

Effects of Anti-Intellectualism in Science from the Perspective of Doctors in Training

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ABSTRACT – Effects of Anti-Intellectualism in Science from the Perspective of Doctors in Training¹. During the Covid-19 pandemic in Brazil, there was a resurgence of practices that are corrosive to the scientific *ethos*, such as budget cuts and denialist and anti-scientific discourses. The objective of this study was to characterize the effects of this scenario on academic training from the perspective of PhD students. Through interviews conducted with 10 doctoral students enrolled in university excellence programs in the country, the following were identified: reduced access to training activities; financial insecurity; impairment academic performance; loss of social prestige of the academic career; emigration; and withdrawal from the academic career. These effects are part of an anti-intellectualist culture that needs to be combated during the recovery of the social value of science.

Keywords: Scientific Denialism. Anti-Science. Budget Crisis. *Stricto Sensu* Postgraduation.

RESUMO – Efeitos do Anti-Intelectualismo na Ciência na Ótica de Doutores em Formação. Na pandemia de Covid-19 no Brasil, houve o recrudescimento de práticas corrosivas ao *ethos* científico, como cortes orçamentários e discursos negacionistas e anticientíficos. O objetivo deste estudo foi caracterizar os efeitos desse cenário na formação acadêmica da perspectiva de doutores em formação. Por meio de entrevistas realizadas com 10 doutorandos matriculados em programas de excelência no país, foram identificados: menor acesso a atividades formativas; insegurança financeira; comprometimento do desempenho acadêmico; perda de prestígio social da carreira acadêmica; emigração e desistência da carreira acadêmica. Tais efeitos fazem parte de uma cultura anti-intelectualista que precisa ser combatida na retomada do valor social da ciência.

Palavras-chave: Negacionismo Científico. Anticiência. Crise Orçamentária. Pós-Graduação *Stricto Sensu*.

Introduction

Formalized in Brazil in 1965, *stricto sensu* postgraduate studies are considered a rare case of success within the country's educational system (Balbachevsky, 2005; Brasil, 2021). This success can be attested, among other aspects, by the growing number of master's and doctoral degrees awarded each year, the significant increase in Brazilian scientific production, and the increased impact of these publications on world science (Brasil, 2021). The proportion of PhDs per 100,000 Brazilians jumped from 4.3 in 2003 to 11.6 in 2019 (Brasil, 2004, 2021); the number of articles published in international journals went from 12,000 in 1998 to 65,000 in 2018; and the impact factor of Brazilian scientific production, measured in terms of citations per publication, increased from 0.73 in 2011 to 0.86 in 2018 (Brasil, 2021).

The achievements made by *stricto sensu* postgraduate studies are, however, at risk of retraction. The training of master's and doctoral students in recent years, especially throughout the 2010s and early 2020s, has occurred in a context marked by a serious budgetary crisis in the area of science and technology (S&T) and by the growth of denialist and anti-scientific practices (Duarte; César, 2020; Escobar, 2021; Oliveira et al., 2020; Quintans-Júnior et al., 2020). According to the Institute of Applied Economic Research (Ipea, 2021), federal resources allocated to the S&T area have consistently reduced since 2014; between 2013 and 2020, this reduction reached 37%. As a result, spending on the area in 2020 was lower than that applied in 2009. Regarding the budget of the Coordination for the Improvement of Higher Education Personnel (Capes), an agency that aims to support the training of master's and doctoral students through the provision of scholarships, the amounts applied in 2020 were similar to those spent in 2011 (Ipea, 2021). Other important budgetary units of Brazilian S&T, the National Council for Scientific and Technological Development (CNPq) and the National Fund for Scientific and Technological Development (FNDCT), combined, have smaller budgets today than they had in the early 2000s (Ipea, 2021).

This budgetary setback currently translates into a significant reduction in the number of scholarships available for master's and doctoral students (Fernandes, 2022), the closure of research laboratories (Quintans-Júnior et al., 2020), a decrease in Brazilian scientific production (Fernandes, 2022; Oliveira et al., 2020; Quintans-Júnior et al., 2020), an unprecedented drop in the number of entrants, enrolled and graduated in *stricto sensu* courses (Quintans-Júnior et al., 2020; Palhares, 2022), a drastic increase in the exodus of Brazilian scientists abroad (Quintans-Júnior et al., 2020; Galvão-Castro; Cordeiro; Goldenberg, 2022), and the termination of postgraduate programs (Gorziza, 2022). It is important to highlight that, having started in 2014, the budgetary crisis in Brazilian S&T was aggravated with the arrival of the extreme right in the federal executive in 2019 (Quintans-Júnior et al., 2020; Tollefson, 2019).

The disinvestment in S&T has also been accompanied by the expansion and strengthening of denialist practices throughout the country (Tollefson, 2019). Scientific denialism is characterized by the effort to cast doubt on scientific results that have already been consolidated and systematically replicated (Duarte; César, 2020; Penaforte, 2021). In general, the aim is to foster false controversies regarding these propositions and create an apparent debate in the absence of any empirical evidence that justifies the review of existing knowledge (Penaforte, 2021). In doing so, denialism also calls into question the authority and legitimacy of scientists and their institutions, as well as inducing or favoring the delegitimization of the ways in which science is produced (Duarte; César, 2020).

Usually, denied scientific results correspond to “inconvenient” statements that, if accepted, could lead to the proposal and implementation of political and social changes contrary to the interests of certain groups (Duarte; César, 2020). Once questioned and denied, however, these statements become innocuous and the integrity of the aforementioned interests is assured (Duarte; César, 2020). In Brazil, the promotion of denialist practices has occurred with the support and participation of national authorities (Duarte; César, 2020; Penaforte, 2021). Scientific results that, for example, confirmed the inefficiency of chloroquine as a therapy for Covid-19 (e.g., Moreira; Nunes, 2022) and warned of the substantial increase in deforestation of Brazilian biomes (e.g., Sanches, 2019) have been questioned and systematically denied by political authorities in recent years. The institutions responsible for these results were placed under suspicion and the scientists were discredited, fired (Sanches, 2019), lost funding for ongoing research (Hallal, 2021), or had their honors revoked by a government decision (Silveira, 2021a). This promotion of scientific denialism has even resulted in conditions that threaten the physical integrity of national scientists (e.g., Stevanim, 2021).

