A r t i c l e s

Youth, science and notions about the truth: consumption for scientific information by high school students from public schools in Rio de Janeiro

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Abstract

Addressing scientific disinformation has been a major concern worldwide. Recognizing the intersubjective processes of relationships of trust established in the midst of disputes over scientific information, this article presents the results of an exploratory study with young high schoolers from public schools in the state of Rio de Janeiro, seeking to understand their media consumption habits on science and how they establish trust about the actors that produce scientific information. The findings of this research point out that young people value individual freedom values, for relations of recognition of scientific and professorial authority – only if they are dialogical –, distrustful about the media and search for greater participation when social conflicts stem from non-recognition.

Keywords: Social uses of the media. Informational practices. Scientific information. Media and Information Literacy. Recognition.

Introduction

Misinformation and disputes over scientific information have become major global concerns, particularly in controversial topics within the scientific community, such as global warming and climate change (LUBCHENCO, 2017; KOLMES, 2011). Despite the higher level of interest in science among the Brazilian population compared to the global average (70% and 46%, respectively), a 2019 study by the State of Science Index revealed a growing sense of skepticism towards science, with 39% of respondents identifying as skeptics and 50% only believing in scientific information when it aligns with their individual beliefs. The National Institute of Science and Technology in Public Communication of Science and Technology (INCT-CPCT) has highlighted that Brazilian youth aged 15 to 24 have doubts about political and social issues that are supported by scientific knowledge[1].

These results reflect an epistemic crisis (ALBUQUERQUE; QUINAN, 2019; OLIVEIRA, 2020), marked by a shift from a truth regime based on trust in institutions to another regime regulated by individual belief and personal experience (VAN ZOONEN, 2012). Moreover, they cross a scenario in which the concept of misinformation brings forth a range of meanings, whether used to define the absence of information, the existence of informational noise, or the sense of information manipulation, with the latter being the most concerning and contributing to a scenario of scientific delegitimization or epistemic crisis (PINHEIRO; BRITO, 2015). This crisis, referred to by Bao (2020) as the "Modernity's decay," is a frequent symptom in today's society, which uses arguments such as media manipulation and/or government manipulation to justify the consolidation of individual beliefs and thus reinforce a scenario of delegitimization of established institutions around Enlightenment ideals of truth production (VAN ZOONEN, 2012).

As one of the solutions to combat misinformation, researches indicate the urgent inclusion of information and media literacy policies in school curricula to develop critical abilities regarding media, especially in a time of proliferation of misinformation and fake news (EL RAYESS *et al.*, 2018; OLIVEIRA, 2020). In a context marked by the increasing consumption of content produced on social media platforms among young people (MARWICK, 2013), including content related to the popularization of science (GONÇALVES, 2012) and informal science education (MARANDINO, 2017), schools have been considered a fundamental part of a multimediatic, communicative, and pedagogical ecosystem (FANTIN, 2008) to address scientific misinformation.

In this context, the youth included in this research assume a position as interlocutors of consumer culture, where the consumption of youth cultures intertwines with forms of media consumption. As proposed by Canclini (1999), this consumption is integrated into the sociocultural, that is, from a broader relationship with the media, its products, and contents

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1   Folha de S. Paulo. Amid misinformation campaigns, schools need to defend science. Available at: https://www1.folha.uol.com.br/educacao/2020/01/em-meio-a-campanhas-de-desinformacao-a-escola-precisa-defender-a-ciencia.shtml. Accessed on Feb 8, 2021.

(JACKS *et al.*, 2017; TOALDO; JACKS, 2013). Media culture presents itself as an integral element of the social structuring process, in which the very condition of being young is reconfigured by it. Therefore, the notion of youth is understood as a social category, a sociocultural representation, and only from the 1950s onwards, the idea of youth culture is generally used to designate the behavioral universe specific to being young (GROPPO, 2000).

In this work, we adopt "youths," in the plural, considering their ambiguities and multiplicities, beyond a cut that only summarizes young people by their age (ABRAMOVAY; CASTRO, 2015). Youth trajectories are understood as a constant process of (re)construction, in which their sociocultural relationships stand out (MACHADO; OLIVEIRA, 2019), shaped in the face of social, political, economic, cultural, and notably, media realities. Thus, the idea of "youth cultures" is emphasized as a way to express the social experiences of young people, distancing itself from a perspective that perpetuates marginality and approaching a search for the recognition of identities.

