclude themselves, due to a phenomenon of threat by stereotype, because an implicit stereotype is already created that women are not part of that space. [...] Nobody told me that I could not be such a coordinator, because I am a woman, but that is clear [...] As you do not see women in these spaces, you do not believe that you belong to such places, right? (Beatriz).

> I already had an offer to take on an important position and I didn't want to, because I thought I didn't have enough strength to go against this tide. But I think that the main reasons are favoritism, of opportunities that are given more to men than to women. In terms of capacity, productivity, we have already shown in detail that there is no difference (Bruna).

The relationship between gender and meritocracy also emerged from the researchers' speeches. The fact that the scientific production evaluation process is conducted in such a way that the evaluator knows who the subject is, makes a blind evaluation impossible. In addition, the researchers cite studies that suggest greater benevolence in the evaluation of works and curricula when the author is male. One example is the one that showed the lowest proportion of women publishing in high impact journals as first authors (Shen et al., 2018) and another example is the study that warns that the authors' gender influences the review process and peer review (Kaatz et al., 2014). The speeches below highlight these points of view of those surveyed.

> In terms of the productivity grant, nothing justifies the difference between women and men. The evaluator looks at the name. Look who he/she is. What kind of blind assessment is it? Am I just looking at the product? If it were blind, would it make a difference? I don't know, because in fact we are evaluated by peers, right, what pairs are these? (Bárbara).

The researchers' observations corroborate the study by Budden et al. (2008), who evidenced a significant increase in the evaluation of articles for publication with the first female author when the evaluation policy was changed in a journal, *Behavioral Ecology*, which started to adopt the double blind review system. The study showed that the percentage of articles approved with the first female author also increased, when the evaluator did not know the name of who was evaluating. Until then, although women represented the majority of those present in biological sciences, they had fewer articles approved for publication.

Behavior adjustment

The interviewees' speeches revealed behavioral and identity issues related to gender stereotypes, defining the appropriate, expected or inherent behaviors for women and men. Some claim to have to develop, as a strategy for career advancement, behaviors and attitudes attributed to men such as assertiveness and harshness in the way of relating and making decisions. The following statements illustrate these perceptions of those surveyed.

> I had to develop aggressiveness in the positive sense of assertiveness, because [...] you run into people who have the view that the woman is just that, she is fragile, you have to hide yourself. I have a persona that goes into action. So, for you to impose yourself in this masculine environment, it is usually required that you have a very high assertiveness, that you learn to read the power relations

> between them and interfere and point out contradictions and be tough. I developed strategies to deal with the male world, such as frowning, changing physical posture, looking in the eye (Priscila).

One way of coping found by one of the researchers to adapt to this male environment was to enroll in a fight class to learn body expressions and tones of voice, adapting her posture to the performance in the management position. She says that in order to face situations present in her trajectory, she had to hide stereotyped attitudes as feminine. In the same vein, Carvalho Neto, Tanure e Andrade (2010) realized that the contradiction between working 'as a man' and being 'female' causes discomfort in executive women. Priscila's speech reveals how much she believes it was necessary to adapt her personal style.

> I went to do martial art because I had a great docility, which I saw that in this world I couldn't be like that. If the other noticed my femininity, in the very positive sense of it, they would pass over me like a tractor. So, I started to develop a physical posture strategy in the martial art. So, I disarm, right? (Priscila).

Studies show that female career advancement requires adaptation to an environment based on male values and behaviors and that many of them adapt and assimilate the attitudes and behaviors of their male colleagues (Meyerson & Fletcher, 2000). A specific study with female engineers, carried out by Fletcher (2001), showed that they give up certain values understood as feminine, such as understanding, communication and the ability to work together, as they understand that these values would bring losses to their careers

In areas less represented by women, the issue of gender stereotypes becomes stronger. Moema and Michele talk about gender stereotypes relating them to mathematics knowledge. They relate insecurity to the feminine characteristic and the lesser interest of women in mathematics. Patrícia, in turn, uses quantitative data to argue, as a way of giving greater credibility to her position as manager. These arguments go back to the myth of female incapacity for mathematics which, in some cases, leads to less stimulus for girls compared to boys. The following statement highlights this testimony.

> I had to develop many strategies to deal with harassment. So, ah [...] you won't be able to look at numbers, for example. So, I handled it. So, I look at the numbers and that was a strategy that I also developed in management. I already take the arguments over numbers. But it is a strategy, because I know that the conversation will be like this (Patrícia).

In the excerpts of the speeches, the interviewees' perception of the feeling of insecurity and the lack of incentive for girls is evident, due to the predominantly male social representation that is naturalized. If, on the one hand, the literature on gender and science argues that the so-called 'hard sciences' produce objective results, requiring abstract thinking, strong analytical skills, hard work and long hours of dedication (Pinto et al., 2016; Schiebinger, 2001); on the other hand, women are assigned characteristics and behaviors related to care, reception, social assistance and subjectivity (Lima et al., 2017; Silva & Ribeiro, 2012). In this sense, these social attributions distance women from the profile that would be expected for working in science, especially in those considered as hard areas (hard sciences).

