

Perceptions on medicalization and mental health by students aiming at university education

Percepções de estudantes que visam ao ensino superior sobre medicalização e saúde mental

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RESUMO | O aprimoramento cognitivo farmacológico refere-se ao uso de medicamentos por pessoas saudáveis para melhorar o funcionamento do cérebro e o desempenho cognitivo. Um dos medicamentos mais utilizados no Brasil com essa finalidade é o Cloridrato de Metilfenidato, que tem sido consumido por estudantes de ensino médio e superior com o objetivo de aumentarem a capacidade produtiva para cumprirem prazos e metas. Considerando que essa prática está se disseminando na sociedade, foi realizado um estudo com o objetivo de caracterizar a percepção de alunos do 3º ano do ensino médio de uma escola profissionalizante da cidade de Juazeiro do Norte (CE) sobre o uso de medicamentos para aprimoramento cognitivo. A pesquisa foi realizada por meio de dois grupos focais com a participação de 13 alunos. Os resultados apontaram que os medicamentos para aprimoramento cognitivo foram vistos inicialmente como algo positivo, que poderia ser usado às vésperas do vestibular e para ajudar nos momentos de pressão por parte dos pais e da escola. No entanto, quando tiveram a oportunidade de refletir sobre o tema, os alunos conseguiram perceber os fatores envolvidos na adesão ao uso de substâncias e o que leva os estudantes a consumi-las. Concluiu-se, neste estudo, que é importante compreender a percepção dos jovens sobre esse tema para que se possa planejar e orientar futuras intervenções.

PALAVRAS-CHAVE: Medicalização; Aprimoramento cognitivo farmacológico; *Doping* intelectual.

ABSTRACT | Pharmacological cognitive enhancement refers to the use of drugs by healthy individuals aiming at enhancing the brain functioning and the cognitive performance. One of the widely used drugs in Brazil with these aims is Methylphenidate Hydrochloride which has been used by high school and college students aiming at enhancing their productive capacity to meet deadlines and goals. Considering the dissemination of this practice in society, this study was held aiming at characterizing the perception of high-school final-year students from a vocational school in the city of Juazeiro do Norte (CE) on the use of drugs for cognitive enhancement. The research was conducted through two focus groups with the participation of 13 students. Results indicated that enhancement drugs were deemed initially as something positive that could be used on the eve of entrance examinations and help in moments of pressure from parents and school. However, when faced with the opportunity to reflect on the theme, students could perceive the factors involved in the adhesion to the use of substances and what drives them to its consumption. It is concluded in this study that it is important to understand youngsters' perceptions on this theme so that future interventions can be guided and planned.

KEYWORDS: Medicalization; Pharmacological cognitive enhancement; Intellectual doping.

Introduction

School has as its core endeavors to socialize individuals, instill culture and moral values, convey the scientific knowledge accumulated by humanity and prepare our students to work and contribute to the development of society. Recognizing these crucial roles, Brazilian law requires all children aged 4 to 17 to be enrolled in school, whether in basic, elementary or secondary education.

Upper secondary education, in particular, is considered to comprise the stage of development between the end of primary education and access to higher education. Providing upper secondary education only became an obligation of the Brazilian State in 2009, in no small part a reflection of the many challenges and contradictions the system has accumulated over the years. Chiefly among those are student access (which is not yet universal), the drop-out rate (which is very high), a lack of clear definition of the purpose of upper secondary education (should it focus on access to higher education or vocational training for work?) and poor quality, the latter thoroughly revealed by average test results.

Among the current roles of upper secondary education, one of the most valued by students and institutions alike is its preparation for higher education. Access to higher education in Brazil occurs through an entrance exam (called *Vestibular*), which often only leads to a small proportion of candidates being accepted. Failure to enter higher education institutions come as a result of several contributing elements: (a) fear of not passing the exam becomes a major source of preoccupation, leading to increased anxiety and stress symptoms and consequent poor performance on the exam itself; (b) a history of failing or low grades in primary and secondary education due to an exclusionary school system.

Heightened expectations of passing in the exam may result in the same elevated anxiety and stress symptoms mentioned above. In addition, the feeling that school has not prepared them well enough, coupled with the fear of failing and having to devote one more year of their life to preparation for the vestibular (or giving up higher education entirely and going into the job market), can lead

many upper secondary education students to resort to different strategies to succeed. One such is the use of pharmacological cognitive enhancement.

There are several ways to improve brain functioning, such as stimulating environments, learning self-regulation techniques, dietary habits, vitamins, physical exercise and psychotropic drugs. The latter, specifically being used by healthy individuals to improve brain function and cognitive performance, is often called pharmacological cognitive enhancement or intellectual doping. One reason for the use of these drugs is that they supposedly act faster than changes in study strategy, for example, since they may induce modifications in the synapses involved in cognitive networks.

One of the drugs used most often in Brazil for this purpose is methylphenidate hydrochloride, marketed in the country under the names Ritalina® or Concerta®. The drug has seen widespread use by students (both in higher and upper secondary education), entrepreneurs and health professionals aiming to increase their productive capacity to meet deadlines and goals. The substance is well known to university audiences: 94.23% of the medical students at the University Center of Volta Redonda (RJ) reported having heard of it, and 63% knew its mechanism of action (Carneiro et al., 2013). A total 35.5% of the students from the Federal University of Bahia knew other students who had used it, and 7.5% knew where to buy the drug without a prescription (Cruz et al., 2011).

Cesar et al. (2012), in a survey with university students from public and private institutions in all 27 Brazilian capitals, found a higher prevalence of methylphenidate users in the first years of humanities undergraduate degrees and in private institutions. Its use was also more frequent among those of the Midwest and South geographic regions of Brazil, as well as among those who lived in self-organized student collectives (called *Republics*) or student housing.