When it comes to the media consumption of science by young people, especially in the context marked by fake news, the challenge is to observe this relationship from a multimediatic ecosystem that goes beyond mere fact checking. It enables social appropriation of scientific knowledge by young people in the construction of their own repertoires. On the other hand, similar to traditional media, popularization and dissemination of scientific productions tend to reproduce low representation of social minorities in these productions (MASSARANI; BAUER; AMORIM, 2013), which may contribute to the problem of non-recognition (HONNETH, 2009; FRASER, 2002) of young people, distancing them from public issues related to media and science.

Considering the focus on the phenomenon of fake news, misinformation, and the contestation of science, media literacy has been advocated as a key strategy to address this issue. Criticism of the media, extensively debated in the academic field, particularly in Communication studies, is considered one of the capacities promoted by media and information literacy (LIVINGSTONE, 2004). Despite being endorsed by international organizations, such as United Nations Educational, Scientific and Cultural Organization (UNESCO), there is no consensus that media and information literacy is the solution to combat scientific misinformation. For example, boyd (2017) has argued that this strategy of media literacy has backfired, as these practices further amplify the widespread distrust of the general population towards the media, especially when individuals already have formed opinions on controversial topics that involve higher personal engagement. Therefore, while media literacy aims to provide tools to tackle misinformation, it opens up a space for a lack of belief in the media institution, without considering core values such as ethics, rights, and responsibilities (SOUSA; OLIVEIRA, 2022). Given the context of a culture of doubt fueled by the epistemic crisis we are experiencing today, it is important to understand whether young people are seeking alternative sources of information. Are these alternative sources related to science a site of social conflict and non-recognition, similar to traditional media, reflecting the growing distrust in scientific institutions?

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In light of this question, and considering the crucial role of schools in providing formal scientific education initiatives, this research seeks to answer the following questions: What media products do young people consume to complement their studies? How and on which platforms do they seek information for their school research? What criteria do they use to establish trustworthiness of these media productions? Do they feel recognized by these productions focused on scientific education? To answer these inquiries, it is necessary to use methodologies that allow for a broader understanding of media consumption (TOALDO; JACKS, 2013), analyzing the uses and practices of information seeking, the circulation of meanings, and the recognition of authority attributed by young people. Communication should be investigated in this regard, using methodologies that consider it as a space of social recognition, such as reception studies (GROHMANN, 2013). Therefore, this research is dedicated to an exploratory study with young high school students from public schools in the state of Rio de Janeiro, aiming to identify the practices of media consumption related to science, in order to reflect on the relationships of trust and recognition derived from their interaction with these productions.

Methodology

With the purpose of identifying discourses and understanding how high schoolers seek information related to science, focus groups were conducted, as this method allows for observing interactions and negotiations that help understand the processes through which meaning is socially constructed through speech (LUNT; LIVINGSTONE, 1996; MORGAN, 1997). Understanding that public schools in the country have distinct profiles, two schools in different cities were chosen, with which the authors of this article have been working on High School Scientific Initiation projects (PIBIC-EM). The chosen schools were Colégio São Cristóvão, in the municipality of Queimados, which has 15 PIBIC-EM scholarships, and Colégio Estadual Walter Orlandini, in the municipality of São Gonçalo, with seven PIBIC-EM scholarships. Despite having an ongoing Scientific Initiation program with these schools, not only PIBIC-EM scholars were invited to participate in the focus groups, but also students who did not participate in the program.

In total, 15 students participated in this research, 11 female and four male. The first group was conducted with students from Colégio Estadual Walter Orlandini, in São Gonçalo, with seven participants, five of them were PIBIC-EM scholars. The second group was conducted with students from Colégio São Cristóvão, in Queimados, with eight participants, two of whom were scholars[2]. Prior to the focus groups, a questionnaire was administered to identify the

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2   In general, with regard to the participation of the seven PIBIC-EM scholarship students (five from the São Gonçalo school and two from Queimados), we did not observe much difference in terms of a more critical participation between these students and non-scholarship students. Especially at the São Gonçalo school, which had a greater number of scholarship students, we noticed that there was a generalized critical sense. However, at Queimados school, at certain moments of the debate, scholarship students stood out with a more evident critical perception.

demographic profile. The students were between 15 and 19 years old. Six identified as black, six as mixed-race, and three as white. The reported economic class ranged from lower middle class to middle class. Only one person identified as low-income[3].