In addition to the expansion of the budget crisis and scientific denialism, there is also an expansion of anti-science attitudes in the country (Monteiro, 2020). Although scientific denialism and anti-science are phenomena with common characteristics, the latter has particularities that cannot be identified in the former. Anti-science is often characterized by the rejection of science and its methods in favor of other ways of knowing (Holton, 1993; Hotez, 2020). More specifically, anti-science involves the defense of an “alternative science” or “para-science” that would be very different from “conventional” science. In this way, anti-science advocates the “end of science as we know it” and its replacement with an alternative way of producing knowledge (Holton, 1993, p. 153). According to Holton (1993), historically, anti-scientific movements seek to delegitimize science, its methods, and its epistemological and ontological claims – but, above all, they seek to reverse the influence that science exerts on human life and progress. In Brazil, the cases of authorities who have criticized the excessive space given to science by society and lamented the fact that the evangelical church has not occupied science (Jornal Nacional, 2019) and who have already

tried to make the teaching of creationism mandatory in schools are illustrative (Pasternak; Orsi, 2021).

Taken together, the phenomena described are emblematic of the hostile conditions under which master's and doctoral students are currently graduating (Escobar, 2021). The consequences associated with them (e.g., reduction in the number of entrants and graduates in *stricto sensu* courses, closure of laboratories, and termination of postgraduate programs) threaten not only the future of postgraduate studies, but also the very survival of national science (Oliveira et al., 2020; Quintans-Júnior et al., 2020). It is worth noting that after the democratic elections of 2022, which resulted in the departure of the extreme right from the federal executive, there is an expectation of a reversal or, at least, a softening of the hostile conditions mentioned (Pagno, 2022). Therefore, an investigation into the effects of the strengthening of practices contrary to science on postgraduate studies may seem, at first, an anachronism under the new federal administration (2023-2026). Although anachronous, investigations of this nature cannot be considered irrelevant, not least because they constitute yet another historical record of this damaging period for Brazilian science.

The materials consulted suggest that the budget crisis in the area of S&T and the strengthening of denialist and anti-scientific practices have impacted the Brazilian scientific community as a whole (e.g., Escobar, 2021; Oliveira et al., 2020; Quintans-Júnior et al., 2020; Tollefson, 2019). Thus, it is possible to hypothesize that doctoral students from different areas of knowledge, from different institutions, and from different postgraduate programs were affected by these phenomena. With this in mind, the objective of the current work is to contribute to the description of the potential impacts of disinvestment in S&T and the expansion of denialism and anti-science on the training of doctoral students, by conducting interviews with students from university excellence programs. In other words, this work sought to deepen research on these effects from the perspective of the students themselves, providing descriptions of the reality experienced and substantiating information already available in the literature. Since university excellence postgraduate programs (i.e., programs rated 6 and 7) are considered benchmarks in quality (Hostins, 2013) and concentrate funding and prestige in the country (Horta; Moraes, 2005), investigating the possible effects of practices contrary to science on students in programs rated 7 could be especially useful to estimate the extent to which they influence and impact the training of new scientists.

Method

Considering the objectives of the current research, an exploratory study was conducted. According to Gil (2008), investigations of this nature focus on new or little-studied phenomena and aim to produce information that helps to characterize, in general terms, these events. This research (CAAE: 89979618.3.0000.5398; approval opinion number: 2,712,777) was attended by 10 doctoral students enrolled in grade 7

postgraduate programs (PPG) in the state of São Paulo and who were, in 2020, scholarship holders from the São Paulo Research Foundation (FAPESP). To select the informants, all the PPG with a score of 7 in the state of São Paulo were initially identified and, subsequently, 10 programs were randomly selected. One student from each PPG was selected; this selection was made through information available on the FAPESP Virtual Library website. We sought to select students with ongoing doctoral scholarships who belonged to the selected PPG and who had completed at least four semesters of the doctoral course. Among the respondents, five are female and five are male; and they belonged to different areas of knowledge: Physiotherapy, Zoology, Pharmacy, Chemistry, Physics, Electrical Engineering, Literature, Animal Biology, Economics, and Philosophy.

Participants were contacted and invited to participate in the study by email, and then took part in semi-structured interviews between May and June 2020. The questions compiled for the conversation were: (i) In your opinion, do the current characteristics of the Brazilian scientific context, which involve budget cuts and the cancellation of calls for proposals and grants, affect your scientific training? If so, how do they affect it?; (ii) In your opinion, considering the national and international scientific scenario, does the growth of denialist and anti-scientific practices (such as the anti-vaccine and flat-earth movements) affect your scientific and academic training? If so, how does it affect you?; and (iii) What are your prospects for the future? The interviews were conducted via Skype and only began after the informants had read and signed the Informed Consent Form. With the consent of the interviewees, all interviews were recorded and later transcribed. A non-naturalistic transcription (Azevedo et al., 2017) of the collected data was performed, which especially preserved the informative content of the conversation and omitted idiosyncrasies of speech (e.g., pauses, fillers, repetitions of phrases, encouragements, false starts).

The data were then subjected to a categorical analysis. According to Caregnato and Mutti (2006), an assessment of this nature involves breaking down the transcribed text into units and reorganizing it into thematic categories, considering the similarity of content between its components. In the current study, data analysis involved the execution of three stages. In the first stage, a familiarization reading of the transcripts was carried out, with a view to identifying excerpts in the reports describing possible effects of the budget crisis, denialism, and anti-science on the training of the respondents, and the identified excerpts were selected (dismemberment stage). In the second stage, the selected reports were grouped by similarity, systematized, and named with expressions that highlighted the identified effects (reorganization stage); at this point, six thematic categories were created related to access to training activities, financial insecurity, academic performance, the social prestige of academic professions, emigration, and giving up the scientific-academic career. In the third stage, the descriptions of these effects were interpreted through an articulation with texts on the topics of interest (interpretative stage).

Results

In this section, a systematization of the informants' reports will be presented regarding the impacts of the budgetary crisis in Brazilian science and the effects of the expansion of scientific denialism and anti-science in Brazil on *stricto sensu* education. These effects were formulated based on an examination of the participants' responses to the questions asked during the interviews. The presentation of the results will be illustrated with excerpts from the respondents' statements that help to exemplify and give concreteness to the phenomena described – the informants will, from now on, be identified by a mnemonic notation formed by the letter P (i.e., Participant) and a number from one to 10. In general terms, six effects were identified: reduced access to training activities; financial insecurity; impairment academic performance; loss of social prestige of the academic career; emigration; and withdrawal from the academic career – which will be described in separate subsections.

