IRIE
International Review of Information Ethics Vol. 30 (08/2021)

Gilda Olinto, Sonoe Sugahara Pinheiro & Nadia Bernuci dos Santos

Go, girls! longitudinal data on gender differences in Internet use in Brazil

Abstract:

This article focuses on gender differences in Internet use in Brazil and how it is changing over time, considering its interplay with other environmental and social conditions. Initially, we consider evidence and theoretical approaches of women's detachment from technology. We then look at data obtained from the 2005 and 2015 Brazilian Bureau of Census Annual Surveys. The results indicate that Internet use grew substantially in the country, but a large portion of the population is still segregated from it. The results also show that some social conditions for Internet use seem to have decreased their impact; however, in 2015 these factors still show a strong effect on the use of this technology. Insofar as gender is concerned, the analyses of its interplay with environmental and social conditions, and its change over time, bring about intriguing, albeit positive results: Women seemed to have transitioned from a slightly inferior to a somewhat better position relative to men.

Keywords: Brazilian Census Data, Gender and Science, Gender and Technology, Internet use

Agenda:

Authors:

Gilda Olinto:

- Brazilian Institute for Information in Science and Technology – Graduate Program in Information Science
- ✉ gildaolinto@gmail.com

Sonoe Sugahara Pinheiro:

- Brazilian Institute of Geography and Statistics (IBGE)
- ✉ sonoes@gmail.com

Nadia Bernuci dos Santos:

- Brazilian Institute of Geography and Statistics (IBGE)
- ✉ nadiabernuci@yahoo.com.br

ISSN 1614-1687

1. Introduction

The title of this article – Go, girls! – was borrowed from Baudelot and Establet's (1992) pioneering work on gender differences in school. The data these authors produced showed that girls performed better than boys. However, as the title that was chosen – 'Allez les filles!' – suggests, those schoolgirls were performing well, although silently, unaware of their superiority. They did not seem to realize that their better performance could be an instrument for driving life changes and empowerment. More than three decades have elapsed since this seminal work, and the contradictory information about women and girls often performing better in school, work, and in the scientific field are still not well understood and have not been absorbed by women or resulted in notions related to self-confidence or self-efficacy. Above all, such success does not seem to influence their life projects, education, and their choice of careers. The subsequent part of our title – gender and the Internet – relates to a subject that is being addressed by many academic and international agencies' publications featuring evidence and arguments on constraints to women's access to and purposeful use of technology, as well as on the relevance of trying to overcome such gender differences in the present knowledge society.

In this article, we first consider some previous data and theoretical ideas about gender differences in technology and then analyze microdata obtained from the 2005 and 2015 Brazilian Census Bureau Annual Surveys. The focus of the analyses is longitudinal, in an attempt to show how gender differences in Internet use changed over time, and how this seems to interplay with other environmental and sociocultural characteristics, such as age, ethnicity, place of residence, occupational groups, and income.

2. Women and technology

This theme – gender differences in technology – is obviously a part of a more general concern about gender differences in science and technology (S&T), a recurrent subject in today's media and a puzzling academic theme for social scientists. Although great progress has been made in education, with women surpassing men in undergraduate courses and even in a few graduate programs in many countries, women are underrepresented in Science, Technology, and Mathematics – commonly known as STEM. Among these STEM areas, information technology or computer science is a great example of a male-dominated professional area, with only about 20% female professionals in many different countries, including Brazil. This low female participation, of around 20%, is also the case among physicists, mathematicians, and engineers (OECD, 2012). Theoretical approaches trying to identify the causes of these gender differences in science and technology include those that emphasize the different cultural milieu in which women and men are inserted since early childhood (Bourdieu,1979, McCall, 1992). These different social environments guarantee male dominance in these fields and generate several types of gender stereotypes that influence behavior, as self-confidence and self-evaluation of abilities, notably those related to science and technology (OECD, 2015, Dicke, Safavian & Eccles, 2019; Gunderson et al., 2012).

Data coming from studies focusing on gender differences in information and communication technology (ICT) - differences in attitudes and behavior between men and women toward ICT in general, and the Internet, in particular - seem to match the above-mentioned tendencies and interpretations. Several studies suggest that boys are more self-confident in computer and Internet use and tend to consider themselves more able to use this technology, even when girls show similar abilities. What stands out in these studies is the negative self-image and lack of confidence that girls tend to have toward their technological capabilities, which contrasts with the positive self-image boys show toward these abilities (Hargittai & Shaffer, 2006; Ferreira, 2017).