It was decided that the location of the activity would be chosen based on the demands of the group itself. Professor Marcos Veríssimo from Walter Orlandini school, who has a scientific background in conflict management in school settings (VERÍSSIMO, 2019), suggested conducting the activity outside of school, as an opportunity for the students who are preparing for the university entrance exams to visit the University. The same could not be done with students from Colégio São Cristóvão, due to the distance between Queimados and the university, so the activity was conducted at the school, in the teachers' room, which caused conflicts and distractions with the entry of professionals into the room.

Building on a line of work carried out by other authors (MARQUES, ROCHA, 2006; GOMES, 2005), which argues that reception is socially constructed and, therefore, motivates struggles for social recognition based on the symbolic universe disseminated by media products, especially when they convey representations of marginalized social groups, this research unfolded in two axes, carried out based on a semi-structured script[4]:

i. In the first axis, practices of consumption and information seeking related to all areas of scientific knowledge were investigated. In this initial stage, questions were asked about their research routines and preferred formats.
ii. In the second part, discussions were prompted regarding what they consider as quality information, the process of choosing these materials, and their relationships of trust/distrust with the productions they usually consult.

Social uses and practices of information seeking related to science

One of the first questions asked to stimulate dialogue was: How do you usually study and how often? Due to the proximity of the college entrance exams, most students stated that they study every day, except on weekends. Some mentioned that they only study on the night before the exams or assignments.

Predominantly, students use two main sources of information: websites in general, with a preference for those with an educational character, such as Brasil Escola, Infoescola, and YouTube, through video lessons. The YouTube channels mentioned were: Descomplica, Débora Aladim, Biologia Total, Professor Noslen, Você Sabia?, 10 curiosidades, Felipe Castanhari. Textbooks also appeared as a topic, but with different perceptions in each group. In the São

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3   The students' names have been hidden and fictitious names will be presented throughout this article. As we did not perceive any distinction between members of the same group, in relation to the ways they understand the media and information, we chose to present them only by their name, respecting the gender mentioned in the identification form, not inserting information such as race or income.

4   The speeches were transcribed and the analyses were conducted using NVivo software for the classification of discursive nodes based on predefined categories drawn from the literature previously referenced in this text.

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Gonçalo group, there was a consensus on the inefficiency of textbooks, reinforced by teachers themselves in the classroom, who, according to students, request consultations from other materials. On the other hand, in Queimados, students attributed great trust to textbooks. In this group, it was observed that for students, having access to physical books is seen as a social privilege, as the school does not have a large library and going to public libraries requires investment and supervision from others. Therefore, as they have internet access at home, studying through digital environments becomes easier.

Regarding preferred formats of video lessons, they stated that it depends on the subject and content of the video. Students prefer dynamic and objective videos that "don't drag on the subject, you know?" (Juliana, Queimados group). While shorter videos are preferred for Exact and Biological Sciences, in topics related to humanities such as history, geography, and sociology, they prefer longer productions that can address complex subjects through deeper reflection, preferably when presenting multiple points of view.

Duration, aesthetics, title, previous experiences, number of views, and YouTube's algorithmic recommendation are elements they take into consideration in the selection process. There is an understanding of the influence of the platforms themselves on information consumption.

> Talita: To pass the time, sometimes I read news articles on Facebook. But then, before you know it, it's getting really bad, with all the depressing stuff.
>
> Mateus: That's why I prefer to research before reading the news, because some newspapers manipulate more than they inform. Especially the ones that show up first in search results.
>
> Marcos: I don't know if you guys have noticed, but the internet creates a mind around your profile. For example, if you search for Uber, you'll start seeing more Uber-related stuff. If you search for politics, you'll get more political stuff. And that's the problem.
>
> Fernanda: Exactly! You get stuck in a bubble. That's why it's important to watch and read opposing opinions, not just to know what others are thinking and reevaluate your own beliefs, but also to avoid having a one-sided view. We have to dig a lot to find quality information and form our own opinions!
>
> Aline: Yeah! We have to do a lot of research! And for that, you need time.
>
> Marcos: Yes, you have to look at all sides, otherwise you become vulnerable to fake news. That's when I deactivate.
>
> Moderator: How?