Reduced access to training activities

According to the data collected, the budgetary setback in the area of S&T has resulted in a reduction in the number and variety of training activities offered by postgraduate programs. That is, with fewer resources available, master's and doctoral programs have reduced the number of spaces dedicated to teaching and student learning. As Participant 1 exemplifies (P1):

Now, the postgraduate program, for example, doesn't have the money to pay for English courses, these things that are a little bit outside of what they officially need to do, right, so there's no money for these things, there's no money to invite speakers to come here, to organize events within the institute (P1).

Furthermore, the release of resources by state research funding agencies to finance certain types of training activities has also become infrequent in the current scenario – and, without the release of these resources, access to such activities is made impossible. Participant 2 (P2) reports that he made “a request to FAPESP for a scholarship abroad [...] and this month they responded to me, saying that my proposal was canceled because they have no idea of [...] FAPESP's financial stability”. P2 refers to a research internship abroad that was included in his project and that would have implications both for the research he was conducting and for his scientific training. As the agency did not release the funds, the development of this activity by the participant became unfeasible.

Additionally, according to the data, disinvestment in the area of S&T may make it impossible for *stricto sensu* students to continue their training in post-doctoral internships. According to Participant 3 (P3):

If I want to do a postdoctoral degree, right, I depend on a scholarship. So, all this confusion about cuts affects whether I want to continue, for example, doing a post-doctoral fellow, because there will be fewer scholarships, so it will be much more competitive, it will be much more difficult to get a scholarship to do a postdoctoral fellow (P3).

Among the 10 participants, three (i.e., P1, P2, and P3) cited reduced access to training activities as one of the effects of the budget crisis in Brazilian science. As seen, this reduction is expressed in the decrease in the number of activities offered by the programs, the non-funding of training activities by funding agencies, and the insufficient number of scholarships available for post-doctoral studies.

Financial insecurity

According to the information collected through the interviews, financial insecurity is one of the effects of the current scenario on the training of doctors. Among the 10 informants, this effect was highlighted by Participant 4 (P4) and Participant 5 (P5). In the words of the interviewees:

You start a research project, you have a plan [...]. And then you lose that scholarship, you know, your whole life is disorganized, because you no longer live with your parents, many of you have left your city, gone to another city, so the only option is for you to work outside of your course [...]. So [it affects your mental health], both in terms of not knowing what tomorrow will be like, you don't know if you'll get a grant tomorrow, you don't know if you'll be supported tomorrow, and you have to worry about things other than your line of research, which shouldn't be (P4).

As I said, right, about the scholarship issue, just like a simple negative review of an article can discourage a scientist from following their path, imagine the lack of funding – that's much more serious, right? And another thing, the big issue of setting up an entire scientific apparatus in Brazil without stability for the researcher. Is very complicated because the guy, who may have the greatest potential in the world to be a very good scientist, sometimes he will not dedicate himself due to something as basic as not having recognition of financial stability (P5).

In addition to financial insecurity impacting the mental health of postgraduate students, generating, for example, anxiety, lack of motivation, and frustration, in the previous excerpts, P4 and P5 also emphasize the incompatibility between the lack of financial stability and the requirements for training doctoral students. In other words, according to those interviewed, another consequence of the lack of investment in Brazilian science is that it makes it impossible for students to dedicate themselves exclusively to the commitments of *stricto sensu* courses – which alludes to the third effect identified: the impairment of academic performance.

Impaired academic performance

The information collected through the participants' reports also suggests that the budget crisis in national science is harming the performance, productivity, and quality of the work of postgraduate students. As exemplified by P1:

So, it's really, really sad. It discourages you, like, it ends up disheartening you, it ends up discouraging you, making you more [...] disheartened, so your research ends up being affected, whether you like it or not. You end up having less, like, determination to do things, because you start, not that we do this for gains and such,

but you start to see that there are more, many more obstacles in the way than anything else, it discourages you, it doesn't make you, like, want to overcome as many obstacles as you did before, you know (P1).

Similar to P1, Participant 6 (P6) asserts that, under current conditions, “[you] feel discouraged about continuing to dedicate yourself so much to a business that may not yield a return”. Participant 7 (P7) states that the disinvestment in Brazilian S&T “directly affects our perspective, it directly affects the subjective aspect of our work, that is, our desire for this work, and this certainly shows in our research”. Thus, three (i.e., P1, P6, and P7) of the 10 participants reported the impairment of their academic performance as an effect of the current scenario.

Loss of social prestige of the academic career

For at least two participants, in Brazil, the budgetary setback in the area of S&T and the expansion of scientific denialism and anti-science are linked to a process of discrediting and loss of social prestige of the academic career. That is, if previously the choice for this career and the professional exercise of scientific work and teaching were socially valued, in the second and third decades of the 21st century, academic training and performance have been, according to the people interviewed, frequently undervalued and the targets of various hostilities. In the evaluation of P6 and Participant 8 (P8), respectively:

If the most basic and obvious things are denied, it is difficult to think that my [scientific] work [...] will have any practical effect. So, it ends up giving us a feeling that nothing we are doing matters much, because no one will read it and everyone believes in themselves, so it is more of an internal discouragement than anything else (P6).

I think that the fact that we are in a country that doesn't prioritize what we do is very frustrating, right? Both in terms of the process itself, at this moment when we are still doing our research, and in our insertion after that. [...] collectively we are being struck all the time, right, all the time we are asking ‘please, let me live doing what I like to do, what I believe in’ (P8).

For the people interviewed, this lack of prestige and the discreditation also lead to the frustration of life projects; this is because the prospects of recognition, professional insertion, and adequate remuneration after completing the doctorate are frustrated. In the words of P8: “I’ve been investing in this for 14 years, it’s a life project, I believe in it! And you have to believe it on your own, right, because you don’t have public or government support for it. So the whole situation is very sad”.

Emigration

According to data collected during the interviews, the emigration of scientists abroad is another effect associated with the budgetary crisis in national science and the growth of denialist and anti-scientific practices in the country. According to three of the 10 informants, the current political and economic conditions are incompatible with the

practice of the professions learned in postgraduate studies in Brazil. For the interviewees, faced with this scenario, the alternative is to seek professional opportunities in other countries. The excerpts reproduced below are emblematic:

My goals for the future are to teach at a public university, to continue researching [...] and to continue training academics, and to improve even more. Now, the perspectives are a little different from the goals. I'm not really sure, for example, if it would be worth staying in Brazil or going to another country. Because research here is very undervalued (P4).

