

STUDENTS AND INTELLECTUAL DOPING: IS ANYTHING GOING IN SEARCH OF ENTRANCE EXAM SUCCESS?

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ABSTRACT

This paper presents the results of a research that aimed to characterize the perception of third year high school students from public, private and vocational schools and from public and private courses about the use of drugs for cognitive enhancement. The research involved 534 students from the cities of Juazeiro do Norte (CE), Fortaleza (CE) and São Paulo (SP). It used a questionnaire aimed at the perception of these students about the use of medicines that promised to improve their use in the studies, if they had heard of them, if they knew users and if they would make use of them. Most considered positive the use of these drugs, showed curiosity about the substance and stated that they would use, if they had access, to ensure energy and concentration in activities. The results of this study underscore the importance of understanding the perception of young people about this topic in order to guide future interventions.

Keywords: High school; medicalization; intellectual doping.

Estudiantes y el doping intelectual: ¿todo vale en la búsqueda del éxito en la prueba de selectividad?

RESUMEN

En este artículo se presenta los resultados de una investigación que buscó caracterizar la percepción de estudiantes del 3^{er} curso de la enseñanza secundaria de escuelas públicas, privadas y de formación profesional y de cursillos públicos y privados sobre el uso de medicamentos para perfeccionamiento cognitivo. La investigación contó con 534 estudiantes de las ciudades de Juazeiro do Norte (CE), Fortaleza (CE) y São Paulo (SP), y se utilizó un cuestionario volcado a la percepción de esos estudiantes sobre el uso de medicamentos que prometían mejorar el aprovechamiento en los estudios, si ya habían oído hablar de ellos, si conocían usuarios y si harían uso de ellos. La mayor parte consideró positivo el uso de esos medicamentos, demostró curiosidad en relación a la sustancia y afirmó que haría uso, caso tuvieran acceso, para garantizar energía y concentración en las actividades. Los resultados de este estudio resaltan la importancia de comprenderse la percepción de los jóvenes sobre este tema para que se pueda orientar futuras intervenciones.

Palabras clave: Enseñanza secundaria; medicalización; doping intelectual.

Estudantes e o doping intelectual: vale tudo na busca do sucesso no vestibular?

RESUMO

Este artigo apresenta os resultados de uma pesquisa que buscou caracterizar a percepção de estudantes do 3^o ano do ensino médio de escolas públicas, privadas e profissionalizantes e de cursinhos públicos e privados sobre o uso de medicamentos para aprimoramento cognitivo. A pesquisa contou com 534 estudantes das cidades de Juazeiro do Norte (CE), Fortaleza (CE) e São Paulo (SP), e utilizou um questionário voltado à percepção desses estudantes sobre o uso de medicamentos que prometiam melhorar o aproveitamento nos estudos, se já tinham ouvido falar deles, se conheciam usuários e se fariam uso deles. A maioria considerou positivo o uso desses medicamentos, mostrou curiosidade em relação à substância e afirmou que faria uso, caso tivesse acesso, para garantir energia e concentração nas atividades. Os resultados deste estudo ressaltam a importância de se compreender a percepção dos jovens sobre este tema para que se possa orientar futuras intervenções.

Palavras-chave: Ensino médio; medicalização; doping intelectual.

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INTRODUCTION

The use of medication by healthy individuals in order to enhance brain functions and cognitive performance is the process known as 'pharmacological cognitive enhancement' or 'intellectual doping'. This practice is in compliance with the social medicalization process, which is the pathway to move individuals' daily social and political issues to the medical field (Moysés & Collares, 2013). Medicalization could turn normal physical and psychological sensations such as insomnia and sadness into diseases like sleep disorders and depression. According to Oliveira, Harayama and Viégas (2016), medicalization concerns the way to interpret life phenomena without taking into account their complexity, it reduces everything to individual characteristics often understood as organic issues.

Medicamentation is another process within the aforementioned one, which concerns the excessive use of medication to relieve daily pain. These two processes can co-exist, or not; some cases only involve medicalization without medication use and there are also cases remarkable for uncontrolled use of medication without previous medical diagnostic. These two processes are quite concerning and are nowadays widespread in society.