Tsuda and Christoff (2015) also point out that 3.13% of the medical students participating in their survey reported complications resulting from the use of methylphenidate, such as health, social, legal or financial issues, as well as that the use of the substance was a cause of concern for people

close to them. In addition, 1.56% also admitted to having been unsuccessful in their attempts to control, decrease or interrupt consumption. Despite those findings, the rest of the students did not consider its use problematic or associate any harm to the consumption of the substance, claiming that they never had any difficulty in stopping. Care should be taken with the use of these drugs, however, because they have not been sufficiently evaluated to be used for this purpose, not to mention the ethical and social implications thereof (Machado & Toma, 2016).

The subject is controversial, and has raised much debate. Advocates of the practice, such as Greely et al. (2008), argue that methylphenidate hydrochloride is a safe drug with few side effects, and that its use for cognitive enhancement is a laudable goal and a personal choice. Regulating it, they conclude, would require only a healthcare policy based on diverse sources of scientific, professional, social and educational resources, in addition to legislation. In contrast, other researchers, such as Farah and Wolpe (2004), argue that it would be unethical to deliberately improve an individual's concentration and memory, questioning the advantages of methylphenidate, since those are minimal, and reinforce that its risks are not known.

As the practice continues to gain adherents and access to the drug becomes increasingly easy, we must expand our understanding of this phenomenon, especially because it relates to teenagers (a particularly vulnerable segment of society), and all the more so because it affects them at a decisive time of their lives: admission to a higher education institution.

Any such analysis must also take into account that the main factor driving this problem – which, it must be recalled, may have consequences for the mental health of our future professionals – may lie in the very design of the admission processes for higher education, whose demand for immediate results leads parents, schools and society in general to place enormous pressure on teenagers to be successful in the entrance exam. When success doesn't come, these young people often seek prep courses in order to better prepare themselves for the next entrance exam. However, that preparation once again brings enormous pressure and may lead young people to

seek other means to achieve success, again leading to pharmacological cognitive enhancers. Later on, if they believe they have been successful because of the use of these medications, they may continue with the practice, putting at risk both their physical and mental health.

In view of the above, this study started from the following problem question: what is the perception of Brazilian students on the third (and last) year of upper secondary education on the use of drugs for cognitive improvement? Aiming to investigate this issue, we defined as our primary objective in this study to collect the perceptions on the use of drugs for cognitive enhancement from students in the third year of upper secondary education at a vocational training school in the city of Juazeiro do Norte (state of Ceará).

Our interest in this topic is also driven by the increase in prescriptions of this type of medication to children and teenagers aged 6 to 16, as well as by empirical evidence of its indiscriminate use by teenagers to enhance their performance in studies, an issue on which actual data is still relatively scarce. It is known that, while these drugs may have increased concentration as an immediate effect, they can also cause growth suppression, increased blood pressure, psychotic episodes and other symptoms in the long term (ANVISA, 2012). In addition, if they see their use as a factor of their success, students may continue to resort to them as a solution when they are unsure of an outcome they must achieve at university.

We believe that understanding young people's perceptions on intellectual doping can help develop preventive practices to mitigate it. In this context, we consider this study to be relevant for: (a) young people, due to the importance of the theme in our day and the prominence it has attained in our social context, with major avenues for access to drugs; (b) schools, which have the chance to review their practices that produce failure and lead some students to use medications in the first place; (c) society, which it will help in demystifying the idea that everyday problems can be solved with pills and that the human brain can always reach higher levels.

Methods

This research was carried out through two focus groups with the participation of 13 students from a vocational school in the city of Juazeiro do Norte (CE).

Focus groups are part of a research technique that collects data through group interactions while discussing a specific topic suggested by the researcher. It is a resource to understand the construction process of perceptions, attitudes and social representations of human groups. According to Gondim (2003), the unit of analysis of the focus group is the group itself, because when an opinion is expressed, even though it is not shared by all, it is referred (for purposes of analysis and interpretation of the results.) to as the group's opinion, formed through a shared production of senses.

This study can be classified as an intervention research, because it contemplated an ethical dimension, involving interventions marked by guiding positions and a problematization of the theme with the participants. These participants, in turn, in addition to participating in the study as active subjects, were able to educate themselves, organize, and appropriate collectively-constructed knowledge (Schmidt, 2006).

Once the educational institution that would participate in the research was defined, a first contact was made and a letter of presentation of the study was submitted explaining its objectives. Later on, the parents of the students were contacted through a letter including a description of the study to be carried out, an explanation of its risks and benefits, and information on how to send the signed Free and Informed Assent Form to the researcher if they agreed with their children's participation therein. In the classroom, the students signed the Free and Informed Assent Form. The study was carried out with the students who: were present in the classroom on the day of the group discussion; agreed to participate; and had brought the Free and Informed Assent Form signed by their parents.

During the first interaction with the class, the researcher introduced herself and invited the students to participate in discussion groups focused on what

young people think about the social pressure to pass the entrance exam and the different means used to increase study performance. The institution has four third-year upper secondary education classes, two of which were referred to us to participate in the study. Of the 49 students from the two classes that were present, 15 volunteered to participate.

The meetings were then scheduled for the following week (as allowed by the availability of the institution). They occurred in a room designated by the school's management during regular school hours (i.e. the remaining students stayed in their regular classes while those who volunteered participated in the group). On the agreed date and time, the students were invited to meet with the researcher. In addition to the researcher and the students, the group discussions were also attended by an observer who was responsible for recording the talks and noting down the names of the students who spoke for later identification. The meetings of the two groups were recorded with the permission of the participants, and then transcribed in their entirety.

Of the 15 students who had volunteered at first contact, only 9 attended the first meeting. The students were initially informed of what was involved in the research, and then asked to sign the Free and Informed Assent Form. They were also asked to respond to a questionnaire aimed at characterizing the sample. After this initial part, the researcher started the discussions. The following topics were discussed on this first day: the definitions of medicalization and medication, the medicalization of life, the relationship between abuse of technology and depression, the medicalization of learning, pharmacological cognitive enhancement, the pressure faced by young people to pass the entrance exam, intellectual doping and the entrance exam.