The prospects as a researcher: I have, at the moment, like, I want to, in the short term, I know I want to leave Brazil, right, to follow, to continue my scientific career, right? I want to do a post-doctorate abroad, because I think there will be many more opportunities for me abroad, but in the long term, I really want to return to Brazil, because I feel this, this civic duty (the participant laughs briefly) to my country, and I really like Brazil (Participant 9 [P9]).

I'm thinking about going abroad – it's difficult, right? Because it's bad, it's very sad, because the country, the people invested in me, so even if I'm not an excellent scientist, I already have knowledge that was generated, that was acquired because of public money. I always wanted to stay in Brazil, because I lived abroad for a while, and so, we identify, you know, with our place and so on. If I had working and employment conditions, and also respect, you know, [...] I wouldn't give up my country (Participant 10 [P10]).

It is important to note that, for the three participants, leaving the country would not have been considered if the conditions were different. P9 and P10 even mention the existence of a commitment to Brazilian society: As they received scholarships for their master's and doctoral degrees, the participants believe that it is necessary to work in the national territory to return the investment that was made to society – but the current conditions do not allow for this work.

Withdrawal from the academic career

For one of the 10 interviewees, the incompatibility between the country's political and economic conditions and the professional practice of scientific work and teaching implies giving up an academic career. According to the informant, in the current context,

Instead of thinking 'look, I'm going to finish my doctorate and go on to Higher Education', I'm going to say 'I'm going to finish my doctorate and I can do something else that has nothing to do with [my area of training], and I have to prepare myself for that so that I don't die of hunger', let's say, in the worst case, it would be that (P7).

After dedicating his higher education (i.e., undergraduate, master's, and doctorate) to a specific discipline, P7 clarifies that he is studying for a second degree, which is not related to his previous education. According to P7, this professional change and the abandonment of the academic career is an attempt to “anticipate some issues and prepare myself for what we see as the dismantling of a career” and to secure resources for his subsistence.

Discussion

The characterization of the effects of the budget crisis and the growth of denialist and anti-scientific practices on the training of participants makes it possible to specify in what terms these events challenge the advancement or even the survival of Brazilian science and postgraduate studies. The effects identified show, for example, that the context at the time of the study imposed losses on the scope of *stricto sensu* training, the quality of work produced in postgraduate studies, and professional performance, in Brazil, of future masters and doctors.

The scope and quality of human resources training in master's and doctoral courses is, for example, hampered by reduced access to training activities and financial insecurity. The first effect becomes relevant when analyzed in light of the process of curricular constraint to which master's and doctoral courses have been subjected since the 1990s. With the implementation of the current evaluation model for *stricto sensu* programs in the 1996-1997 biennium, the average time for masters and doctorate degrees began to be regulated by Capes (Kuenzer; Moraes, 2005). More specifically, the distribution of resources by the agency became contingent on the training time required by programs to complete the graduation of their students. Under these conditions, *stricto sensu* courses have compacted their curricula and shortened the training of human resources at this level of education (Kuenzer; Moraes, 2005). Since then, according to Barata (2019), there has been a progressive reduction in the supply of subjects and other training activities. As a result, in current PPGs, "there is practically no space for broad theoretical and methodological training, with students limited to the more technical aspects of research reproduction" (Barata, 2019, p. 3). Considering the data collected, the budgetary crisis in Brazilian S&T may accentuate the lack of training spaces already reported in *stricto sensu* courses and harm the quality of human resources trained in these spaces (Barata, 2019; Kuenzer; Moraes, 2005). With fewer resources, PPGs reduce the variability and supply of training activities and funding agencies reduce the frequency with which they fund the actions requested by their beneficiaries.

At the national level, the budgetary setback in S&T is also characterized by the budgetary instability imposed on the area (Tollefson, 2019; 2020). The consecutive cuts and frequent contingency of resources in the scientific and technological fields generate financial insecurity for scientists and postgraduate students, as there is no guarantee that the commitments made by funding agencies will be honored. In *stricto sensu* courses, this insecurity is especially reflected in the impossibility of guaranteeing that scholarships will be paid on the scheduled dates (G1, 2022; Tollefson, 2019, 2020). In the literature, financial security is considered a *sine qua non* element to ensure the adequate training of master's and doctoral students and the completion of *stricto sensu* courses within the scheduled period (Holley; Caldwell, 2012; Reis; Blundi; Silva, 2020; Santos; Perrone; Dias, 2015). On the other

hand, financial insecurity is incompatible with students' exclusive dedication to their postgraduate routine, and can frustrate academic and professional projects and encourage student dropout. This is because scholarships are often the main means of subsistence for postgraduate students, and without guarantees regarding their payment, master's and doctoral students are exposed to various economic vulnerabilities (Reis; Blundi; Silva, 2020; Santos; Perrone; Dias, 2015). According to Reis, Blundi and Silva (2020), financial insecurity has a decisive impact on the routine, practice, and performance of postgraduate students, destabilizing and disorganizing their academic activities. In this way, it imposes losses on both *stricto sensu* training and the quality of the work produced.

As seen, the impairment of academic performance was also identified as one of the effects of the current scenario on the training of doctors. In light of the data collected, the disinvestment in S&T and the expansion of scientific denialism and anti-science in the country have increased the response cost involved in executing the activities proposed by the programs; and, concomitantly, satisfaction related to their development and execution has decreased. Together, these two factors can reduce the likelihood of master's and doctoral students engaging in the activities required by the routine of postgraduate studies. In this case, the political-economic context in question can ultimately contribute to the delay or non-compliance – by students – with the curricular requirements imposed by the programs.

The limits imposed by the current scenario on the professional performance of future masters and doctors are related, according to the data collected, to the loss of social prestige of the academic career. In view of this, emigration and abandonment of academic-scientific professions emerge as alternatives. Since *stricto sensu* courses aim to train professionals to work in the academic context (Almeida Júnior et al., 2005), the inclusion of masters and doctorates in higher education institutions is compatible with the educational objectives of these courses. In the 21st century, however, there is an inconsistency between the training of human resources in master's and doctoral degrees and the opportunities that graduates have to effectively practice the professions they have learned. In 2017, the formal employment rate of doctoral graduates in Brazil was 72.3% – the lowest rate recorded since 2010 (Centro de Gestão e Estudos Estratégicos [CGEE], 2019). According to the CGEE (2019), the remaining 27.7% could not be automatically interpreted as an unemployment rate, since these graduates may be, for example, working as freelancers or in post-doctoral internships.