Another group of data emphasizes several types of gendered use of ICT: Girls and boys behave differently and make different choices using the Internet, even when there is parity in Internet access and use. Data from some studies suggest that women and girls tend to make more use of the Internet to communicate and to be more task-oriented when using this technology, including use for educational purposes, while men and boys tend to make a more diversified use of the Internet and use it more for entertainment, such as gaming. In addition, the male group seems to be more interested in technological aspects of ICT, while the female one is

less interested in media resources and more interested in content (Deursen, Dijk & Peters, 2011; Wasserman, 2005). In Brazil, data from a national survey on Internet use among youngsters show a few strong gender differences, notably use for entertainment. Besides, the same study, among others, points to the predominance of technical and pragmatic Internet use among boys, such as for downloading software, checking maps, and for shopping (Cetic, 2016; Bernuci & Olinto, 2019).

Studies in needy regions in developing countries bring about other, and sometime contradictory perspectives to approaching gender differences in Internet use. One of these studies stresses that women are limited in Internet use, as they are not allowed to go to mobile shops or LAN houses alone. Internet use by women is controlled by husbands and parents and is often done hidden from them. Their main problem is still being able to use it (Kumar, 2015). The same perspective is found in a study carried out with Kenyan rural women which brings evidence about constraints these women face in their use of the internet, which does not seem to promote significant changes in their lives due to existing power structure, including male dominance (Wyche & Olson, 2018).

A different interpretation is found in the report of a program that promotes the use of mobile technology for health care in several poor African countries, notably its use in maternal care, successfully contributing to healthy pregnancies and reducing infant mortality (West, 2015). Also, a qualitative study that interviewed more than a hundred domestic worker in New Deli, indicate that their use of cell phones, facilitate their contacts with their families and employers, seeming to enhance their agency and decision-making, empowering them in face of their poor social conditions (Malhotra & Ling, 2020).

Social theory on women and technology, as well as feminist thought and activism, try to understand and promote reaction to gendered behavior. One approach emphasizes that women's alienation from technology comes from the fact that technology itself is male-oriented, designed by and for men, and the Internet would tend to be a male-dominated space. Therefore, Internet products, such as software, are not sensitive to female characteristics and identity, and, thus, one could note the tendency for women to feel less comfortable and competent in ICT environments in general (Scott, Semmens & Willoughby, 1999).

Other approaches stress that the Internet world only reflects the old, physical one, with its characteristics of social inequality, including male dominance. Some analysts argue that social groups better able to recognize and realize the full potential of the Internet will tend to use it to their advantage. Therefore, the Internet merely reproduces structures of control and oppression, and access to specific social networks might even increase social inequality, including racial and gender differences (DiMaggio & Garip, 2012). This perspective could explain the prevalence of patriarchal behavior in the realm of Internet access and use, as this is notably the case of underdeveloped and poor regions (Kumar, 2015). A somewhat different point of view emphasizes that, since the Internet tends to become imbedded in everyday life, gender and technology, and specifically gender and Internet use are co-produced, or co-constructions, a perspective that points to a way out from male dominance, since new forms of gender relations and Internet products might result from constant new experiences. However, the strong emphasis placed on how technology is related with the masculine world in some of the above-mentioned approaches seem to maintain a negative perspective regarding the technological world for women (Wajcman, 2010).

Increasing the complexity of the subject, a few theoretical perspectives assert that the gender and technology issue demands considering the different aspects of the context where it is produced. This perspective points out that gender interplays with class, race, location, and other social dimensions that should be kept in mind when technology inequalities are under analysis. The different Internet 'geographies' may have different effects on gender behavior, as is the case of the urban versus rural environments; so may the social and racial perspective (Carstensen, 2009; Zook, 2006). Although not addressing gender, a US study emphasizes the impact of the rural environment on Internet use: The evidence presented in this study suggests that people living in rural areas are less likely to use the Internet to search for information on health (Hale, Cote & Dentrea, 2010). The racial dimension of the gender issue is under the limelight of the feminist movements, including in Brazil. This dimension is seen as necessary for the understanding of women's experiences (Carneiro, 2003), as

are other dimensions that differentiate women's experiences, including class, ethnicity, age, and sexuality (Cho, Crenshaw & McCall, 2013). To Ferreira (2017), "it is important to acknowledge the various ways in which gender, race, class, and other categories of differences interconnect to create a particular social location from which each woman experiences everyday life, including interaction with technology. Intersectional approaches are required to fully understand inequalities in the use of technology".