Based on Zorzanelli, Ortega and Bezerra Junior (2014), the relevance and contemporaneity of the medicalization concept are proven by the comprehensiveness the topic has reached in the social and human sciences field in the last decades. According to these authors, medical interventions in individuals' intimacy date back to the 17th century due to the raise of modern medicine and hygiene concepts. This process turned medical professionals into experts who are accessed by all to seek solutions for their daily malaise. Accordingly, medicalization lies on moving behaviors that in the past did not belong to the medical intervention field to this very scientific area. In other words, what in the past was not necessarily a medical issue *ipso facto*, started to be understood as such. However, these authors point out that using the term 'medicalization' to criticize medical power overshadows different levels of its occurrence such as medical prescriptions to cases that do not necessarily treat diseases, as it happens with cognitive enhancement.

The discussion about pharmacological cognitive enhancement is nowadays gaining room in the media, since it is known that such practice has been gathering more supporters at all age groups and social classes. Methylphenidate hydrochloride is one of the mostly used medications in Brazil for this aim, it is available in the market by the names Ritalin® or Concerta®. It has been used by college students, businessmen and healthcare professionals to increase productive capacity in order to reach deadlines and targets. It is adopted

to treat narcolepsy and Attention-Deficit/Hyperactivity Disorder (ADHD), since it can have immediate effect on concentration enhancement. However, on the long-run, it can stop growth, raise blood pressure, lead to psychotic episodes, among other symptoms (ANVISA, 2012). It is necessary being careful with the use of such drugs, because their use to treat other disorders was not yet sufficiently tested, as well as the ethical and social implications of their use (Machado & Toma, 2016; Urban & Gao, 2013; Farah, 2002).

This topic is controversial and brings along a broad debate. The ones who advocate for this practice, such as Greely et al. (2008), argue that methylphenidate hydrochloride is a safe drug, which has few side effects; therefore, according to them, its use for cognitive enhancement is positive and a personal choice. Nevertheless, besides legal regulations, its use would demand public polices made by a whole set of scientific, professional, social and educational resource sources. On the other hand, different researchers, like Farah and Wolpe (2004), highlight that it would be unethical to deliberately enhance individuals' concentration and memory. These authors also question the advantages of methylphenidate, since they are minimal and the risks of using these medications on the long-term are not known, so far.

According to Itaborahy (2009), the debate on medication use for enhancement means is not disconnected from the current medical prescription practice, not even from the mechanisms used by the pharmaceutical industry to invest in advertisement focused on success, or yet to invest in research to often broaden diagnostic criteria, their potential target-public and the medical use of these medications. However, it is necessary having in mind that there are many ways to enhance cognitive performance, such as exercising, healthy diets, regular sleep, as well as reading and exercises, which would be alternatives demanding more effort, despite their less invasive profile.

Nowadays, Brazil is the second largest methylphenidate consumer, it just loses position to the United States. *Agência Nacional de Vigilância Sanitária (Anvisa)* (National Agency of Sanitary Surveillance) analyzed methylphenidate prescription and intake from 2009 to 2011 based on the *Pharmacoepidemiology Bulletin* (2012). They have concluded that the monthly intake of it in the three assessed years rose by 28.2% among children and youngsters in the age group 6 to 16 years. This consumption changed depending on the time of the year – it was higher in the second semester and lower at school vacations (January, July and December).

Methylphenidate use for cognitive enhancement is not regulated in Brazil; however, there are many ways to have access to the substance. The first of them lies on medical prescription; therefore, most of the time,

patients forge ADHD symptoms. The second way would be sharing prescribed medication, which is not hard to be achieved given the current increase in the number of prescriptions. The third form would be medication sharing by other means, such as getting it from a friend or teacher. The fourth way would lie on illegal purchases (without medical prescription) in websites.

Although it is not a controversial medication, it has been used to potentiate school and labor performance. Reaching high productive levels in a short period-of-time with low costs and high quality are requests set by the culture of 'success at any cost'. "The (...) ideal to be the star in successful scenarios is linked to the narrative that everything depends, exclusively, on the individual's will" (Brant & Carvalho, 2012, p. 624). Thus, people acknowledged as healthy are using medications as gadgets, as magical goods, real accessories to get productive exacerbation, as the aforementioned authors have stated.