Gender microviolence

Discourses related to harassment or perception of harassment experienced by women researchers or colleagues emerged, all based on gender stereotypes. In this sense, a researched woman warns of microviolence experienced by her and other women due to the fact that they are a minority in an environment marked by male presence. Velho and

León (1998) had already warned of the need for women scientists to deal with peculiarities in their trajectories, unlike men, such as harassment and prejudice.

> When a colleague heard that I was going to take a contest for the title, he said: 'What, are you going to do?' He looked me up and down, like who are you to take a contest? I doubt he would say that to a man. He didn't say that a woman can't do that. But it is these everyday insinuations that remind you of this place. These microviolences happen all the time (Beatriz, emphasis added).
>
> I love going to the beach and now and then I'm tanned. And once I heard it like this: 'Are you going to participate in a doctoral examination board like that? They will think that you didn't study for it. Sometimes, even in the family environment, I hear: 'you certainly had this opportunity because you are a beautiful woman' (Bruna, emphasis added).
>
> When I was a student I listened to a lot of bullshit and I didn't care and nowadays I see it. At that time, I simply chose to ignore and this resilience is very feminine. In fact, it is something that women are required to pursue in their scientific careers. Because imagine, if you started early, since you were a girl fighting for everything, with everything, sometimes you won't have any gas, no energy for science, to do nothing else (Moema).

Thus, sexist behaviors, marked by naturalized practices in the academic environment, contribute to the selective culture of male valuation and create invisible obstacles to the interest and permanence of women in the scientific career (Meyerson & Fletcher, 2000). Among these barriers, there is the need for women to continually prove their professional competence to assert themselves in front of themselves and the male group.

Final considerations

The present study aimed to analyze the discourses of Brazilian women researchers about their professional careers with a focus on gender relations and the career choice process. The research expanded the reflections on the trajectories of researchers due to their relevance to the country's scientific and technological development.

Regarding the process of academic and professional choice, the reports revealed that almost all participants had identification with teaching or scientific practice since their youth, some even in childhood or adolescence. The narratives also showed that their professional choices were built based on socialization throughout their life trajectories, with special importance for interactions with teachers. The support or not of family members for the professional choice also appears with an emphasis on the speeches, and most of the interviewees report having received support from their family for such a choice.

In spite of the fact that the statements of academic and professional choice have not shown explicit situations of prejudice or gender inequality, the same cannot be said of the professional careers of the interviewed researchers. The category on gender stereotypes shows a set of obstacles faced by women inserted in the academic environment, with perceptions of gender inequalities and prejudice situations in the work context.

The speeches presented show a perception of those researched about a female under-representation in decision-making bodies in the Brazilian scientific context, confirming the theoretical framework of the present study. They explain the lack of female models in science and point out a set of consequences for the fact that scientific policies are built by men. Thus, the androcentric bias on which scientific activity was based, combined with the invisibility of women in the production of knowledge and the historical biological and social distinction, leads some interviewees to question their own abilities. In this context, as a

strategy to adapt to the academic environment and to advance the career, some researchers decided to adopt behaviors and attitudes socially attributed to men.

Even understanding the individuality and peculiarities of each one, it was possible to notice that there are several points of congruence between them, which points to conditions that have to be faced towards the entry, permanence and development in science. Nevertheless, life storytelling is one of the strategies identified by literature and international programs to motivate and attract girls and young people to a scientific career, especially in areas where they are underrepresented.

In view of these findings, we conclude that the greater access and educational opportunities guaranteed to girls in Brazil have not yet been resulted in equal professional chances for men and women in the scientific setting. On the one hand, the policies of female inclusion in education and science that materialized in the predominance of women at all levels of formal education cannot be disregarded. On the other hand, it would be naive not to observe that they are in a much lower percentage than men, whether in the positions of political decision in the academy, or in the highest positions of the scientific career.

In this sense, this study brings contributions to the scientific community in order to rethink social practices already established and supported by a historical-social context that no longer matches the reality and demands of contemporary society. It also allows to know testimonies of women who opted for the scientific career and who observe gender disparities in the academy, without having a socially and academically constructed space for such discussions.

Despite these contributions, there are limitations that need to be pointed out, such as the impossibility of generalization, due to the qualitative nature of the study. But, on the one hand, this represents a limitation; on the other hand, the methodological option for the interviews makes it possible to give voice to women scientists and to deepen questions about the difficulty of their career as researchers. Another limitation lies in the fact that it was not possible to include a more diverse sample of researchers, comprising other areas of science and a larger number of institutions to which they are linked to.

Thus, we suggest studies that advance the discussion on gender disparities present in the academy, whether with quantitative or qualitative methodology. Studies with both sexes are also recommended to assess the extent to which difficulties in the professional career impact the performance indicators of men and women researchers.

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Suzane Carvalho da Vitória Barros: PhD in Psychology (Universidade Salgado de Oliveira - UNIVERSO), Science and Technology Analyst at the Instituto Nacional de Câncer (INCA), in Rio de Janeiro. During the development of the work, he was a CNPq fellow.

Luciana Mourão: Doutora em Psicologia (Universidade de Brasília - UnB), Full Professor of the Graduate Program in Psychology at the Universidade Salgado de Oliveira (UNIVERSO) and visiting professor in the Graduate Program in Social Psychology at the Universidade do Estado do Rio de Janeiro (UERJ). CNPq and Faperj productivity scholarships.