Other perspectives to the gender-ITC problem underline the use of different concepts and metaphors to the understanding of and to support action toward gender equality. 'Feminist techno-science' and 'digital gender' are a couple of the terms that analysts propose, pointing out the positive use of ICT for improving women's conditions, for their empowerment and to build citizenship. These positive actions are facilitated by the development of new and increasingly available communication resources, such as weblogs, which facilitate female presence on the Internet, their creativity, and the mobilization toward gender equality (Carstensen, 2009).

The promotion of women's participation in computer science is one of the interesting positive actions that is worthy of note. A recent study identified and analyzed 72 initiatives in that direction done by non-profit organizations. Women who were interviewed, mostly computer programmers, some of whom founders of the initiatives, were motivated by the lack of women in their work environment, by gender discrimination, and by the lack of computer projects dedicated to women. The reasons why they believed women are distant from technology include a lack of encouragement for creativity in the way they are educated, the absence of female participation in company management, and a lack of role models (Araujo, 2018).

There are also important programs developed by international institutions focusing on information and ICT competence, on promoting ICT gender equality, and on gender protagonism in the web. This is the case of UNESCO's Media and Information Literacy (MIL), a program that highlights the importance of the conscious use of ICT, notably Internet use, considered a kind of competence that contributes to ensuring democracy and the building of citizenship. Gender differences in MIL is a specific concern of this program, considering early alienation of women from technology, as well as the lesser interest of young girls in hard science and technology as career choices (Tomte, 2008).

The various perspectives on gender and ICT reveal how complex the subject is. Several negative aspects and constraints imposed on women relative to the use of this technology, notably ICT and Internet use, should be considered in empirical studies, as is the case of male predominance in the technical domains of the Information Society, the environmental and social constrains related to patriarchal values affecting women in the virtual space, and the interplay of different social conditions in the female experience. These different perspectives point not only to the urgency of the issue, but also bring up some good news brought about by theoretical perspectives that emphasize women's protagonism and empowerment that are also at stake when ICT is the focus of analyses.

The relevance of the subject – the urgency of women's inclusion in knowledge society – and the contrasting approaches discussed above, pointing to negative and positive perspectives of women's access and use of ICT, motivated the present study. We try to bring about data on gender differences in internet us in Brazil, focusing on trends over time, considering environmental and sociodemographic factors that might impact gender differences in internet use in the country. As some approaches considered suggest, the opportunity to use the cell phone, even superficially, could bring about important contribution to women's agency and empowerment. Therefore, the persistence of the weight of contextual factors in gender differences in ICT use over time would suggest that structures of control and oppression are being maintained and guaranteeing male dominance of ICT use.

3. Data and methodology

Our data source is microdata obtained from the 2005 and 2015 Annual Brazilian Household Surveys of the Brazilian Census Bureau (IBGE/PNAD, 2005, 2015). We present here, therefore, new data, not available in institutional Survey reports. Data analyses are based on raw data made available to anyone by IBGE and were obtained through the Statistical Package SPSS. The survey collects the sociodemographic characteristics of a representative sample of the Brazilian population, including a measurement of Internet use. About internet use, respondents were asked: "In the past three months, did you use the Internet somewhere?". In 2015, the country's population was over 200 million people; however, since the question about the Internet was only made to those aged 10 years or more, analyses about Internet in these two survey years represented almost 154 million people, in 2005, and close to 178 million in 2015.

Besides gender, the other variables considered in the analyses made here, aiming at detecting the influence of the demographic and sociocultural environment, were Age, urban or rural household condition, region of residence, race/color, occupational position (employed, employer, public servant, domestic worker, self-employed), and household income. The tables featured herein consider the interplay of these variables.

The data analyses presented here are limited. They focus only on a very simple measurement: Use versus non-use of the Internet in Brazil. The reason for not considering any other dimension of Internet use is basically the limitation of our data source: The national survey only used this measurement of Internet use in these two surveys. However, we can argue that use as opposed to non-use is the first dimension of use, and it implies potential differences with non-use. Any kind of use, even this restricted one, means virtual communications (Baumer et al. 2015). High percentages of non-use by women compared to men, could indicate submission to a patriarchal order or to other environmental or social constraints affecting women more than men. As not using to the Internet may restrict access to other resources, such as health benefits. Above all, however, the proposed analyses seek perspectives to promote changes in women's conditions and their empowerment through the purposeful use of the Internet.