Such non-therapeutic use is mostly observed among college students, businessmen and healthcare professionals who, by the way, have broader knowledge about the drug than the general population. The public that takes medications for enhancement and recreational purposes, or to lose weight, has also been using such medications in its ground form - as powder - or diluted in water in order to be injected (ANVISA, 2010).

Since this practice has been gaining supporters and the access to medication is getting easier, it is demanding to deepen the understanding about this phenomenon, mainly when it comes to vulnerable populations, such as adolescents – in special the ones facing turning points in their lives, for instance, the entrance exams.

Based on the aforementioned context, the following question allowed the research to be developed: What is the perception of senior high school students and from entrance-exam preparation course students about using medications for cognitive enhancement purposes? We believe that knowing youngsters' perception about cognitive enhancement can make use-related preventive actions feasible, given the current importance of the topic and the room it has been gaining in the social context - great access to medications. Even schools should review practices that lead to school failure, since it can make some students opt for using medications. Finally, society should demystify the concept that daily issues can be solved with pills and that human brain functions can always reach higher levels.

This study was held aiming at characterizing the perception of high-school final-year students from public, private and vocational schools and public and private pre-college preparatory courses in the cities of Juazeiro do Norte (CE), Fortaleza (CE) and São Paulo (SP) on the use of drugs for cognitive enhancement. For

such, was developed through a quali-quantitative study, searching to demonstrate a general panorama on the theme, with questionnaires applied to 534 individuals.

Cities were chosen to provide a diversified panorama of Brazilian reality, the idea was to assess different socioeconomic and political features. Institutions of different administrative nature were also chosen to gather multiple realities. Results were analyzed and compared based on the selected city and on the kind of institution attended by the participants.

METHOD

Data collection was achieved with the application of an instrument composed of the following questions:

- a. Demographic features (sex, age);
- b. What do you think about using medications to enhance school performance? (open question);
- c. Have you ever heard about medications to enhance school performance? () yes () no;
- d. Do you know someone who uses, or who have used, some medication of this type? () yes () no;
- e. If there was a medication to enhance school performance, would you take it? () yes () no.

The first contact with each one of the institutions participating in the research was made after they were defined; subsequently, the contact was made with students' parents. Students who were in the classroom when the questionnaire was handed out, who had agreed on participating in the research and who had brought the Free and Informed Consent Form signed by their parents (in case they were underage) participated in the survey. Overage students signed the form themselves. Institutions were defined by researchers' convenience.

Instrument application in all institutions was performed in the classroom by a researcher in a date and time previously appointed by the institution. Teachers were asked to leave the classroom in order not to embarrass the students. At first, the researcher introduced herself and invited the students to participate in the study by answering the questionnaire. Students were reassured that they should volunteer to participate and beyond the guarantee of its secrecy – none in the school would have access to the provided information.

Next, students were instructed about how to answer the scale, they were asked to answer the questions individually and to answer all the questions. They had approximately 10 minutes to answer the questionnaire. Subsequently, all doubts about the topic were clarified and important information about the risks of taking these medications was outspread – a folder elaborated by the authors was handed out.

In total, 534 students – 205 men (38.9%), 323

women (61.1%) and six who didn't identified their gender participated in the study. Participants were in the age group 14 to 67 years, most of them were between 16 and 19 years old – mean age was 18.43 years¹.

Given the nature of the data, analytical treatment through non-parametric tests was applied to assess whether there was association between the perception about the medications and the students' features. The chi-squared test was carried out at 5% significance level and 95% confidence interval.

RESULTS

Students' perception about medication use to enhance school performance was assessed through open questions, which were applied to collect spontaneous concepts about the topic. The answers to these questions were grouped within four categories, namely: positive perceptions, negative perceptions, critical perceptions and indifferent or absent answers. These categories were defined based on recommendations in the Content Analysis by Bardin (2011).