Following Mattos (2012), it is possible to question this analysis proposed by the CGEE (2019). The extension of schooling, through post-doctoral internships, can be understood as a strategy to combat unemployment. Under the current budget cuts in the area of S&T (Fernandes, 2022; Ipea, 2021), however, this option does not seem to be available either – as P3 and P7 acknowledged during the interviews. In this sense, more recent journalistic publications denounce the existence of unemployment among doctors (Andrade, 2024; Sayuri, 2018)

and the underutilization of scientists in the country (Carrana, 2021; Silveira, 2021b) – who, in order to survive, accept incompatible or below-qualified positions. Furthermore, as reported, Brazilian researchers have been increasingly exposed to hostile conditions that threaten not only their financial and institutional security (e.g., Escobar, 2021; Hallal, 2021), but also their physical and psychological integrity (Escobar, 2021; Stevanim, 2021).

In this context, the emigration of Brazilian scientists abroad – commonly referred to as the brain drain – and the abandonment of academic careers emerge as adaptive possibilities. Although the actual numbers involved in the brain drain are still unknown, it is estimated that between 3,000 and 35,000 scientists have left the country in the last two decades (Andrade, 2024). This group includes both students who went to conclude or complete their *stricto sensu* training abroad and remained in the destination countries, as well as Brazilians who emigrated in search of opportunities or better working conditions in the S&T area (Andrade, 2024). It is worth noting that the movement of scientists to other countries (Galvo-Castro; Cordeiro; Goldenberg, 2022; Quintans-Jnior et al., 2020) has long-known deleterious effects (Berlinck; San’Anna, 1972). With the departure of these highly qualified professionals, the public resources invested in training these personnel may not be adequately returned to Brazilian society; in addition, with fewer scientists working in the national territory, the country’s own scientific and technological development is put at risk and the achievement of scientific and technological sovereignty is postponed (Berlinck; San’Anna, 1972; Quintans-Jnior et al., 2020). Individuals giving up on an academic career has similar consequences for Brazil. On an individual level, in turn, abandoning the professions learned in *stricto sensu* courses is related to the frustration of life projects after years of dedication to higher education. Thus, it can be considered as one of the ultimate effects of the budget crisis in S&T and the expansion of scientific denialism and anti-science in the training of doctoral students.

From this analysis, it is worth highlighting one aspect that permeates all the effects mentioned: the suffering of doctoral students. During the interviews, this suffering could be identified not only in the participants’ accounts, but also in their facial expressions and gestures. In the excerpts reproduced, it is particularly suggested by the respondents’ mention of feelings of sadness (P1, P8, and P10), frustration (P8), and discouragement (P1 and P6). Since these conditions are under control of agents external to the PPG, the events involved are also characterized by being mostly uncontrollable (Samelo, 2012). In other words, the occurrence of these hostile events is not, in general, affected by the actions of the students within the scope of *stricto sensu* courses; and this condition of uncontrollability can further intensify or exacerbate the suffering of these students.

In summary, the results of the current study show that the effects of disinvestment in the area of S&T and the expansion of scientific denialism and anti-science do not only affect those who are directly af-

fectured by these events (e.g., those who had their scholarships discontinued or who had the results of their own studies negated). As seen, even though they were not directly exposed to them, participants reported how these events influence and modify their routines in postgraduate studies. As a result, it is possible to assume that these phenomena are also able to act on potential entrants to *stricto sensu* courses: with the loss of the social prestige of the academic career, fewer people may be interested in master's and doctoral degrees. In fact, a decrease in the number of new entrants to postgraduate courses has already been noted in recent periods (Palhares, 2022).

The results obtained in this research also demonstrate that practices contrary to science and the impacts associated with them even affect students enrolled in programs of excellence that, admittedly, concentrate financial and symbolic capital within the National Postgraduate System (Horta; Moraes, 2005; Hostins, 2013). In other words, despite the privileges enjoyed by the PPG best evaluated by CAPES, the effects of the attacks on national science also extend to them. Throughout the interviews, the 10 participants mentioned the deleterious consequences of these events on their own training (e.g., P1, P2, P3, P6, P7, P8, P9, and P10) and on *stricto sensu* training in general (e.g., P4 and P5). Since they belong to different areas of knowledge, the data collected from respondents also support the analysis that the budgetary setback in S&T and the expansion of scientific denialism and anti-science impact Brazilian postgraduate studies as a level of education (Escobar, 2021; Oliveira et al., 2020; Quintans-Júnior et al., 2020; Tollefson, 2019) and not just specific areas or PPG. This generality is yet another element that signals the risks that the political-economic conditions of the 21st century impose on the survival of Brazilian scientific culture.

It is worth noting that scientific denialism, anti-science, and the budgetary crisis of national S&T can also be analyzed in light of anti-intellectualism. For Hofstadter (1963), in a seminal work on the subject, anti-intellectualism is a phenomenon whose emergence can be identified at different moments in the history of humanity and which, because it is multifaceted, resists an unequivocal conceptualization. Furthermore, for the author, anti-intellectual practices converge, as a rule, in their resentment and suspicion towards the academic *ethos* and the representatives of this *ethos*, as well as in their "constant disposition to minimize the value" of the process and products of intellectual/academic activity (Hofstadter, 1963, p. 7). Thus, anti-intellectualism involves an aversion to abstraction, the use of reflective and analytical reasoning, and actions that seek to undermine the credibility of institutions, professionals, and academic knowledge (Stanley, 2022; Szwako, 2022). According to Szwako (2022), denialism, anti-science, and anti-intellectualism are phenomena with common properties, but a relationship of comprehensiveness is observed between the latter and the former.

In the Brazilian case, the anti-intellectualism observed during the military dictatorship (1964-1985) emerged again in the 2010s and early

2020s. In its 21st century version, it is characterized, especially, by campaigns to discredit and devalue public universities and the actors involved (Reis; Senra, 2021; Szwako, 2022). In 2019, for example, Abraham Weintraub, the then Minister of Education, accused Brazilian universities of chaos, suggesting that no virtuous teaching, research, and extension activities were being developed in these spaces (Szwako, 2022). Likewise, the worsening of the budgetary crisis in national science and technology, with the arrival of the far right in Brasília in 2019, can be associated with an anti-intellectualist agenda of the then government (Quintans-Júnior et al., 2020; Reis; Senra, 2021; Szwako, 2022; Tollefson, 2019). As P8 summarizes, in current times, “we are experiencing an acute crisis of aversion to everything that is in the order of the intellect, to everything that is in the order of thought”.