The second meeting occurred 2 days after the first one, also at a time set by the school management. Five students participated in this meeting, only one of which had participated in the first meeting (the other students were taking a test). This meeting addressed the following topics: a recap of the previous encounter, the Brazilian education system, the pressure of the entrance exam and pharmacological cognitive enhancement. Soon after, the students

were handed a brochure prepared by the authors containing information on the risks of consumption of these drugs and strategies to improve study performance, and the group was then dismissed. This group meeting also lasted one hour.

After the groups were finished, the recordings were transcribed and the manifestations by each student were duly identified. For organization purposes and in order to avoid personal identification of the students, the participants' sheets were placed in alphabetical order and each student was assigned a fictitious name. The remarks by the students below were lightly corrected for clarity.

It should be emphasized that this work is part of the doctoral thesis of the first author under advisement of the second. Therefore, for more information on the methodological procedures, see Trigueiro (2017).

The project was approved by the Ethics Committee of the University of São Paulo Psychology Institute and by the CONEP (National Research Ethics Commission), the latter on June 8, 2015 under CAAE (Certificate of Presentation for Ethical Review) No. 42211115.8.0000.5561.

Results

Based on the responses to the questionnaire applied to characterize the group, we verified the following: none of the students has or has ever received a prescription to use methylphenidate hydrochloride; one student knows a person who has a prescription to use methylphenidate hydrochloride; no student has tried methylphenidate hydrochloride for the purpose of improving study achievement; one student knew someone who had tried the drug for this purpose. Finally, when asked if they had read or heard about methylphenidate hydrochloride being used for this purpose, five students answered yes.

After the presentation of the participants of the group and of the methodology that would be used, the researcher read the following definition of medicalization:

Researcher: Medicalization is the name used for the process by which problems that are part of the daily life of individuals are moved into the medical field. For example, turning normal physical and psychological sensations like insomnia and sadness into symptoms of illnesses, such as Sleep Disorder and Depression. It means transforming ordinary situations like sadness - after all everyone gets sad - and determining that, in fact, all sadness is depression, even though depression is a disease and not something that happens the whole time with everyone. Within this process, there is another, called Medicamentization, which is the excessive use of medications for the relief of those sensations that are not diseases but that have been considered to be. For example, sometimes we have insomnia if we are worried about something, if we have a test the next day and we can't sleep. In the old days, people used to take a bath, have a cup of tea, turn off the lights and try to sleep. Nowadays, what do people do? They take sleeping pills, they take some other medication to get to sleep. Or, another example: when we were kids and we had the flu, someone would make us tea, or prepare a warm bath. Nowadays, we run to the drugstore and buy four or five types of medication right away.

Following this definition, students were asked to report examples of how this relates to their daily lives:

Lucas: [...] I think that, because of the pressure of day to day, people find themselves sadder, more depressed, with no reason to live. I've seen cases, in my own family, where the guy says, "I work every day from 7:00 a.m. to 5:00 p.m., and in the evening I have to study until 10. I can't have fun. Money is just enough to pay the bills." That's why people end up getting progressively sad and thinking it's depression. So they will go and take sedatives, depression pills [...] Another good example is the use of marijuana. Some people use marijuana to be on "another plane" and looking for relief from everyday life, from this sadness, lack of money, having to work every day to make that money. (Male, 17).

Mateus: Some medication treat diseases, but they can also create dependency on people who consume them. Some people are addicted to illicit drugs, but medications are also drugs, only licit ones. For example, people who take medication for any headache they have and always have the same headache again. I'd rather do it differently, not take pills and lie down, relax; because we get dependent on medication.

And this issue of depression, it's happening a lot with teenagers, who should be the happiest, but today young people are sadder, angrier, more tired, and this also increases the number of suicides. Statistics say that the number of suicides today is much higher than ten years ago, even in small towns like ours. If we look at a case of suicide and investigate thoroughly, we find out that the person was sad, even if often didn't show it. There are other things that can also influence this, like lifestyle, the workday, many factors. (Male, 17).

Julia: I don't think the right way to treat people with psychological disorders is with medication, hospitalization. It's not right to drug people because they have some disorder or because they imagine things. Sometimes I think family support alone would solve it. (Female, 17).

These testimonies show these young people perceive this phenomenon occurring in daily life and the risk they pose of bringing harm to people's lives. The students also made a connection between the abuse of technology and depression, and associated social and political issues with symptoms that are becoming increasingly common:

Mateus: I found what she said very interesting, because today advanced technology, that makes smartphones, for example, can regulate our personal relationships. For example, sometimes a group of friends goes out, everyone gets on their phone and no one talks to no one. There was this episode when a friend was wearing a headset and I couldn't talk to her. I had to text her that I was trying to get her attention so she could see it. I mean, what influence could this have, say, in depression, since a social network or anything of this kind will not fill the need for a face-to-face conversation with you...? It's a good thing, but you have to be careful, because it has a downside.

I find it very annoying. If you go out with a group of friends and everyone stays on their cell phone, it's best not to go at all, just stay home. Otherwise it gets unbearable. Because people think they are there but are on Facebook, and end up forgetting to talk. In the end you'll be left with this emptiness inside, because you have no physical connection, no eye to eye.

The new generations haven't developed this contact well, that's very sad. (Male, 17).

Lucas: I think this sounds like the case of a classmate.

She has a hard time answering when she is called up because she creates stories and stories in her head, she thinks in cartoons. Today she seems to be getting better,

because we are drawing her attention, but that's what she was like before. She didn't pay attention to any of the nine lessons we had during the day, she was always thinking about anything but the class. Even during the internship she didn't pay attention. We could talk to her a thousand times, but if she was listening to music she was already imagining a video clip for the song. That's a very complicated thing. I went to ask her why she thought she behaved that way. She thinks that this is a result of spending too much time at home and not having a good relationship with her parents. She says that her parents want to make her life hell, that she spent most of her childhood inside her room listening to music, drawing, creating stories and stuff, but never in the company of other people. This is reinforced by her living far away from everyone. So we can bring this to the present day on the issue of the media, even if this "not responding to people when you're surfing the internet" thing is not a disease, it can generate one. For example, I would spend a lot of time on my cell phone, and when I spent a lot of time on my cell phone, I kept thinking about it, who was there or not, on Facebook, WhatsApp, things like that. And that made me pay no attention to anyone who was by my side. It was generating an "attention deficit" in me. Now I rarely use the cell phone, if I'm at home I leave it inside a drawer. I talk to people in and out of the house too. It may be that it's OK at the time, but then this will generate a nuisance. (Male, 17).