More than half of the answers (55.2%) qualified medication use for cognitive enhancement as positive, as well as their use by the ones who have a hard time studying, by those who have to work or yet by students who have to be approved in the entrance exams. These students stated that these medications could keep them awake for longer and increase their concentration; therefore, they would help overcoming difficulties. They believe that medication would ease their studies and help enhancing their school performance. These positive perceptions can be observed in the following answers:

I think it's nice, mainly to be accepted to college, since the study load is much higher, I would take it and I think it is interesting because public education got much better, but it yet is not enough for the reality we live. (Man, 20) (Public entrance-exam preparation course, Juazeiro do Norte City).

I would love to, because nowadays I'm working hard in my studies, I'm living a "double life" between work and school, it would be great to have something to help me. (Women, 19) (private entrance-exam preparation course, Fortaleza City)".

"It would be awesome taking medications to study better, just as athletes use substances for physical training. (Man, 20) (private entrance-exam preparation course, Fortaleza City).

Using medications that enhance school

¹ The project was approved by the Ethics Committee of the Psychology Institute of University of São Paulo under CAAE 42211115.8.0000.5561.

performance would be very useful for me, since I intend to pass the entrance exams to get to college and it would demand a good performance. I think that the use of any product to ease information absorption is welcome, mainly by high school students (Woman, 17) (Technical school, Fortaleza City).

On the other hand, almost ¼ (23.6%) of students participating in the study linked medication use to a negative or unnecessary action, they stated that dedication to their studies would be more effective. They also pointed out the importance of family and school support, as it can be seen in the answers below:

I don't think it is necessary, studying is something about "will", who really engages to study won't need medication. (Woman, 17) (Public entrance-exam preparation course, São Paulo City).

I believe it's not necessary to use such medications. School must be more committed. It is necessary to have good interaction with students, and encourage them more. (Man, 16) (Public school, Fortaleza City).

Due to so much medication used nowadays one can see the increase in the number of chemicals found in these drugs, in the number of heart diseases and what about cancer cases, the number just increases, I don't think it's cool. (Man, 19) (Public School, Juazeiro do Norte City).

I believe that medications would not be effective; it would be better to distribute the study shifts; to encourage students to live healthier lives (improve food quality and the quality of the sleep); etc. (Man, 18) (Technical School, Fortaleza City).

It is essential observing that, based on critical perceptions, 3.6% of the students have condemned the uncontrolled use of medications. This category was created to include answers from students who, besides evidencing a negative perception about the use of enhancers, included reflections about social and educational medicalizations in their answers.

I think that using medication to enhance school performance is a mistake, because medications are to treat diseases, medication changes body and mind, to present times, most students don't need medication, unless they truly need it. We aren't machines, we are human beings. (Woman, 17) (Public school, São Paulo City).

I believe that medication use, of any kind, should be restricted to necessary intake. There is the culture of self-medication, mainly among

entrance-exam students, instead of bringing benefits, it causes losses to health in the long-run. (Woman, 21) (Private entrance-exam preparation course, Juazeiro do Norte City).

Finally, 17.6% of the assessed students did not answer the question, or their answers were classified as unpositioned, as observed in the answers below:

I think that it can be beneficial and, also, harming, because it can enhance my school performance at first; maybe, I can become dependent on these medications as time goes by, since, although it would be for a good cause, they are drugs like any other. Therefore, my position before this question is dubious and instable. (Woman, 17) (Private school, Fortaleza City).

Data were assessed per city and students in São Paulo were the ones presenting the most negative perception about these medications (27.9%), whereas the ones from Fortaleza recorded the most positive perception about it (56.1%), neutral perception reached 18.9% and critical perception was 5.0%. With respect to institution type, private school students were the ones recording the highest positive perception about these medications (68.7%), they were followed by the ones in private entrance-exam preparation courses (28.85%). Technical students recorded neutral perception about them (23.3%) and the ones in public schools showed a critical perception about these medications (5.1%).

When students were inquired about whether they had ever heard about these medications, most of them (70.6%) gave negative answers, and even a higher rate (87.1%) of students have stated not to know any user of these medications. However, more than half of them (65.35) have said they would take them.