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> Fernanda and Marcos: Clear your browsing history.
>
> Marcos: Clear the cache, uninstall the browser... and start your searches again.
>
> (São Gonçalo Group)

Contrary to studies that suggest that young people are not capable of understanding the complexities of communication and information technologies (NG, 2012), the students not only demonstrate an understanding of the logics that permeate digital platforms, but also create strategies to subvert them when algorithmic mediations invade their own choices in consuming information.

After analyzing the data, three analytical categories were identified based on the students' discourse about the intersubjective relationships of individuals regarding media consumption related to science: (i) relationships of recognition of scientific and professorial authority; (ii) skepticism and media criticism of other epistemic institutions; and (iii) a search for greater participation when social conflicts arise from non-recognition.

Relationships of recognition of scientific and professorial authority

In an attempt to understand the process of choosing materials related to science consumption, the criteria used to define what constitutes quality information were asked. In addition to linguistic and grammatical structure (in the case of texts on websites), the use of sources and the authority of content producers were mentioned in both focus groups. Although some students in the Queimados group argued that it is more important for a person to be able to "explain things properly" than to be a professor, there is a reinforcement of the value of scientific and professorial authority in the discourse of young people, pointing to the relevance of bibliographic references and the academic-teaching career of the individual who produces and selects educational materials.

> Talita: I usually open multiple websites and compare them to see if they are saying the same thing. I think that's it! To know if a website is telling the truth, we first have to compare it with several other websites.
>
> Júlia: Look, I'm not saying we do this, but ideally, we should take the text and ask a professor or a professional in the field. For example, if I have doubts, I'm not sure if it's true, then I go and ask.
>
> Lorena: I ask too.
>
> Moderator: But you said that's the ideal. What do you actually do in practice?

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> Júlia: I let it go! I trust it anyway.
>
> Simone: It's like, I'm putting my trust in you and going with it!
>
> Pedro: Going with faith!
>
> Mariana: That's why I don't trust the internet. Anyone can go there and edit. Like Wikipedia. Anyone can say whatever they want in a video. There's no way to confirm if you're a professor. That's why I trust books more, because it's a more serious thing. It's a professor or someone in the field who wrote it.
>
> Júlia: But guys, like what you said about books. Of course, books are more reliable. But we're talking about our reality here. I think it's not fair to think that we're being deceived. Like, I read books, but I don't have many books at home, I don't have money nor people to lend me books. So, we know it's not that reliable, that's why we struggle so much comparing one source to another, going up and down, asking the professor for help, because many times that's our reality. We don't have [money], you know?
>
> (Queimados Group)

From this dialogue, in which the economic issue often appears marked during the focus group discussions (especially in the Queimados group, whose Human Development Index is lower than in São Gonçalo[5]), the importance of discussing issues related to everyday practices intertwined with social and economic class relations was emphasized. There are numerous challenges in addressing class issues in consumer studies, especially when it comes to young students, whose variables such as income, level of education, and regular access to symbolic and cultural goods are dependent on family relationships, and their understanding of their own position within the social relations of the productive system is not always perceived[6]. Therefore, when dealing with young audiences, we need to pay attention to the discourses that permeate social recognition, in order to understand how meanings and significance are constructed (GROHMANN; FIGARO, 2014). Moreover, in this intersubjective construction of recognition, it is possible to observe the student-teacher relationships that are established based on trust as well as around social conflicts intertwined with power relations.