Mateus: And it also has a class factor, in a sense of social class. Today, most parents have been raising their children without letting them play outside and with all these gadgets, so a 9-year-old has a tablet, a computer, an Xbox. And it's also a social group thing. For example, everyone in a group of friends has the same gadgets, and, if one of the kids doesn't have what the others have, this kid will ask their parents for it, because having those is actually necessary for this kid to be accepted into the group. This makes children hyperactive, dependent on them. Moreover, it's these habits that create a culture of individualism. So I believe that the social issue really has an influence on this, our social place, our way of life. (Male, 17).

Following that exchange, the students raised the issue of how the lack of interest by some students in school is associated with the medicalization of learning:

Julia: [...] I think school is very boring, but the more you study, the easier it gets. I like romance books, and when I read those I don't feel sleepy, which is very

different with history. It's like when you don't want to do something because it's boring, like studying, but the game is cool, so you pay attention to the game. I think it's more or less that, not a disease. (Female, 17).

Mateus: And it starts blocking the mind for some things... And for others it opens it... As you said, they can pay attention to the game, but not to classes, so the class is already being blocked out. The mind commands the whole body, and the psychological part has a lot of influence over our life. It's like someone who says they don't understand math. This is not necessarily true, they often put it in their heads that they don't understand math. I think this is not a disease. That's a psychological thing, yes, but not a disease. (Male, 17).

From the discussion on the medicalization of learning, we went on to discuss pharmacological cognitive enhancement and its relationship with the entrance exams. Students were invited to reflect on what impacts might have occurred should some candidates make use of this practice:

Lucas: In my case, I wouldn't be OK with doing it. I don't like it. But if I'm competing with someone who has taken it, and for whom this drug works... For example, if you have ten seats [for admission in a given university degree] and fifteen candidates, five are using these drugs and the other five, who studied hard, who spent maybe years trying to reach that mark, could be in tenth place because a person took the drug and you didn't? I find that unfair. (Male, 17).

Lucas: It's not worth it, but a lot of people take it because of pressure at home. The parents want the son to get into medical school, so they take the entrance exam for a medicine degree and don't want to disappoint anyone... Many young people are under pressure from parents to perform at school or the entrance exam, and feel a lot of responsibility not to disappoint their parents. In response to this, these young people will do everything they can to not disappoint; and then you know that they will not just study, that they'll seek drugs. There are also other influences at home. Like, if you finished high school and now will only study and not work, parents often become upset. Then, in order not to suffer more pressure than they already suffer at home, people resort to these remedies. And then, sometimes, they pass [the entrance exam] but it's not for themselves, it's to make their parents proud. (Male, 17).

Lucas: That's why I think it's important that we always question the use of drugs, especially illicit drugs. There are many campaigns always showing the consequences of these abuses, and I think the same should happen regarding this intellectual doping. Because people who are drugging themselves to pass these exams, they most likely don't know the consequences of the things they are taking, they know only the advantages. I only saw advantages at first. You take it to focus and you really do. But you never know if you are actually learning and, like the teacher said, there is no guarantee of results. And there are also people who can concentrate naturally, can study naturally even better than those who are concentrating because of medication. We need to have awareness campaigns about the use of these drugs, because those who don't know the side effects will only see advantages. If my parents forced me to do something, and I had no way out, I would seek the medications if I only knew the advantages and not the consequences. (Male, 17).

Lucas: You can concentrate, yes, but maybe not necessarily in your studies. That is the initial issue, being focused on games and not in your studies. I believe that every human being tends to focus on things that they like. If they like to study, they will focus on studies, if they like to read, like she does, romance books, they will be able to focus on that. So this issue of focusing on studies or not... If you don't like to study, honey, it ain't gonna happen. (Male, 17).

Based on this information, they managed to make extrapolations, as can be seen below:

Lucas: In addition, this probably also feeds an entire illegal market, because someone will always have to sell drugs; it must involve a lot of money. So the problem is not only in who takes them, but also in that whole market that it drives. And the people who belong to it don't care if you're going to have an allergic reaction, whether you're going to die or not. They just want to sell, and for a lot of money. (Male, 17)

Another interesting point was raised by one of the students regarding the Brazilian educational system and its structure of operation:

Fernando: I see this whole situation in a very educational sense. The Brazilian educational system thinks you need to attend a lot of classes to learn and in fact this is wrong, since this is a passive process and studying, in order to work, needs to be accompanied

more individually, to be active. Another thing is a Brazilian consensus that studying is boring, that those who study are boring. For example, there is an exam called PISA, which is like the ENEM [Brazil's Upper Secondary Education National Exam, a national standardized test], but at the global level. Brazil takes part in this exam and, the more countries enter the ranking, the more Brazil falls in the ranking. The Brazilian educational system doesn't work. In other countries, what they have is the integral full-time educational system, where children have classes in the morning and during the afternoon they have activities to review and reinforce what was learned in the other period. Here, the full-time school system was implemented with classes throughout the day. This makes learning impossible; everything we are learning here and now, for example, is in the limbic system, in the short-term memory area, and when we go to sleep, what is here will be "filtered" and what is really important will be taken to the cortex. For this information 'transportation' to happen, we need rest. (Male, 18).

After this reflection, the first meeting was closed, and all students were invited to return at the time scheduled for the second meeting.