Students from São Paulo City were the ones mostly knowing about these medications (37.7%), they were followed by students from private schools (38.8%) and from private entrance-exam preparation courses (36.4%). On the other hand, the ones who did not know about these medications were from Fortaleza City (23.9%) and from public schools (22.4%). Students who knew someone who takes these medications were the ones from São Paulo City (21.3%), from private entrance-exam preparation courses (19.5%) and from private schools (16.4%). Students who had shown lower knowledge about these medications were the ones from Fortaleza (10.4%) and the ones from public schools (8.25%). Finally, the ones who mostly stated that they could take some of these medications were from Fortaleza City (67.9%) and the ones from private entrance-exam preparation courses (69.5%). The ones not prone to take them were from São Paulo (57.4%) and from public schools (59.8%).

Based on the statistical analysis, there is association

between sex (women) and knowing a user ($\chi^2(4) = 4.259$, $p=0.039$), but there was not difference between being man or woman and using these medications. It was possible observing association between studying in private schools or in private entrance-exam preparation courses and to have heard about the medications ($\chi^2(1) = 8.504$, $p=0.004$), as well as between studying in a public institution and to have never heard about them ($\chi^2(4) = 9.279$, $p=0.054$). There was association trend between attending private institutions and knowing a user ($\chi^2(4) = 7.492$, $p=0.006$).

There was also association trend between living in São Paulo City and knowing some user ($\chi^2(2) = 5.648$, $p=0.059$). On the other hand, there was association between living in Fortaleza and to have not heard about this medication type ($\chi^2(2) = 8.692$, $p=0.013$).

Just as expected, students presenting positive perception were the ones stating that they would take these medications (88%), and the ones who have evidenced negative perception about them were those not prone to take them (80.2%). However, there was inconsistency in answers from some students who had stated to consider these medications bad, but who even though would take them (19.8%).

DISCUSSION

Based on the aforementioned, pharmacological cognitive enhancement concerns medication use to manipulate and enhance brain functions, it is linked to the medicalization logics. According to Lemos (2014), medicalization is not limited to pathologization because it can also operate on preventive health management to increase longevity, health control and to accelerate and broaden new research and publications, to enhance sexual and physical performance, to cognitive stimulus due to deeper concentration in tests and tenders, among others. This author also states that:

The growing intensity of requested competition at work and the high demand for performance through target reaching, in addition to solidarity wear out and to fragmentation of social bonds, open room to body medicalization. Situations capable of diminishing skills and/or of making them slower or excessively fast, at the extent to impair performance, as well as any movement to resist the consumption and market logics of each daily action, are quickly medicalized (...). We live in a society that does not stand suffering, crying, sadness, critics, subversive speech, dissidence, and that reinforces the delusion of happiness, self-performance and health as idealized salvation. (...) (p.492)

Methylphenidate hydrochloride is one of the most used medications in Brazil to enhance cognition, its use

is therapeutic or off label, it is common among college students, businessmen and healthcare professionals, for example. The hypothesis in the present study lies on the assumption that these medications are also spreading among high school students, despite their supporters in college environment. Thus, by taking into account that the positive perception about cognition enhancer medications can lead to their intake, it is necessary assessing the perception of youngsters about this topic.

Results in the current research evidence that the number of students prone to take these medications was high (65.3%). Contradictions shown by the collected data are worrisome, because information provided by the students point out that almost $\frac{3}{4}$ of the sample (70.6%) stated to have never heard about this type of medication, as well as most of them (87.1%) said that they did not know anyone taking it, but half of the participants (55.2%) considered its use positive and even a larger number of students stated to be prone to take it (65.3%).

Based on these data, the positive perception about these medications can be seen as a trend of self-medication. Since cognitive enhancement medications are not regulated in Brazil, students would get them through other means rather than medical prescriptions.

Self-medication rates in Brazil are high. A research by the Science, Technology and Industrial Quality Institute (2014) has shown that self-medication is part of the daily routines of 76.4% of Brazilians, this rate reaches 90.1% among youngsters in the age group 16 to 24 years. Five among 10 youngsters carry pills to be taken if any inconvenient happens and 16.5% of them take painkillers every week. The present research also highlighted that the higher the schooling the higher the self-medication rates - 50.9% of interviewees who had finished elementary school bought medication without medical prescription, whereas 76.3% of those who finished high school and 84.8% of the ones who finished college did so.