The research questions (RQ) that we posed and guided our data analyses where:

RQ1- Did the Internet use increase substantially in Brazil from 2005 to 2015, contemplating both gender groups, in this 10-year period? RQ2- How did specific social and environmental circumstances interacted with gender in their effect on Internet use, from 2005 to 2015? As mentioned above, the answer to these questions will allow an estimate of the weight of social and environmental constraints to women's use of the Internet and of the perspectives of women's protagonism in the virtual world, in face of its increasing presence in our daily lives.

4. Data analysis

In order to answer the two questions proposed in the previous section, some tables are presented in this section. The first table seeks an answer to the first question showing the total increase in Internet use and the use increase relative to gender between 2005 and 2015.

Table 1 – Distribution of the Brazilian population internet users by gender – Brazil 2005 and 2015

Used the internet	2005		2015	
	Men	Women	Men	Women
Yes	21.9%	20.1%	56.8%	58.0%
No	78.1%	79.9%	43.2%	42.0%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

Based on the data above, we seem to have a positive answer to the first question: Internet use increased substantially in the period under analysis (from about 20% to 57%), and the minor male superiority in 2005 (1.8% difference) was replaced by a small female advantage in 2015 (1.2% difference). Despite this substantial total growth, and favorable to women, we should also point out that 42.5% of Brazilians still did not use virtual communications in 2015.

In order to seek an answer to the second question, the following group of tables show how specific social and environmental circumstances - age, race/ethnicity, place of residence, occupation and household income - did change between 2005 and 2015 and interacted with gender on internet use. These remaining tables will only display the positive answers relative to each category of the variables considered, that is, those who have not used the internet, and not the complementary negative answers. Table 2 shows the evolution in Internet use by gender and age groups:

Table 2 – Distribution of the Brazilian population by Internet user age group and gender – Brazil 2005 and 2015.

Age groups	2005		2015	
	Men	Women	Men	Women
10-19	28.0%	29.8%	74.2%	78.0%
20-29	28.8%	29.4%	76.7%	80.3%
30-39	22.2%	20.3%	66.3%	71.5%
40-49	19.2%	15.8%	52.7%	57.6%
50-59	14.3%	9.6%	39.1%	42.0%
60+	4.8%	2.1%	18.5%	16.6%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

The most striking piece of information in Table 2 is the growth of Internet use in all age groups, each involving some 30 million people, although this growth was larger among younger people – the first three age groups. Considering gender differences, we can see that, among the younger age groups, women had already surpassed men in 2005, but such superiority is clearer and more consistent in 2015 among most age groups, except that of people aged 60 years and more.

Race/ethnicity is the sociodemographic information related to Internet use in Table 3, which shows the increase in Internet use by gender and racial group.

Table 3 - Distribution of the Brazilian population by Internet use, racial/ethnic group, and gender - Brazil 2005 and 2015

Racial/Ethnic group	2005		2015	
	Men	Women	Men	Women
White	29.9%	26.7%	64.1%	64.2%
Mixed race	13.2%	12.5%	50.6%	52.4%
Black	16.6%	14.4%	53.1%	53.7%
Yellow	53.0%	41.6%	75.5%	68.6%
Indian	15.5%	13.8%	43.3%	43.9%
No racial Information	5.3%	9.8%	0.0%	0.0%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

Before analyzing Table 3, it should be mentioned that the more representative racial groups in the country are Mixed and White, each with some 60 million people. The Black racial group included about 16 million people, while the yellow and Indian groups each involved fewer than 1 million people. As shown in table 3, the increase in Internet use is substantial in all groups, but notably among Mixed race and Blacks, two groups that, if considered together, would be the largest racial/ethnic group in the country, and one with lower socioeconomic

well-being indicators compared to the White group. Also worthy of note is that the group classified as yellow was already in the best position in 2005, remaining so in 2015.

Considering the difference between gender and racial/ethnic groups across time, it is noticeable that men had a small lead in 2005, in all racial groups, while in 2015 this minor advantage went to women in most groups, notably in the mixed-racial group. The exception is the yellow racial group, in which men still tended to surpass women in 2015. However, as already mentioned, this group is not a major one in the country.