The second meeting began with a recap of the previous meeting, since only one participant of the first meeting was present. From there, the entrance exam for higher education and the Brazilian education system as a whole were discussed. The students were asked about the fact that a single test is applied to students from all over Brazil in order to evaluate what they have learned in the three years of upper secondary education. To this question, they answered:

Nicolas: The test will show the content that was absorbed and the study framework that person had. If she didn't have a satisfactory framework for her studies, she will have difficulties because she didn't learn everything she should have learned. (Male, 18).

Fernando: I believe it is the same content, but with different methodology. The students in this other school focus a lot on the entrance exam. So I think that the reality of each environment, of each school, should be taken into account. A school with fewer resources may have lower-performing students. This is influenced by investments from the government, from the public administration. Thinking about it, it's unfair that

we have the same test for such different realities. (Male, 18).

Fernando: Not to mention that private school students are focused on developing specific abilities for the exam, whereas professional school students develop other abilities that will not be reflected in the entrance exam. (Male, 18).

The students were also invited to discuss the pressure involved in the entrance exam and how this may induce the use of cognitive enhancers:

Researcher: [...] When you consider this selection process fair, because everyone is doing the same test, for those who don't pass the conclusion left is that they didn't strive and didn't study enough. [...] Do you think students who feel more pressured could be more likely to resort to these medications or not?

Nicolas: I think so, because in your head you will hear this need and, in a certain way, will seek the best possible result regardless of the means. (Male, 18).

There was also a discussion about the possible association between different types of schools, different cities and the tendency to use these substances:

Nicolas: I think other places may have more information about these drugs than our city, because I myself hadn't heard of it. I think it can also happen that the person knows about the subject and assumes the consequence of the use of these drugs. (Male, 18).

Germana: We have to deal with a lot of content. We have the pressure to always be prepared, to know everything. I think that's why some students may resort to these drugs, especially those who are not in the habit of studying and leave everything for the last minute. (Female, 17).

Fernando: Pressure from family, from school. You have to pass the entrance exam, that's what has to happen. It turns out that, as much as you study, there is no place for you there. (Male, 18).

Researcher: [...] Do you think that, in larger cities, this pressure would be greater or lower than in smaller cities?

Fernando: I think in bigger cities the pressure is bigger. (Male, 18).

Researcher: Why?

Fernando: I don't know... I think that the growth and development of cities and the need for manpower will make cities move faster. So you need to be prepared to enter the job market much faster than in smaller cities. (Male, 18).

Hector: The competition is great in both the entrance exam and in the job market, because you need to stand out to have your place guaranteed. A sign of that great competition you're talking about. (Male, 17).

Nicolas: I also believe that large cities have easier access to this type of medication. (Male, 18).

Fernando: There are people who live in a reality different from ours, where the main thing is to make money. If, for example, one of these people wants to pass a civil service test but can't focus a lot of attention on their studies, they might fall for taking this kind of medication. (Male, 18).

Germana: Some people may say that they will not use this because they have side effects while others will accept taking the risks because they think it will be better this way, because it has benefits. (Female, 17).

André: It may be lack of guidance too; I imagine that most people who take these drugs take them because they didn't have enough guidance not to take them. (Male, 17).

At that moment, the researcher presented to the students the data collected during the quantitative research by Trigueiro (2017) in order to compare the perception of these students with those expressed in the questionnaires. To this end, some answers were read out loud and students were able to comment on them.

Researcher: "I don't agree with the use of these drugs because that is what the pharmaceutical industries want. This market makes millions with medications. In my opinion, to take advantage of the studies, it is necessary that we seek willpower in ourselves and create a schedule of studies, accompanied by healthy habits such as good nutrition and physical activity". This person suggested that these drugs are offered to us through the pharmaceutical industries, which run a lot of advertisement to increase drug use, even though they are profiting from it.

André: I think this has nothing to do with it. The drug was created for one purpose and is used for another, so I think the pharmaceutical industry has no responsibility in relation to the use that is made of the medicine that is not the correct one. (Male, 17).

Nicolas: I disagree, because like all industries of the capitalist world, this one also aims at profit. That is, the purpose should be to cure diseases, but it ends up being the profit of the industry. And one other thing, there are diseases that could be cured, but the profit with a delayed treatment is greater than with a quick treatment aimed at curing it. (Male, 18).

Germana: For example, if a cancer cure drug had been proven to be effective and put on the market, the profit from treatments like radiotherapy and chemotherapy would fall. This puts more drugs on the market that will keep people dependent than drugs that will heal them. (Female, 17).

We detected naive conception from one of the students about the power of the pharmaceutical industry, but another student questioned him, and, in the end, they were able to come up with a synthesis of these ideas. Further comments on the results followed.

Researcher: One more piece of information for you: the results of the research are not yet ready, but what I've noticed so far tells me that most young people, like you, have never heard of this type of medication, most don't know anyone who uses these drugs, but they think it's cool and they say they would use them. What do you think of this?

André: I've seen a movie about this subject, it's called "Limitless". In the film the character consumes a substance that causes his brain to run full steam for 12 hours, and in this interval, he can do several things, even learn a new language. But when the effect passes he forgets what he had learned, and it also has several side effects like dehydration and physical exhaustion. (Male, 17).

Fernando: Another thing: however much this drug improves concentration, when I'm studying, it will not influence my ability to absorb this knowledge. (Male, 18).

To conclude the meetings, we delivered informational materials and officially closed the group discussions.

Discussion

As already discussed, entering higher education is the wish of most upper secondary education students. According to a study carried out in public and private schools in 13 Brazilian capitals, entering university was ranked the highest priority by students of all institutions, and especially so among students of private schools (Abramovay & Castro, 2003). Sparta and Gomes (2005) confirmed that the students continue to attribute great importance to being admitted into a higher education institution, both in public and private schools. The authors identified this was the first choice of the majority of the young people surveyed, ranking above all other options (such as prep courses, vocational training or entering the job market). A relevant fact in that study was that parental level of education was a variable of influence on the choice of respondents. Those whose parents had completed higher education were the ones most likely to pick higher education as their first choice; children of university-educated parents were the most likely to choose university prep courses as their next step; children of parents with only elementary education were the most likely to choose going into vocational training and entry into the labor market as their options after finishing upper secondary education.