With respect to medication intake among students in public entrance-exam preparation courses, based on the research by Cassimiro (2012), 21% of students in the two assessed entrance-exam preparation courses in Belo Horizonte City (MG) were taking psychotropic drugs. Antidepressant drugs were the ones presenting the highest incidence, but 15% of youngsters have stated to take ADHA drugs such as methylphenidate hydrochloride. There was not statistically significant difference in the preference for any particular psychotropic drug among students competing for a seat in different scientific fields in the entrance exam. However, when they were analyzed by field of interest, most users willed to go to medical school, which is the hardest one to be approved for.

Cognitive enhancement drugs are more popular among students in public universities, their use could reach 60% among the assessed students (Mota & Pessanha, 2014). Cesar et al. (2012) carried out a study with public and private college students in the 27 Brazilian state capitals and found higher prevalence of methylphenidate use in the first years of college, mainly among students attending human studies courses in public universities and among students in private institutions.

Several studies have confirmed the belief in taking pharmacological cognitive enhancers to accomplish daily tasks. Based on the literature, individuals who were taking pharmacological cognitive enhancers pointed out the high volume of academic assignments to justify their intake, since they diminish fatigue and keep them awake (Urrego et al., 2008; Barón et al., 2011). However, some students have reported that they used to take these medications because they make them feel better and turn the activities to be accomplished more joyful (Vrecko, 2013).

These are concerning data, firstly because of the scarcity of short- and long-term longitudinal studies focused on analyzing losses associated with the indiscriminate use of substances and, secondly because, as pointed out by Cesar and collaborators (2012), the use of such substances was higher among methylphenidate users, as well as the moderate risk to develop alcohol and amphetamine dependence, and the dependence on at least one illicit drug. People who have previously used benzodiazepines, alcohol or amphetamines also have higher changes to become methylphenidate users.

Students in the present study also pointed out that they felt pressured by their parents to get good scores in the entrance exam, and such pressure can also take them to medication consumption. The testimony below depicts such situation:

Something very positive. The capitalist world induces competitiveness. Besides enhancing the performance of the ones who just study, it gives more chances to people that have to work and study. (Man, 18) (private entrance-exam preparation course, Juazeiro do Norte City).

A positive perception about pharmacological cognitive enhancement can be in compliance with the cultural belief of 'success at any cost', whose high productivity levels in the short-run, low investments and high quality are essential. Such belief makes students think that entrance-exam approval only depends on individual effort, because "normal" means to always have good performance and to be approved in the exam at high school conclusion. Wherever it does not happen, it means that the reprovved student has

some sort of brain issue and that the student would be responsible for such failure and for the “cure” of such lack of success. Accordingly, it would be necessary to administer the correct medication, so the student would start “functioning” better, in other words, what is not working properly must be fixed and what is performing well can be enhanced.

When students were asked about the awareness of and will to take cognitive enhancers, similar answers were observed in the three selected cities (São Paulo, Fortaleza and Juazeiro do Norte). The rate of students who know a user, or who have heard about these medications, was similar. However, data have evidenced lack of information about them. Students in Fortaleza were the ones with less information about them, but, on the other hand, they were the ones having positive perception about these medications, in addition to be the ones more prone to take them. Nevertheless, students from São Paulo were the best informed about these medications, most of them knew someone taking them, but they were also the ones lesser interested on taking them and recording more negative perception about these drugs.

Overall, the intake of psychoactive substances is higher in bigger cities and in more developed regions. The study carried out by *Fórum sobre Medicalização da Educação e da Sociedade* (Forum about Education and Society Medicalization) was based on data of psychotropic drug prescriptions in private units registered by *Sistema Nacional de Gerenciamento de Produtos Controlados - SNGPC* (National System of Controlled Products Management) of *Agência Nacional de Vigilância Sanitária - ANVISA* (National Agency of Sanitary Surveillance). Its results pointed towards higher methylphenidate consumption in states in Southern Brazil, which were followed by states in the Midwest and in the Southeastern region; the lowest consumption of it was in the Northeastern and Northern regions. Its study evidenced higher medication consumption in the second semester of the school year, and such result can be related to the day to take the entrance exam rather than just to the conclusion of academic activities.