Stanley (2022) chooses anti-intellectualism as one of the characteristics of fascist politics. According to the author, the role of formal education in this policy is to facilitate the transmission of information that meets fascist interests and premises, such as information that worships a mythical and traditional past and that reaffirms the social roles attributed to the sexes; that promotes irrationalism and intolerance towards sexual and racial diversity; and that incites and maintains the division of the population between “us” and “them”. Since formal education often privileges plurality in its spaces, it becomes a target of attacks and hostilities; university autonomy is, from this perspective, a threat to be neutralized. The attempts of the Brazilian far right to restrict the autonomy of public universities in recent years (e.g., Duarte; César, 2020; Galvão-Castro; Cordeiro; Goldenberg, 2022; Saldaña, 2021) can, in this sense, be interpreted as another characteristic of anti-intellectualism and fascist politics in the country.

As Campos and Bernades (2022) explain, although the classification of current political frameworks as fascism is controversial, it is necessary to recognize that fascist policies can be implemented even if the state is not actually fascist. For Campos and Bernades (2022), Reis and Senra (2021), and Barroco (2022), there is a coincidence between government actions carried out during the 2019-2022 four-year period and fascist government tactics – with anti-intellectualism being an emblematic example. Thus, the effects – identified in this study – of denialism, anti-science, and the budget crisis of S&T on *stricto sensu* education can also be understood as effects of anti-intellectualism or fascist politics on the education of doctors. As has been repeated, such effects threaten the future of national science and postgraduate studies.

Final considerations

Given that *stricto sensu* postgraduate studies are part of a context characterized by budgetary setbacks in the area of S&T and the expansion of scientific denialism and anti-science (Duarte; César, 2020; Escobar, 2021; Oliveira et al., 2020; Quintans-Júnior et al., 2020), the current study sought to deepen the description of the effects of this scenario on the training of doctoral students, highlighting the perspective

of the students themselves regarding these impacts. The data obtained demonstrate that these phenomena affect even those not directly exposed to budget cuts and denialist and anti-scientific practices. Taken together, the effects observed in relation to these events involve: reduced access to training activities, financial insecurity, impairment academic performance, loss of social prestige of the academic career, emigration, and withdrawal from the academic career, with such effects being permeated by the suffering of doctors in training. It is important to note that most of these effects can converge to weaken scientific practices in the country; the exodus of scientists abroad and the abandonment of academic careers even contribute to decreasing the number of scientists working in Brazil. Such consequences – which can also be interpreted as consequences of national fascist policies – directly threaten the survival of the national scientific culture (Quintans-Júnior et al., 2020).

As mentioned, with the defeat of the far right in the presidential elections of October 2022, there is an expectation that budget cuts in the area of S&T will be reversed and that Brazilian science will enter a more prosperous period (Pagno, 2022). In addition to systematic and continuous investment in S&T, however, it will be necessary to develop public policies that ensure that graduates of doctoral courses remain in Brazil (Quintans-Júnior et al., 2020) and enter the job market. It will also be necessary to develop policies that make academic professions attractive again (Palhares, 2022), and identify ways to curb and reverse, in the country, the growth of denialist, anti-scientific practices (Hotez, 2020), and, ultimately, anti-intellectual practices (Szwako, 2022).

Finally, it is worth noting that this study has limitations related to the small number of participants, the characteristics of the sample (Grade 7 PPG students and scholarship holders) and the use of verbal reports as the basic data for analysis. Future research, based on different methods, could advance the discussions initiated here. It is important, for example, to assess the effects of budget cuts and the expansion of scientific denialism and anti-science on students enrolled in programs with other grades (e.g., PPG with grade 3, 4, 5, or 6), on master's students, and on students who were directly exposed to these events. It may also be relevant to investigate the occurrence of anti-scientific and denialist practices among *stricto sensu* students themselves.

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References

ALMEIDA JÚNIOR, Antônio Ferreira et al. Parecer CFE no 977/65, aprovado em 3 dez. 1965. *Revista Brasileira de Educação*, v. 30, p. 162-173, 2005. Disponível

em: https://www.researchgate.net/publication/250989251_Parecer_CFE_n_97765_aprovado_em_3_dez_1965. Acesso em: 13 maio 2025.

ANDRADE, Rodrigo de Oliveira. Brazil's plan to lure 1000 expat scientists back home faces criticism. **Science**, 8 May 2024.

AZEVEDO, Vanessa et al. Transcrever entrevistas: questões conceituais, orientações práticas e desafios. **Revista de Enfermagem Referência**, n. 14, p. 159-168, 2017. Disponível em: https://rr.esenfc.pt/rr/index.php?module=rr&target=publicationDetails&pesquisa=&id_artigo=2715&id_revista=24&id_edicao=114. Acesso em: 13 maio 2025.

BALBACHEVSKY, Elizabeth. A pós-graduação no Brasil: novos desafios para uma política bem-sucedida. In: BROCK, Colin; SCHWARTZMAN, Simon (Org.). **Os desafios da educação no Brasil**. Rio de Janeiro: Nova Fronteira, 2005. p. 275-304. Disponível em: https://www.researchgate.net/publication/237073967_A_pos-graduacao_no_Brasil_novos_desafios_para_uma_politica_bem-sucedida. Acesso em: 13 maio 2025.

BARATA, Rita Barradas. Mudanças necessárias na avaliação da pós-graduação brasileira. **Interface**, v. 23, e180635, p. 1-6, 2019. Editorial. Disponível em: <https://www.scielo.br/j/icse/a/gBkWRwqC5svbVNL3R8QN4sx/>. Acesso em: maio 2025.

BARROCO, Maria Lúcia. Direitos humanos, neoconservadorismo e neofascismo no Brasil contemporâneo. **Serviço Social & Sociedade**, n. 143, p. 12-21, 2022. Disponível em: <https://www.scielo.br/j/ssoc/a/zjrwPzBctDGqj84D74Vg4cv/?format=pdf&lang=pt>. Acesso em: 13 maio 2025.

BERLINCK, Manoel Tosta; SAN'ANNA, Vanya. A "evasão de cérebros" brasileiros para os Estados Unidos da América: análise da situação sugestões para uma política de retorno. **Revista de Administração de Empresas**, v. 12, n. 2, p. 13-23, 1972.

BRASIL. Ministério da Educação. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. **Plano nacional de pós-graduação (PNPG) – 2005-2010**. Brasília, DF: CAPES, 2004.

BRASIL. Ministério da Educação. Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. Comissão Especial de Acompanhamento do PNPG 2011-2020. **Evolução do SNPG no decênio do PNPG 2011-2020**. Brasília, 2021. 208 p.