Gaining entry into higher education, besides being the main plan of most students for their future, is also what they consider to be the most important role of school. However, the priority given to this kind of preparation strongly drives curricula towards teaching only that which is required of students for success in the entrance exam, which can also detract from a more humanistic and critical-thinking focus on the topics taught in the classroom. In short, the drive to have schools prioritize teaching students whatever they need to pass the entrance exam comes at the detriment of its perception as a place for the learning of values and socialization, a privileged arena where students can learn to exercise citizenship by developing critical thinking, intervene in the social environment that surrounds them and fully internalize the importance of mutual respect.

Perceptions about schools can also be influenced by school culture itself, which often attributes greater expectations of success to students in private

schools and lower ones to students in public schools. One example of school culture is the fostering of competitiveness among students, exemplified by the *rankings* to which they are subjected or the message that success depends only on individual effort.

Pressure to get good results on the entrance exam can lead students to manifest a number of symptoms. D'Ávila and Soares (2003) asked young people about the biggest sources of anxiety regarding the entrance exam. Their main responses were: fear of failure; too many subjects to study; disproportionate ratio of candidates/seat; lack of preparation regarding studies; difficulty of the test; pressure from parents, friends and teachers; uncertainty about the degree chosen; inexperience with the entrance exam; inability to afford higher education; lack of preparation to attend a university degree.

These difficulties may lead to other problems, as shown by Paggiaro and Calais (2009), who found manifestations of stress in about two thirds (67.7%) of prep school students surveyed. The most mentioned symptoms were: feeling of constant physical weariness; constant tiredness; memory issues; constant thinking of a single subject; self-doubt; feeling of incompetence; muscle tension and others, with the entrance exam being the main concern among the sample. Rocha et al. (2006) found indications of depressive disorder among upper secondary education students at a private college, with a predominance of symptoms in the female sample. The authors believe the results are a reflection of a state of distress, fear and confusion arising from adolescence and the proximity of the entrance exam.

The data reveals that upper secondary education students feel pressured by their parents and schools to perform well in the entrance exam, a pressure that can also lead them to drug consumption. The statements by some students in this research illustrate this particularly well:

Germana: (...) We have the pressure to always be prepared, to know everything. I think that's why some students may resort to these drugs, especially those who are not in the habit of studying and leave everything for the last minute. (Female, 17).

Fernando: (...) It turns out that, as much as you study, there is no place for you there. (Male, 18).

A positive perception of pharmacological cognitive enhancement may stem from a cultural belief in success at any cost, where the drive to achieve major productivity in short periods of time, and to do so with low investment and high quality, becomes an imperative. This belief leads students to think that passing the entrance exam depends only on individual effort, since the “normal” thing is to always perform well at school and go straight to university at the end of upper secondary education. When that does not happen, it is because there is something wrong in that student’s brain; then, just as the causes of their failure lie solely in themselves, so would the “cure” for failure also be in them and them alone. Thus, all it would take was to administer the correct medication to get things back to working properly, because what is bad must become good and what is good can always improve.

The above data also indicates that positive perceptions about medications may also fuel a tendency to self-medicate, since cognitive enhancement drugs are not regulated in Brazil and students who obtain them do so by means other than a medical prescription. This context helps explain why the rates of self-medication in Brazil are high. A survey by the Institute of Science, Technology and Industrial Quality (2014) showed that self-medication is part of the routine of 76.4% of Brazilians, reaching as high as 90.1% among young people between 16 and 24. Five out of ten carry pills to take when some discomfort arises, and 16.5% use painkillers every week. The survey also pointed out that the higher the level of schooling, the greater the rate of self-consumption. While 50.9% of respondents who only completed primary education buy medications without prescription, that number rises for 76.3% for those with an upper secondary education degree and 84.8% for university-educated respondents.

Several surveys confirm self-medication among students. A study by Cassimiro (2012) showed that 21% of students in two prep courses in Belo Horizonte (MG) used psychotropic drugs. Antidepressants were the most prevalent, but 15% of respondents reported using ADHD drugs, such as methylphenidate hydrochloride. There was no statistically significant

difference between the prevalence of use of psychotropic drugs among students trying to access higher education degrees in sciences or humanities, but it was verified that the majority of drug users was studying to be accepted into medicine degrees, for which university access is hotly contested. As already pointed out in the introduction, cognitive enhancement drugs are more popular in higher education institutions. 94.23% of medical students at the University Center of Volta Redonda (RJ) reported having heard of them (Carneiro et al., 2013), while 35.5% of students from the Federal University of Bahia knew other students who had used them (Cruz et al., 2011).

These numbers are worrisome, first, because of the scarcity of medium- and long-term longitudinal studies that analyze the harm associated with the indiscriminate use of the substance. Secondly, as Cesar et. al. (2012) pointed out, a higher prevalence of (and at least moderate risk for developing) addiction to alcohol, amphetamines and at least one illicit drug has been observed among users of methylphenidate. People with prior use of benzodiazepines, alcohol or amphetamines are also more likely to become users of methylphenidate.

According to a study conducted by Pasquini (2013) at 30 universities in the state of São Paulo, 25.3% of the students claimed to purchase the drug from Paraguayan sources during test periods or when they deem it necessary. This brings another dimension of concern, since illegal drugs offer no control over whether the substance was produced within the regulatory standards required by health surveillance agencies. These drugs purchased on the black market can also be consumed for purposes other than enhancement, such as recreation (a pattern of behavior similar to that of illicit drug users, also common within the school and university system).

One of the students reflected on this in the focus group:

Lucas: *In addition, this probably also feeds an entire illegal market, because someone will always have to sell drugs; it must involve a lot of money. (...) They just want to sell, and for a lot of money. (Male, 17).*

The students also discussed the power of the pharmaceutical industry:

Nicolas: (...) Like all industries in the capitalist world, this one [the pharmaceutical industry] is also aimed at profit. That is, the purpose should be to cure diseases, but it ends up being the profit of the industry. (...) (Male, 18).