A statistical analysis was carried out to check the link between the perception about medication use and sex. Its results did not show differences between the perceptions of men and women. However, there was association between the feminine gender and knowing someone who uses these medications, although results did not show difference between the masculine and feminine sexes and the use of such medications. Research associating medication use for cognitive enhancement purposes and sex were not conclusive, since some studies point out the prevalence of their use among men and some show such prevalence among women. For example, methylphenidate consumption

was higher among men in the research conducted by Cesar et al. (2012), and higher among women in the study by Carvalho (2016), but there was no difference between sexes in the research carried out by Carneiro et al. (2013). A worrisome fact was highlighted by Graça (2013), who pinpointed the use of medication by female students for weight losing purposes.

Concerning age, results in the current study point out that students younger than 18 years were the ones presenting the highest positive perception about the medications, and their answers showed association trend between the two variables. However, the literature is not consensual about these findings. Cassimiro (2012) recorded higher consumption of psychotropic drugs among students older than 21 years. He associated this outcome with pressure and high expectations to be fulfilled. On the other hand, Carvalho (2016) observed greater adhesion to substances between younger students, and this outcome allowed assuming that knowledge acquired throughout life can influence the consumption of such substances.

Tsuda and Christoff (2015) pointed out that some students can use these substances for simple curiosity and to test their effectiveness for physical and mental activities. This result is confirmed by the testimony of students in the present research, who stated to be unaware of these medications, although they also said that they would take them, as shown below:

I have never heard about such medications, however, if they did not cause ANY kind of side effects or sequels and only had positive results, I see no problem in taking medications to stimulate studying. Besides, it should be something of personal choice. (Woman, 17) (Public school, Fortaleza).

Based on this information, one can conclude that the use of non-prescribed methylphenidate is a reality in Brazil and it cannot be ignored. It is important highlighting the need of identifying risk components associated with such use. The following features were identified in students participating in the current study who had stated to be prone to take these medications: they could be either man or woman, younger or older than 18 and live in any of the three selected cities. It is likely that most of them attended public or private entrance-exam preparation courses, had heard about the medication, knew a user and considered the medication positive.

Thus, by taking into consideration methylphenidate use and dependence, it is mandatory to discuss about nowadays inappropriate medication-intake issue to caution society about the bad use and the aforementioned side effects of such practice, as well as

about the yet unknown effects of it. Methylphenidate use for cognitive enhancement purposes is outspreading, since the herein referenced studies provide data collected in different locations.

Oliveira, Harayama and Viégas (2016) have shown that schools discuss the drug-use issue, but they mainly address recreational drugs, such as alcohol, cigarettes and illicit drugs. However, schools live with the prescription of psychotropic drugs to students and teachers, who take them to enhance cognition or to treat school complaints. Data in the present research also point towards the need of better investigating the high prevalence of medication use in order to suggest preventive measures and/or to provide appropriate support to students, as well as to assure better professional formation without posing any risk to one's health. Accordingly, the aforementioned authors state that the use of psychotropic drugs must be the core of debates about drugs at school. These debates shall not lie on the dominant perspective of prohibition, but on the recovery of school's formation role, which must focus on the critical clarification about the topic.

The study faced some limitations, namely: a) data are not representative of Brazil given the sample size and features and because it was not randomly chosen, however, these data are relevant because, along with other studies, they can help forming the theoretical *corpus* to subsidize policies to prevent the abusive use of cognitive stimulants; b) participants answered the questionnaire on their own, it could have become a bias – some respondents might have not understood some term in the question, they might have not been honest at the time to answer to a question or they might have tried to provide socially acceptable answers to the most sensitive questions, such as the case of the use of illicit drugs -, which may have caused data underestimation. However, results are in compliance with the ones found in previous studies, and this outcome validates the recorded results.

Finally, it is essential highlighting the importance of the current research, since analyses related to medicalization in high school are not often found. It is necessary carrying out new studies in order to better understand what these youngsters think about this topic and to developed preventive actions against such practice. Moreover, knowing these youngsters' perception about this topic will enable deeper debates about the subject, and it can contribute to broaden the knowledge in this field.

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