We now present two tables – Tables 4 and 5 – referring to individual location in the country, to detect this contextual influence in Internet use: The urban versus rural dimension and the regional dimension. These dimensions seek to identify the negative impact of the rural milieu and less developed regions in internet use, especially for women. The expectation according to the literature would be for lower use by women, notably in the rural environment.

Table 4 – Distribution of the Brazilian population by Internet use, urban vs. rural place of residence, and gender – Brazil 2005 and 2015

Place of residence	2005		2015	
	Men	Women	Men	Women
Urban	26.1%	23.0%	63.4%	63.1%
Rural	3.1%	3.8%	23.1%	26.1%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

Table 5 - Distribution of the Brazilian population by Internet use, region, and gender – Brazil 2005 and 2015

Country Region	2005		2015	
	Men	Women	Men	Women
North	11.8%	11.7%	43.9%	48.5%
Northeast	12.3%	11.6%	43.7%	46.4%
Southeast	27.8%	24.8%	65.3%	65.0%
South	26.7%	24.5%	61.3%	61.0%
Midwest	24.2%	22.5%	63.0%	64.9%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

The initial information we should provide about the urban x rural household condition does not appear in the table above, and refers to the much lower representation of the rural group, which has only 15% of Brazilians. Insofar as Internet use is concerned, Table 4 shows that its growth is more substantial in the urban environment; its increase in the rural areas was substantial, but a negative aspect is that still in 2015, Internet use only added up to 24.5% of rural Brazilians. With respect to gender differences, it is interesting to note that the male advantage in urban areas, seen in 2005, changed to gender balance in 2015; however, surprisingly, women already surpassed men in rural areas in 2005, and this advantage increased in 2015.

The North and Northeast regions are the country's less developed ones, and that the Southwest and South the better developed. So, as expected, Internet use was already higher in those more developed regions in 2005, and remained so in 2015. Concerning gender differences and gains in female Internet use over time in the country's regions, we can point out that men fared slightly better in all regions in 2005. However, in 2015 the two gender groups in the more developed regions had similar results, but women had a slight advantage in the less developed ones, notably in the Northern, and poorest Brazilian region.

The last two tables focus on variables detecting work situation and income. Table 6 depicts major occupational positions, as defined by the IBGE/PNAD survey, while Table 7 aggregates income in four quartiles.

Table 6 - Distribution of the Brazilian population by Internet use, occupational position, and gender – 2005 and 2015

Occupational position	2005		2015	
	Men	Women	Men	Women
Employee	24,7%	38,2%	66,8%	82,8%
Public servant	48,8%	45,1%	80,9%	84,7%
Domestic worker	4,7%	4,2%	34,2%	45,0%
Self employed	10,5%	14,9%	42,4%	60,2%
Employer	38,4%	45,5%	78,0%	88,4%
Other	10,8%	5,4%	32,7%	22,5%

Source: IBGE, Brazilian Household Annual Survey, 2005, 2015. Microdata

Table 7 - Distribution of the Brazilian population by Internet use by household income (grouped in quartiles) and gender – 2005 and 2015

Income Quartiles	2005		2015	
	Men	Women	Men	Women
1	5.5%	5.4%	35.2%	39.6%
2	9.2%	8.8%	46.7%	48.8%
3	19.1%	18.4%	61.2%	63.2%
4	50.3%	45.2%	80.7%	79.5%

Source: IBGE, Annual Brazilian Household Survey, 2005, 2015. Microdata.

Considering absolute data that originated (but are not shown) in tables 6, it is interesting to point out that the larger occupational category is that of employees, adding up, in 2015, to almost 57 million people. Although still a work category in which men predominate, there was a substantial increase in women among employees. Next comes the self-employed, with more than 22 million Brazilians – this could also be considered a male group, since there are almost two times more men in this category. The next two more frequent work categories are that of domestic labor and public servants, each with a little more than 7 million Brazilians, and, in both groups, women are the vast majority: 92.3% of the domestic workers and 60.4% of the public servants.

Focusing on Internet use of these occupational groups, as shown in Table 6, one can notice the great increase in all categories, in addition to the higher use in positions that reveal a formal working condition. Employees, employers, and public servants account for more than 80% of the use. However, the use among the more informal categories – domestic worker and self-employed - points to a situation of almost non-use (around 4 to 15%) in 2005, to a much higher Internet participation in 2015 (around 45 to 60%). Analyzing women's presence and evolution relative to Internet use by work category, it can be pointed out that they already showed a better position in some categories in 2005, but this female advantage is clear in all categories in 2015 (except the smaller group of "other occupations" which, together, account for only 8.8% of the labor categories), notably among employees and self-employed, two predominantly male categories.