CAMPOS, Carmen Hein; BERNARDES, Márcia Nina. Ideologia de gênero e o Ministério da Mulher, da Família e dos Direitos Humanos. **Revista Estudos Feministas**, v. 30, n. 3, p. 1-13, 2022. Disponível em: <https://www.scielo.br/j/ref/a/43NqLDdCy6Gjzb8BSPfJf5H/?format=pdf&lang=pt>. Acesso em: 13 maio 2025.

CAREGNATO, Rita Catalina Aquino; MUTTI, Regina. Pesquisa qualitativa: análise de discurso *versus* análise de conteúdo. **Texto & Contexto - Enfermagem**, v. 15, n. 4, p. 679-684, 2006. Disponível em: <https://www.scielo.br/j/tce/a/9VBbHT3qxByvFCtbZDZHgNP/?format=pdf&lang=pt>. Acesso em: 13 maio 2025.

CARRANÇA, Thais. Desemprego no Brasil da pandemia: doutor em engenharia espacial vende doces. **BBC News Brasil**, São Paulo, 12 maio 2021. Disponível em: <https://www.bbc.com/portuguese/brasil-57035017>. Acesso em: 21 maio 2023.

CENTRO DE GESTÃO E ESTUDOS ESTRATÉGICOS. **Brasil: Mestres e Doutores 2019**. Brasília: CGEE, 2019. Disponível em: <https://mestresdoutores2019.cgee.org.br>. Acesso em: 21 maio 2023.

DUARTE, André de Macedo; CÉSAR, Maria Rita de Assis. Negação da política e negacionismo como política: pandemia e democracia. **Educação & Realidade**, v. 45, n. 4, e109146, p. 1-22, 2020.

ESCOBAR, Hertton. 'A hostile environment.' Brazilian scientists face rising attacks from Bolsonaro's regime. **Science**, 7 Apr. 2021. Disponível em: <https://doi.org/10.1126/science.abi8999>. Acesso em: 21 maio 2023.

FERNANDES, Samuel. Cortes diminuem bolsas de pesquisa e prejudicam publicações científicas. **Folha de São Paulo**, São Paulo, 24 jan. 2022. Disponível em: <https://www1.folha.uol.com.br/ciencia/2022/01/cortes-diminuem-bolsas-de-pesquisa-e-prejudicam-publicacoes-cientificas.shtml>. Acesso em: 21 maio 2023.

G1. Após novos bloqueios, Capes diz não ter como pagar mais de 200 mil bolsas de mestrado e doutorado. **G1**, 06 jan. 2022. Disponível em: <https://g1.globo.com/educacao/noticia/2022/12/06/apos-novos-bloqueios-capes-diz-nao-ter-como-pagar-200-mil-bolsas.ghtml>. Acesso em: 21 maio 2023.

GALVÃO-CASTRO, Bernardo; CORDEIRO, Renato Sérgio Balão; GOLDENBERG, Samuel. Brazilian science under continuous attack. **The Lancet**, v. 399, n. 10319, p. 23-24, 2022.

GIL, Antônio Carlos. **Métodos e técnicas de pesquisa social**. São Paulo: Editora Atlas, 2008.

GORZIZA, Amanda. (2022, 04 de agosto). Sem blindagem para a ciência. **Revista Piauí**, 04 ago. 2022. Disponível em: <https://piaui.folha.uol.com.br/sem-blindagem-para-ciencia/>. Acesso em: 25 maio 2023.

HALLAL, Pedro. SOS Brazil: science under attack. **The Lancet**, v. 397, n. 10272, p. 373-374, 2021.

HOFSTADTER, Richard. **Anti-intellectualism in American Life**. New York: Alfred A. Knopf, 1963.

HOLLEY, Karri; CALDWELL, Mary Lee. The challenges of designing and implementing a doctoral student mentoring program. **Innovative Higher Education**, v. 37, n. 3, p. 243-253, 2012.

HOLTON, Gerald James. **Science and anti-science**. Cambridge, MA: Harvard University Press, 1993.

HORTA, José Silvério Baía; MORAES, Maria Célia Marcondes. O sistema CAPES de avaliação da pós-graduação: da área de Educação à grande área de Ciências Humanas. **Revista Brasileira de Educação**, n. 30, p. 95-116, 2005. Disponível em: <https://www.scielo.br/j/rbedu/a/M8tTt3grZhXGmcXmJrVmTfd/?format=pdf&lang=pt>. Acesso em: 14 maio 2025.

HOSTINS, Regina Célia Linhares. Formação de pesquisadores em programas de excelência de pós-graduação em educação. **Revista Brasileira de Educação**, v. 18, n. 53, p. 415-498, 2013. Disponível em: <https://www.scielo.br/j/rbedu/a/Cm8PCtJW8GV7g6qgPqywGTh/?format=pdf&lang=pt>. Acesso em: 14 maio 2025.

HOTEZ, Peter. Combating antiscience: are we preparing for the 2020s? **PLOS Biology**, v. 18, n. 3, e3000683, p. 1-6, 2020.

IPEA. Diretoria de Estudos e Políticas Setoriais de Inovação e Infraestrutura. **Nota técnica**. Políticas públicas para ciência e tecnologia no Brasil: cenário e evolução recente. Brasília: IPEA, 2021.

JORNAL NACIONAL. Em vídeo, Damares Alves diz que igreja evangélica perdeu espaço nas escolas para a ciência. **G1**, 09 jan. 2019. Disponível em: <https://g1.globo.com/politica/noticia/2019/01/09/em-video-ministra-dos-direitos-humanos-critica-adocao-da-teoria-da-evolucao-nas-escolas.ghhtml>. Acesso em: 21 maio 2023.

KUENZER, Acacia Zeneida; MORAES, Maria Célia Marcondes. Temas e tramas na pós-graduação em Educação. **Educação & Sociedade**, v. 26, n. 93, p. 1341-1362, 2005. Disponível em: <https://www.scelo.br/j/es/a/NCGYCZkVyFqBNwCTJnjWJ8x/?format=pdf&lang=pt>. Acesso em: 14 maio 2025.

MATTOS, Valéria de Bettio. **Trajetórias profissionais de mestres e doutores egressos da Universidade Federal de Santa Catarina**: inserção no mundo do trabalho. 2012. 234 f. Tese (Doutorado em Educação) – Programa de Pós-graduação em Educação, Universidade Federal de Santa Catarina, Florianópolis, 2012.

MONTEIRO, Marko. Science is a war zone: some comments on Brazil. **Tapuya: Latin American Science, Technology and Society**, v. 3, n. 1, p. 4-8, 2020.