The consumption of psychoactive substances in general is greater in large cities and more developed centers. For example, Cesar et al. (2012) found greater consumption of drugs among university students in the Midwest and South geographic regions of Brazil. This is likely due to the fact that the populations of megacities, affected by strong economic and social inequalities and the stress associated with accelerated urbanization, may be more susceptible to deterioration of their health (particularly their mental health), which predisposes them to increased use of medications.

This was one of the topics discussed in the focus groups. When instigated to discuss the topic, the teenagers inferred that drug consumption is more prevalent in more developed cities:

Fernando: I think in bigger cities the pressure is bigger. (...) So you need to be prepared to enter the job market much faster than in smaller cities. (Male, 18).

Hector: The competition is great in both the entrance exam and in the job market, because you need to stand out to have your place guaranteed. (Male, 17).

Fernando: (...) If, for example, one of these people wants to pass a civil service test but can't focus a lot of attention on their studies, they might fall for taking this kind of medication. (Male, 18).

Tsuda and Christoff (2015) also warn that some students may make use of these substances out of curiosity, both about them and their effectiveness in physical and mental activities. This is reflected in the feedback from the students in the focus groups, who said they didn't know these drugs but admitted the possibility of using them:

Lucas: (...) People who are drugging themselves get into this or that degree most likely don't know the consequences of the things they are taking, they know only the advantages. (...) But you never know if you are actually learning (...). In my case, I wouldn't have done

it. I don't like it. But if I'm competing with someone who has taken it, and for whom this drug works... (...) (Male, 17).

This shows that the pressure for results can be very strong for some, who feel tempted to resort to drug consumption to improve performance. Maher (2008), as part of a survey of scientists from 60 countries, showed that the respondents were initially against the supply of medications for children who didn't have disabilities. However, about a third of these respondents said they would be tempted to offer their children drugs if they found out that the parents of the other children were offering them to their children to improve their performance.

Petersen, Norgaard and Traulsen (2015), in interviews with US students who make use of stimulants, identified a few characteristics in common among them: they are ambitious, have good grades, are professional students in full-time degrees, have plenty of time for social activities and practice physical activity a few times a week. For them, the improvement would not be for a specific cause, but to improve their performance and make them feel good, as can be observed in the statement below: "I wish to be the best and I can be [...] If you are responsible, if you educate yourself, if you don't abuse it, it can be a useful tool [...]" (US university student, 32).

The authors further stated that many student users had a sort of ritual when they used the medication to study, which included organizing the environment, books, their notes, the computer etc. before taking it. They did this because, when they didn't prepare for the work session before the medication took effect, they could waste hours on computer games or other leisure activities and only realize it after wasting time and the effects of the drug (Petersen, Norgaard & Traulsen, 2015).

For these students, the drug was seen as a reserved aid for important moments during the semester, when feelings of disinterest, overload and academic insecurity arose and they needed to eliminate or prevent procrastination. The drug transformed them immediately from disinterested, overburdened and insecure people into productive, focused and confident individuals. They further stated that they

took it not only to get rid of something unpleasant, but also to intensify a passion or enthusiasm that was already there, to take pleasure in the experience of studying, as one student said: “Adderall adds fuel to my fire” (US university student, 23) (Petersen, Norgaard & Traulsen, 2015).

Liakoni, Schaub, Maier, Glauser and Liechti (2015), in a survey of upper secondary education students in the United States, found that those who felt more pressured by school or more stressed about the school environment were the ones who revealed that they had used substances at least once in the previous year, compared to students who didn't perceive themselves to be under school pressure or who perceived only minimal pressure. The authors also found that students who used a substance at least once for cognitive enhancement were those who felt less satisfied with their life situation compared to non-users.

As for later stages of academic or professional life, Coelho (2014), in a study developed with individuals involved in intellectual activities such studying for a civil service test, doctoral thesis or a selection process for a graduate degree abroad, also found in this public a very favorable perception to medications. These individuals sought medication for the purpose of improving their studies (either in time spent and/or the quality of studying), and sought specialist doctors to obtain a prescription for that purpose. They reported difficulty performing study activities in accordance with their expectations, needs and social performance demands, stating that they felt an improvement in their study *performance* with the drug, reporting higher productivity and increased willingness to perform the tasks involved. It is also interesting to note that medical prescription brought safety for these individuals, because the presence of the doctor was seen as a guarantee of control of the possible risks of using such a drug.

The author claims that producing mental performance of excellence, exceeding the limits of what is considered normal capacity, is a response to the demands of a competitive and individualistic society in which exceeding the limits of natural is to exceed others, the collective. In this context, one of the respondents in Coelho (2014) says something very similar to the statements collected in the present

study. “I saw it as a potentialization of studies, to feel safer, to make better use of time, to keep me awake” (Coelho, 2014, p. 5).

In line with the above results, the participants of Barros (2009) also claimed that good performance in the tasks and professional activities is the main source of social recognition, which justifies so much effort and investment in cognitive/academic performance. For them, social recognition was connected both to desiring to be equal to others (which equates to having the same performance as the others) and at the same time to differentiate oneself (i.e. to stand out) from others. To resemble a group (sense of belonging), one must maintain their individuality, standing out from the social whole.

In light of the above, we inevitably conclude that the non-prescribed use of methylphenidate is a reality in our country, one that cannot be ignored. Considering methylphenidate's elevated potential for abuse and dependence, it is urgent to carry out discussions that address the current problem of undue consumption and alert the population to the dangers of its misuse, including the adverse effects already described and those yet to be uncovered. The practice is also widespread, as corroborated by the numerous studies cited above that found evidence of the practice across a large number of institutions and levels of education. The data also revealed a clear need for further research into the high prevalence of cognitive enhancers in order to propose preventive measures and/or provide support for students, thus ensuring better professional development with lessened risks to health.