Table 7 distributes the country's population in four equally sized h income levels – four quartiles. It shows a very low use of the Internet up to the 3rd quartiles in 2005, and an abruptly larger use in the 4th one. This changed into a smoother, albeit persistent and strong effect of income on Internet use in 2015: Another point to be made about the results featured in Table 7 is that women were in an inferior position in all quartiles in 2005, and their inferiority was more substantial in the highest income level. In 2015, this changed to practically a balance between genders, but with a slight female advantage in most income levels, notably in the lowest quartiles: women only reach slightly lower marks than men in the highest one.

5. Concluding remarks

Our conclusions focus on the answers to the research questions proposed. With regard to the first research question, analyses made here suggest a positive answer to this question, identifying substantial increase and the progressive inclusion of women in the use of the internet in the country. In fact, there has been a considerable growth in Internet use in Brazil: 20.9% to 57.5% and the minor male superiority was replaced by a small female advantage. But this values also bring a piece of negative information, since the Internet use percentage was still very low, leaving almost 40% of Brazilians without using this technology.

Regarding the second research question, which inquires about the constraints socioenvironmental and social conditions imposed on Internet use, and how these conditions interplay with gender, we consider that there are a couple of perspectives that data analyses suggest answering this question. The first is that, in fact, Internet use increased substantially across all these social and environmental dimensions from 2005 to 2015, indicating a high degree of ICT democratization in Brazil. However, a second answer to this question is that these social and environmental circumstances still seem to play a substantial role, constraining or limiting Internet use: differences between racial groups indicate the prevalence of white supremacy; use in the rural environment was still very low in 2015, reaching only 24.5% of Brazilians; there are still major differences between the more developed and less developed regions in the country. Above all, economic conditions, measured based on household income, still seem to have a strong impact on Internet use, which doubles between the first and the fourth income quartile.

The aspect of this second research question related to the main concern of this article considers the interplay of the gender and these social dimensions and was inspired by the theoretical approaches emphasizing that the understanding of women's experiences with technology in general, and the Internet, in particular, has to consider the different social dimensions or geographies of the Internet. The answer to this question brings a few positive surprises.

Although gender differences are small in both survey periods considered, and even though this might not be sustained statistically, the results in general suggest that women had several disadvantages in Internet use relative to men in 2005, but tended to surpass them in 2015. This happened in most of the social dimensions and categories analyzed. Based on the comparisons between 2010 and 2015, we note that women exceed men, going from lower to better results in overall Internet use, in most age groups, in most regions, in rural areas, in most color/ethnic groups, as well as in most occupational groups and income quartiles.

Another interesting aspect of the results is that the tendency of women to surpass men in Internet use seems greater among the less privileged groups or environments. Women show clearer advantages relative to men in rural areas, in less developed regions, among the less privileged racial/ethnic groups, and among the three lower income quartiles (men only surpass women in the higher income quartile). Although more research should be done on the subject, we think these puzzling results are positive and suggest that women seem challenged to act in adverse circumstances.

We can close this article going back to the facts and arguments posed in the introduction. In Brazil, as in other contexts, women are performing better in some aspects of science and technology, but this advantage seems to remain unseen, and insufficiently analyzed or understood. For the time being, though, these results can provide support to theoretical efforts and actions aimed at promoting gender equality in science and technology, including, specifically, their use of the Internet to their benefit. The road to Brazilian women's protagonism in the virtual world seems open. In other words, let's go girls!

Acknowledgments. The authors are grateful to the National Council for Scientific and Technological Development (CNPq) for its financial support.

References

Araujo D. A. Herdeiras de Ada Lovelace. [Dissertation]. Rio de Janeiro: Graduate Program in Information Sciences. Federal University of Rio de Janeiro, 2018.

Bernuci, N. Olinto, G. Gender Differences in ICT Access and Use Among Brazilian Youngsters. Communications in Computer and Information Science: Springer, 2019, p. 379-389.

Baudelot C, Establet R. Alles les filles! Une révolution silencieuse. Paris: Seuil, 1992.

Baumer E.P.S, et al. Why study technology non-use. In: First Monday, 20 (11), 2015, p. 20. https://firstmonday.org/ojs/index.php/fm/article/view/6310

Bourdieu P. La distinction: critique sociale du jugement. Paris: Minuit, 1979.