MOREIRA, Rudá; NUNES, Ana Carolina. Documento da Saúde defende efetividade da cloroquina. **CNN Brasil**, São Paulo, Brasília, 22 jan. 2022. Disponível em: <https://www.cnnbrasil.com.br/saude/documento-da-saude-defende-efetividade-da-cloroquina/>. Acesso em: 21 maio 2023.

OLIVEIRA, Eduardo et al. Science funding crisis in Brazil and COVID-19: deleterious impact on scientific output. **Anais da Academia Brasileira de Ciências**, v. 92, n. 4, p. 1-3, 2020.

PAGNO, Marina. Lula terá que 'reconstruir' ministério da Ciência e reverter bloqueio de fundo que pode causar 'apagão', avaliam especialistas. **G1**, 12 nov. 2022. Disponível em: <https://g1.globo.com/ciencia/noticia/2022/11/12/lula-tera-que-reconstruir-ministerio-da-ciencia-e-reverter-bloqueio-de-fundo-que-pode-causar-apagao-avaliam-especialistas.ghhtml>. Acesso em: 21 maio 2023.

PALHARES, Isabela. USP, Unesp e Unicamp formam 25% menos mestres e doutores na pandemia. **Folha de São Paulo**, São Paulo, 02 mar. 2022. Disponível em: <https://www1.folha.uol.com.br/educacao/2022/03/usp-unesp-e-unicamp-formam-25-menos-mestres-e-doutores-na-pandemia.shtml>. Acesso em: 21 maio 2023.

PASTERNAK, Natália; ORSI, Carlos. **Contra a realidade**: A negação da ciência, suas causas e consequências. Campinas: Papirus 7 Mares, 2021.

PENAFORTE, Thais Rodrigues. O negacionismo enquanto política: o debate da cloroquina em uma comissão parlamentar. **Cadernos de Saúde Pública**, v. 37, n. 7, e00023021, p. 1-13, 2021.

QUINTANS-JÚNIOR, Lucindo José et al. Brazil's research budget: endless setbacks. **EXCLI Journal**, v. 19, p. 1322-1324, 2020.

REIS, Ana Carolina; BLUNDI, Breno Alves dos Santos; SILVA, Eduardo Pinto. Desmantelamento da ciência brasileira no deliberado corte de bolsas: aspectos políticos e consequências psicossociais para estudantes de pós-graduação. **Muiraquitã: Revista de Letras e Humanidades**, v. 8, n. 1, p. 371-393, 2020.

REIS, Ronaldo Eustáquio Feitoza; SENRA, Kathy de Freitas Marinho. O anti-intelectualismo e a espiral do silêncio: A manutenção da ignorância e o medo do isolamento como estratégia política. **Ambiente & Educação**, v. 26, n. 1, p. 751-781, 2021.

SALDAÑA, Paulo. Bolsonaro desconsiderou 1º da lista em 40% de nomeações para reitor de universidades federais. **Folha de São Paulo**, Brasília, 27 jul. 2022. Disponível em: <https://www1.folha.uol.com.br/educacao/2021/07/bolsonaro>

desconsiderou-1o-da-lista-em-40-de-nomeacoes-para-reitor-de-universidades-federais.shtml. Acesso em: 21 maio 2023.

SAMELO, Mariana Januário. **Desamparo aprendido e imunização em humanos: avaliação metodológica/conceitual e uma proposta experimental**. 2012. 192 f. Tese (Doutorado em Psicologia) – Programa de Pós-graduação em Psicologia, Universidade de São Paulo, São Paulo, 2012.

SANCHES, Mariana. 'Tentam incriminar o carteiro pela mensagem', diz pesquisador do Inpe sobre demissão de diretor que criticou Bolsonaro. **BBC News Brasil**, São Paulo, 02 ago. 2019. Disponível em: <https://www.bbc.com/portuguese/brasil-49212252>. Acesso em: 21 maio 2023.

SANTOS, Anelise Schaurich; PERRONE, Cláudia Maria; DIAS, Ana Cristina Garcia. Adaptação à pós-graduação stricto sensu: uma revisão sistemática de literatura. **Psico-USF**, v. 20, n. 1, p. 141-152, 2015. Disponível em: <https://www.scielo.br/j/psuf/a/Xwwrt737WYsRk6Mb3qpC7Yc/?format=pdf&lang=pt>. Acesso em: 14 maio 2025.

SAYURI, Juliana. Com crise e cortes na ciência, jovens doutores encaram o desemprego: 'Título não paga aluguel'. **BBC News Brasil**, São Paulo, 16 jul. 2018. Disponível em: <https://www.bbc.com/portuguese/brasil-44696697>. Acesso em: 21 maio 2023.

SILVEIRA, Evanildo. Mérito científico, Bolsonaro e cloroquina. **Questão de Ciência**, 19 nov. 2021a. Disponível em: <https://www.revistaquestaoeciencia.com.br/questao-de-fato/2021/11/19/merito-cientifico-bolsonaro-e-cloroquina>. Acesso em: 21 maio 2023.

SILVEIRA, Evanildo. Triturando diplomas. **Revista Piauí**, 01 dez. 2021b. Disponível em: <https://piaui.folha.uol.com.br/triturando-diplomas/>. Acesso em: 21 maio 2023.

STANLEY, Jason. **Como funciona o fascismo**: a política do “nós” e “eles”. Tradução de Bruno Alexander. Porto Alegre: L&PM, 2022.

STEVANIM, Luiz Felipe. Efeitos da anticiência. **Radis**, 08 abr. 2021. Disponível em: <https://radis.ensp.fiocruz.br/index.php/home/entrevista/efeitos-da-anticiencia>. Acesso em: 21 maio 2023.

SZWAKO, José. Anti-intelectualismo. In: SZWAKO, José; RATTON, José Luiz (Org.). **Dicionário dos negacionismos do Brasil**. Recife: CEPE, 2022. P. 39-41.

TOLLEFSON, Jeff. 'Tropical Trump' sparks unprecedented crisis for Brazilian science. **Nature**, News in focus, v. 572, p. 161-162, 8 Aug. 2019. Disponível em: <https://www.nature.com/articles/d41586-019-02353-6>. Acesso em: 21 maio 2023.

TOLLEFSON, Jeff. Brazilian lawmakers in showdown to double science budget. **Nature**, News in focus, 19 Aug. 2020. Disponível em: <https://www.nature.com/articles/d41586-020-02433-y>. Acesso em: 21 maio 2023.

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