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5   Queimados is located in the metropolitan region of Rio de Janeiro. It has a population of 150,000 inhabitants, ranking 73rd in the state of Rio de Janeiro according to the Human Development Index (HDI), a comparative measure of wealth, literacy, education, life expectancy, birth rate, among other factors, according to published data. by the United Nations Development Program (UNDP), of the United Nations (UN). São Gonçalo, on the other hand, ranks 14th in the HDI of the state of Rio de Janeiro, with a population of around 1 million inhabitants (IBGE, 2018).
6   This may be the reason why nine out of 15 students were unable to inform their family income or the economic stratum to which they belong.

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The recognition of authority and trustworthiness is established based on mutual respect in dialogic interactions. The valuation of scientific and professorial authority pointed out in the video lessons is also recognized in everyday social relationships, such as the mention of the influence of Professor Marcos Veríssimo on their future careers, or the professor who maintains a blog and makes texts available online for frequent student consultations. Therefore, students attribute a higher degree of trust to these materials. In the focus groups, however, this professorial authority is contested by students when they mention the political-ideological positions of some teachers and question the openness of some teachers to debate with students.

> Luana: It's frustrating when someone, be it friends or family, is only focused on one point of view. Instead of just showing one side of the coin, it's better when the teacher encourages us to read and think.
>
> Lorena: It's really difficult when they don't accept our opinion and think that only theirs is right.
>
> Mariana: I'm aware of my place. Here, I'm a student and he's the teacher, so I can't disrespect him. I can't raise my hand, I can't criticize, I can't raise my voice. He's the teacher and I'm the student. But sometimes I feel the urge to speak up. He shouldn't just say what he thinks is right without explaining why. "I'm the teacher and that's final."
>
> (Queimados Group)

This is a dispute that occurs in interpersonal relationships within hierarchical institutionalization in the school environment, where teacher authority, based on the imposition of cultural arbitrariness (BOURDIEU; PASSERON, 2011), takes on different contours and negotiation spaces when recognition is established through charisma and dialogue, perceived through performance based on intimacy and proximity (MAIA, 2019). It is in this type of communicative action (HABERMAS, 1995), based on the free exchange of arguments aimed at understanding, that meanings are updated and reality can be reconstructed in a non-oppressive way when space is opened for debate and different points of view.

Distrust and media criticism

The search for different perspectives on the same subject, even from opposing political-ideological positions, is seen as a consensus on being well-informed. Students usually look at comments on digital platforms "because there we find comments from other teachers, and even from other students too" (Aline, São Gonçalo Group). However, the importance of different opinions does not only emerge in matters related to education or science, but also in relation to the media. According to the students, the multiplicity of views, opinions, and perspectives

is seen as a way to ensure impartiality, which, like in the teaching activity, attributes this characteristic to the quality of information production, and therefore establishes a relationship of trust with those who adopt this approach.

For the students, traditional media outlets such as Globo, Estadão, and Record – mentioned by the students – are discredited, especially due to their own alternative information searches.

> Aline: It's always good to watch videos from other channels that oppose our interests and that are not covered in the newspapers, like feminism, the black movement... Like, in the newspapers, it's always sensationalist news that has nothing to do with these movements, you know?
>
> Talita: Yeah, it's impossible to take journalism seriously. They always generalize everything.
>
> Aline: Yeah, it's always good to see what people who oppose each other are saying about it so we can try to understand...
>
> Talita: What's going on in their minds.
>
> Moderator: So you guys usually see the other side of the story. You must have come across a series of materials...
>
> Aline: Well, absurd ones...
>
> Talita: Man, one day I... I don't know, I woke up at 10 o'clock and before 6 p.m. I had read all sorts of absurd things, you know? And it's like totally senseless stuff.
>
> Mateus: That's what happened to me with news about politics, education, government-related... There was a point where... There was a point where I said: "no, I have to stop watching this because it's already affecting me. I'm getting sad. I'm getting depressed because of this type of news."
>
> (São Gonçalo Group)

Furthermore, not only traditional media is viewed with suspicion. In a discussion about measures to address misinformation, it was observed that the students consider fact-checking agencies, although understood as useful tools, as a threat to their rights and individual freedoms, as they are subject to interpretation based on certain interests.

> Marcos: These websites that claim to determine whether information is false or true are full of interests. We can tell.