Brazil is still struggling to reach what has long been achieved in other countries: the universalization of upper secondary education and greater access to higher education. According to the National Household Sample Survey (IBGE, 2015), 16.7% of young people aged 15-17 are still out of school in Brazil. Among those who are in school, 37.3% are behind the regular school year for their age. Most of these young people consider school to be demotivating, meaningless for their lives and incompetent to prepare them to contribute to the progress of society, whether through higher education or by facilitating access to the job market.

However, when the school and the student only partially fault the former for school failure, students feel heavily responsible for their success in school. In a society in which making the cut-off grade for the higher education entrance exam is more important than the appropriation of knowledge *per se*, students are not given a chance to reflect on the meaning of what they are learning, how they are learning and if they are learning. This can lead to a loss of density in studies, as the superficial supply of information creates an excess of fragmented knowledge that serves little purpose but to do well in tests rather than the building of one's capacity to think critically. These practices create a system that punishes and morally exposes students by valuing the "best" and condemning the "worst", accordingly defining them as more or less intelligent (respectively). This also leads to an increase in psychological suffering due to the loss of a sense of belonging and the mounting pressure for more success, compounded by the guilt they feel for not having studied hard enough or not having the necessary schooling to obtain a position in the job market.

Sometimes, both schools and families themselves project on children and teenagers their desire for them to "be someone in life". Albeit well-intentioned, this behavior can lead to pressures with which children and teenagers have a hard time coping. This may also be worsened by a lived reality that often bears little resemblance to the plans families make for the future of their children, including little familial knowledge of study routines or limited access to quality schools.

All these factors have led students and schools to failure - "school failure" here construed to mean a student, at the end of a given school period, being unable, for any reason, to perform the functions or fulfill the objectives expected thereof for that stage of their educational development. Specifically regarding upper secondary education, school failure would mean the inability to continue studying, being unprepared for work and citizenship, lacking basic scientific and technological knowledge, and not having improved as a human person, all of which are explicitly stated as the aims of secondary education in the Guidelines and Foundations of National Education Law (1996).

As such, school failure would be the result of the relationships that are established in school and the learning methods and conditions offered to students. Consequences of school failure can include, among others, children and teenagers who lack the minimum expected literacy, continue to perform at low levels, are held back a year multiple times, interrupt their studies or are unable to follow through, drop out of school before completing their basic education, don't conform to institutional rules or have undesirable conduct.

In a celebrated study, Patto (2015) found, from a careful analysis of the life and academic histories of poor children, that school failure is built into social and educational relationships. The author carried out a genetic analysis of the school difficulties faced by his research subjects, and concluded that school failure is a social, dynamic, historically entrenched object, not something intrinsic to the student.

Conversely, it can also be said that school success would not be intrinsic to the student, but rather be the result of their social and educational relations. In light of the above, we must understand how the Brazilian educational reality could lead some students to seek different means to reach school success, which does not depend solely on them. It is important to propose alternative interventions that can prevent the medicalization of teenagers through pharmacological cognitive enhancement. Those could include debates in upper secondary education classrooms and prep courses that can help bring to the fore topics such as the risks involved in the practice, better learning strategies, and the promotion of open spaces where students can share their anxieties and fears regarding the entrance exam. Other activities that involve the whole school community could be supported, such as awareness campaigns, thematic workshops, focus groups, discussions on films and texts of relevance and others.

Finally, it is equally important for this discussion to also take place in universities. Firstly because of the significant prevalence of medicalization in them, and secondly because university students are the future professionals of the country, and their beliefs about drugs may influence their future practices as well as their mental health. Another space that needs to be occupied by discussions is the virtual one; a large

number of websites and fan pages widely proclaim the possible beneficial effects of these drugs. More of these websites and fan pages should be discussing the risks of these drugs, preferably using accessible language that is familiar to these audiences. All these actions can be developed by the core stakeholders of the school environment, such teachers, principals, directors of studies, educational advisers and others, acting in partnership with health professionals (psychologists, doctors, nurses and pharmacists).

Conclusions

This study endeavored to offer a reflection on the challenges faced by Brazilian upper secondary education students seeking access to higher education. It is well known that higher education simply does not supply the entire demand for willing entrants in the educational system, leading to intense competition for access to certain degrees (particularly those considered to be of greater prestige) and institutions (among which public universities are considered the gold standard, and therefore the most difficult to enter). This leads to intense pressure for students to perform excellently at entrance exams and the ENEM (Brazil's National Upper Secondary Education Exam, used as an entrance exam by most institutions) aiming to grab a coveted spot at a university.

The school environment (especially universities) is also highly demanding of students, imposing intense workloads and the need for enormous dedication on their part. In such circumstances, healthy students become prone to use psychoactive substances so they can study for longer, enjoy increased energy and concentration and feel less need to rest, which in turn creates expectations of markedly improved academic effectiveness.

Because this involves risks to physical and mental health, it is imperative that we better understand what young people think about them. The data obtained indicates that cognitive enhancement drugs are seen by students as positive, useful aid in a number of situations: as the entrance exam approaches; to help in times of pressure from parents and school; when they feel overwhelmed by their activities; to handle multiple tasks; and to ensure they have energy

and concentration. However, when they had the opportunity to think better about the topic and talk about these drugs in the focus groups, the teenagers were able to understand the factors involved in the use of these substances and what led students to consume them.

Due to the fact this theme has been subject to little debate in Brazil so far and in light of the exploratory character of this work, one must be cautious to generalize its results. The data collected is insufficient to portray the diversity of experiences, living conditions, traditions, customs, cultures and values of teenagers, in part due to the restrict convenience of the sample. However, its results are consistent with those presented in national and international surveys.

For future interventions, we recommend that focus groups be organized with university students (for comparison purposes) and that attempts be made to broaden debates on the subject in the media, schools, prep courses and healthcare institutions, preferably using language accessible to students, so that they are aware of the risks involved in this practice.

Competing interests:

No financial, legal or political competing interests with third parties (government, commercial, private foundation, etc.) were disclosed for any aspect of the submitted work (including but not limited to grants, data monitoring board, study design, manuscript preparation, statistical analysis, etc.).

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