Carneiro S. Mulheres em movimento. In: Estudos Avançados, 17 (49), 2003, pp. 117-132. http://www.revistas.usp.br/eav/article/view/9948/11520

Carstensen T. Gender trouble in the Web 2.0: gender relations in social network sites, wikis, and weblogs. In: International Journal of Gender, Science and Technology, 1 (1) 2009. http://genderandset.open.ac.uk/index.php/genderandset/article/view/18/31

Cetic. ICT Kids Online: Survey on Internet Use by Children in Brazil. São Paulo: Brazilian Network Information Center, 2016. https://cetic.br/pt/tics/kidsonline/2016/criancas/

Cho, S.; Crenshaw, K. W, McCall, L. Towards a field of intesectionality Studies: theory, applications, and Praxis. In: Signs, 38 (4), 2013. https://www.journals.uchicago.edu/doi/pdf/10.1086/669608

Deursen A. J.V, Dijk J. A.G. M, Peters O. The contribution of gender, age, education, Internet experience, and hours online to medium and-content-related Internet skills. In: Poetics, 39, 2011, pp. 125-144.

Dicke A, Safavian N, Eccles J. S. Traditional gender role beliefs and career attainment in STEM: a gendered story? In: Frontiers in Psychology, 10 (1053), 2019.
https://www.frontiersin.org/articles/10.3389/fpsyg.2019.01053/full.

DiMaggio P, Garip F. Network Effects and Social Inequality. In: Annual Review of Sociology, 38, 2012, pp. 93-118.

Ferreira E. The co-production of gender and ICT: gender stereotypes in schools. In: First Monday, 22 (10), 2017. https://firstmonday.org/ojs/index.php/fm/article/view/7062

Gunderson, E. A. et al. The role of parents and teachers in the development of gender-related math attitudes. In: Sex Roles 66, 2012.

Hargittai, E. Shaffer S. Differences between actual and perceived online skills: the role of gender. In: Social Science Quarterly, 86 (1) 2006, 432-448.

Hale T.M, Cotte S, Dentrea P. Rural-Urban differences in general and health-related internet use. In: American Behavioral Scientist, 54 (9), 2010, pp. 1304-1325.

IBGE. Pesquisa Nacional por Amostras de Domicílios. Rio de Janeiro, 2005.

IBGE. Pesquisa Nacional por Amostras de Domicílios. Rio de Janeiro, 2015.

Kumar N. The gender-technology divide or perceptions of non-use. In: First Monday, 20 (11), 2015. https://firstmonday.org/ojs/index.php/fm/article/view/6300

McCall, L. Does genderfit?: Bourdieu, feminism, and conceptions of social order. In: Theory and Society, 21, 1992.

Malhotra, P. & Ling, R. Agency within contextual constraints: Mobile phone use among female live-out domestic workers in Delhi. Information Technologies & International Development,16, 2020, pp. 32–46.

OECD. Gender equality in education, employment, and entrepreneurship: final report. Paris: OECD, 2012. https://www.oecd.org/employment/50423364.pdf

OECD. The ABC of gender equality in education: aptitudes, behaviour, confidence. Paris: OECD, 2015. http://www.oecd.org/education/the-abc-of-gender-equality-in-education-9789264229945-en.htm

Scott A, Semmens L, Willoughby, L. Women, and the Internet: The Natural History of a Research Project. In: Information, Communication and Society, 2 (4), 1999, pp. 541-565.

Tomte C. Return to gender: gender, ICT, and education. Paris: OECD, 2008. http://www.oecd.org/education/ceri/40832766.pdf

Wajcman J. Feminist theories of Technology. In: Cambridge Journal of Economics, 34 (8), 2010, pp. 143-153.

Wasserman I, Richmond-Abbot M. Gender, and the Internet: Causes and variations in access level, and scope of use. In: Social Science Quarterly, 86 (1), 2005.

West, D.M. Using mobile technology to improve maternal healthcare and fight Ebola. Center for Technology Inovation and Brookings. Executive Summary. 2015.

Wyche, S., & Olson, J. Kenyan women's rural realities, mobile Internet access, and "Africa Rising." Information Technologies & International Development (Special Section), 14, 2018, pp. 33–47.

Zook M. The Geographies of the Internet. In: Annual Review of Information Science and Technology, 40, 2006, pp. 53-78.