> Mateus: Yes, we know they are biased, they are not impartial. They only say what they want. I prefer to decide what is true for myself.
>
> Fernanda: Yeah, exactly. That's why we research so much, so we can decide what is true and not have someone telling us what is true. You have to research a lot.
>
> (São Gonçalo Group)

Within the two groups, there was a recurrence of discourses that sought to defend mechanisms for preserving their individual liberties as a crucial value in the process of information seeking. Taking into consideration that there are many possible sources in the informational ecosystem of digital environments, it was observed that the recognition of authority also comes from personal relationships with emotional bonds (HONNETH, 2009), such as with family and friends, and individual experiences.

> Pedro: For example, if someone passed a competitive exam by watching an interview or a video lesson, they would recommend it to us. That's how you gain trust.
>
> Mariana: I trust Descomplica a lot because my brother got into college just by watching video lessons. He didn't attend any prep courses or anything. The only thing he did was spend 1 hour a day watching live classes, and he got into college that way.
>
> Pedro: Yeah, with recommendations, you see the results.
>
> Júlia: Usually, we tend to see it on the channel itself or in commercials of prep courses. This course approved so many people, this channel is viewed by so many people. But when we have someone, like her brother, right there with her, then she really saw it. If I have a friend who I saw actually pass, who had some difficulties and improved, well, then I have to check it out too, right?
>
> (Queimados Group)

We observe that there is a recurring sense of disbelief in institutions that were traditionally seen as sources of knowledge and information, such as the media and school, due to a perception that these institutions may go against respect for individual freedoms. Despite the absence of media and information literacy programs in schools, students demonstrate the ability to critically analyze the media, questioning Anglo-American models of news production and challenging measures that classify truth and facts. It is evident that their

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defense of individual freedoms also responds to demands for recognition of individuals as content producers rather than just consumers.

Participation and non-recognition

In the processes of dialogue through which individuals shape their identities in the struggle for recognition (HONNETH, 2003), the issue of representativeness becomes a central element of discussions. Despite students stating that representativeness is important to them, the materials they consume, especially video lessons, show little identification between them and the authors of these productions. When the discourse of the speaker forces this type of identification, students claim to be able to perceive it, as they follow these actors on other digital platforms such as Instagram and Twitter.

In the face of social conflicts caused by non-recognition, spaces for participation emerge through students' actions as a form of struggle for recognition. They report engaging in actions such as producing and sharing videos to solve a math problem taught in school that was not adequately explained, or searching for topics not covered in school, such as Afro-Brazilian content or issues related to gender and social movements that are not discussed in school.

> Aline: It's just that thing, you can't identify with it. It's always the same white men. They want to appropriate everything, you know? They think they know everything. They have complete knowledge. They will always know more about racism than a Black person. They will always know more about sexism than a woman. Heterosexuals know more about homophobia than a homosexual and so on.
>
> Mariana: This also hinders spreading information because these people are the first ones to arrive. And more people read it because the white guy writes about the Black movement and more people will read his than a Black guy who spoke about it long before and talked about his own experiences.
>
> Mariana: There is no leverage to reach multiple Black people.
>
> Moderator: What do you mean by leverage?
>
> Mariana: Already having a name. And already having enough followers, you know?
>
> Aline: And it's like, for example, there are many Black people talking about the subject. Explaining it in extremely didactic ways, in various ways, with patience and all, and then a white person comes along and the guy is like, "Wow, genius, exactly that. I totally identify with it," you know? In this case, the opinion of the oppressor always counts ten times more than that of the oppressed.
>
> Mariana: It always prevails.

Aline: Oh yeah, I follow a History professor, she's Black, poor, she wears glasses (laughter from the group), and she's not very good with technology, but she explains well. Like, she gives a summary... every video she posts, I'm like, "That's it, absolutely beautiful, she understands it all" (laughter from the group).

Mariana: Yeah, I think there's also that... it's not that different for a white person to share content and a Black person to share content, but I prefer to watch it from a Black person, from someone who represents me more so I can follow that person, you know? And like she said, every time she posts, we go there and share and promote that person so they can grow, you know?

Talita: Yeah, there are people with millions of followers and others with only a few, but hey, that person explains super well too.

Fernanda: Like, I did that. The person I follow had 72 followers. So I took a weekend to be like, "Hey, guys, follow her, really good, really good!" I posted it on Facebook, posted it on WhatsApp. And she reached 103. I was like, "Wow, so proud of myself."

(Group São Gonçalo)

Students understand representativeness as a way of recognizing the identity attributed to the individual, as a product of intersubjective recognition built from social interactions, including media interactions. Through their understanding of algorithmic mediations in the use of social media platforms, they seek to create strategies for participation within the visibility logics of platforms, as a way of playing the game based on the rules learned from their experiences and mediated sociabilities in digital environments. We observed that, although students may be considered media literate in terms of developing critical and analytical capacities about media, their actions for recognition struggles are still constrained by the logics of algorithmic mediations in digital spaces. This participation mediated by the logics of datification inserted in recognition struggles aligns with what Couldry *et al.* (2007) have discussed, stating that not every mediated experience determines democratic participation due to the dependency on the layers of social infrastructure present in these social media platforms.

In this sense, the great challenge for schools in this scenario of datification and platformization of society is not only to adapt to the digital culture-immersed way of life, but also to define their role in relation to the use of communication and information technologies. Despite the variety of dynamics of reading and information seeking on digital platforms among students, we observe that young people's critical reflections on traditional media practices are present in their discourse, even without media and information literacy programs. However,

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this criticism does not necessarily accompany their understanding of the use of communication and information technologies.

Final considerations

Disputes over scientific information have emerged in recent media discussions, particularly related to topics such as climate change, global warming, and historical denialism, which are recurring in an anti-science agenda of the government combined with reduced funding for research and threats to public education in Brazil (MARQUES, 2019). This anti-science agenda echoes in society, especially during a time of epistemic crisis where individuals lose confidence in traditionally conceived institutions as producers of truth. Before delving into the relevant findings of this research, particularly to understand how young people consume science and define ways to establish trust in scientific information, it is important to highlight three limitations encountered in this study.

The first limitation relates to a small set of participants and schools. The second limitation also concerns the research sample, specifically the inclusion of high school student scholarship holders in scientific initiation as participants in this research. Although no major differences were observed in the modes of critical participation of these students, considering that the groups were mixed, it is known that the results may have been affected for this reason, as scholarship holders theoretically tend to have a higher level of knowledge about science compared to non-scholarship students. Additionally, the scholarship holders from the Queimados school were mentees of one of the authors of this article. Finally, the third limitation lies in the locations where the focus groups were conducted, with one in the school itself and the other at the university. It should be noted that conducting the focus group in a school environment posed a hindrance to issues of authority, which may have reflected in the results to some extent. On the other hand, the group at the university, although more timid, appeared to be more comfortable, as if it were a safe space for debate, despite the presence of a professor.

Considering these limitations, the results of this research reveal that young people use a variety of sources of information, ranging from the media and social media websites to their personal networks, such as family and friends, which constitute the affective intersubjective sphere of the recognition process (HONNETH, 2009). They point out that the decline in trust falls on media institutions, but scientific authority is still preserved, as long as dialogical relationships that allow students to be recognized as part of the knowledge production process are established, as the opinions and individual freedoms are highly valued by the young participants in the focus groups. Following models that seek recognition and participation of students in the process of knowledge construction, schools will need to provide students with mechanisms for reflection and criticism of digital technologies, so that students can not only access and participate in digital spaces, but also analyze the discrepancies of representation in these productions and critically recognize the interests reproduced by hegemonic media

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discourses, not only from traditional media, but also from large technological oligopolies that provide information.

It was possible to observe that, even though recognition is understood as a necessary part of the moral development of society and a path to social transformations (HONNETH, 2009), without policies of economic redistribution and political restructuring, discussions about identity representation will be limited to disputes over information mediated by the algorithmic logics of digital spaces. As Fraser (2002, p. 113) points out, "what requires recognition is not the specific identity of the group, but the status of its individual members as full partners in social interaction." It is in this sense that we, as scientists and teachers, whose authority is still recognized by young people amidst the epistemic crisis and culture of generalized doubt, need to propose solutions that involve overcoming the social subordination imposed on certain social groups through hierarchical logics, in policies and actions aimed at new models of redistribution for society and in scientific practice.

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