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Chapter 7

Marijuana, Experience of Temporality, and School Performance from a Qualitative and Quantitative Approach

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Additional information is available at the end of the chapter

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Abstract

The study aims at knowing how low marijuana doses affect cognitive ability in postprimary students. The objective of the quantitative research was to analyze the results of neuropsychological and Neuro-SPECT tests comparing schoolchildren who smoke marijuana with those who do not, with emphasis on the effects on cognitive functions involved in learning. We wanted to assess the effects on the cerebral function of marijuana-only users. It was a comparative study based on the total sample of 565 school adolescents coming from four schools in the metropolitan area of Santiago, Chile. All were interviewed in order to select a sample that was stratified by sex, class and consumption of marijuana. The following two groups were made: 40 marijuana-only users and 40 nonusers. We took as a reference a study performed by the authors in 2007, in which the correlation between the consumption of marijuana and effects on cognitive functions involved in scholastic learning were established. The findings show statistically significant differences in the following areas: subgenual bilateral hypoperfusion, more marked on the left side (Brodmann area 25), frontal bilateral hypoperfusion (Brodmann's areas 10 and 32), front cingulate gyrushypoperfusion (Brodmann area 24) and hypoperfusion of Brodmann area 36 that projects to the hippocampus. The results are highly matched with the neuropsychological tests given in the sense that, like with the 2007 study, significant differences are found between the two groups as far as the tests measuring cognitive functions are concerned. A qualitative research: we wanted to investigate the experience of time in high school students who regularly smoke marijuana, given that this substance has effects on the prefrontal lobe and on the hippocampus, brain areas related to the ability to plan tasks (executive function) and to memory. Moreover, adolescence is a delicate stage in regard to planning of the future. At the same time, the idea was to understand and make use of the concepts of temporariness and anticipation, which as a general rule will be handled only by

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philosophical theories. Our guiding principle is the ability to "anticipate oneself," proposed by Sutter, a phenomenological psychiatrist. Data were analyzed from the autobiographies of the students through the hermeneutical phenomenological method developed by Lindseth, based on Ricoeur. Results allow answering the question of the study about the temporary experiencing of the young abusive marijuana consumer. The results showed poverty in the temporary dimensions referring to the past and the future, while in the report, it is more developed in the present moment. They appear detained in a more childish stage, in which the present predominates, and the future seemed not to be united with the past, which impresses as if it were "avoided." What has been (past) does not link with what is wanted to be, so, elements of the past have no relation with future project.

Keywords: cannabis, marijuana, adolescents, Neuro-SPECT, HMPAO, neuropsychological tests, temporality, time, hermeneutical phenomenological method, anticipation, projection capacity

1. Introduction

From a historical point of view, cannabis or marijuana consumption has been related to cultural and worldview aspects that confer different meanings. Marijuana is a recreational drug that comes from the marijuana plant: the hemp plant Cannabis sativa. Marijuana has 489 known constituents, only 70 of which are cannabinoids with the remainder including potentially neuroactive substances. Tetrahydrocannabinol (THC) is the most common phytocannabinoid and is psychoactive. CBD is the best studied of the nonpsychoactive cannabinoids [1, 2]. Consumption has been common since ancient times, but it never seemed to be a social problem. Nowadays, without discussing its characteristics and biochemical structure, its consumption seems to be tied to both positive and negative connotations that arise from social, historical and cultural circumstances. These circumstances determine and define what a society or era regards as a social problem [3]. Regarding this topic, scientific research reports the negative effects and potential benefits of marijuana consumption. These findings do not have an impact on the discussion, which has turned into a political matter, instead of a public health matter.

In order to discuss the benefits or negative effects of marijuana consumption, and especially its medicinal use, first we need to clarify that marijuana cannot be regarded as medicine. This confusion comes from various studies on the medicinal properties of marijuana, but this study considers the cannabinoids only, which are some of the components of this plant. This means that we must make a difference between the plant and some of its components, which are used in studies on pain management, for instance. Assigning medicinal properties to marijuana is the same as assigning the analgesic properties of morphine to poppy plants: morphine is used to manage the pain, not the hallucinogen effects of opium. This conceptual error is the base argument in the defense of the medicinal use of marijuana plants [4] and, by extension, for its consumption at a population level.

Regarding its use as medication in the palliative treatment of pain in terminal cases, chronic pain reduction is described without a determined cause. The same happens with the increase

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in mobility in multiple sclerosis patients with spasticity reduction, as well as in arthritis and musculoskeletal ailments. In low doses, it could stimulate the appetite of AIDS patients [5–7].

It is used to relief oncological pain as a palliative strategy (compassionate), even though specialists do not consider it to be better than morphine derivatives. It has been used to treat vomit and secondary effects of chemotherapy, without evidence to defend its use in this cases, nor comparative studies to confirm it to be better than the recommended medication to treat vomit and nausea associated with chemotherapy. It has never been proven to be better than conventional antiemetics, yet only in placebo studies.

It is worth mentioning that, without denying some possible benefits of its medicinal use, none of these studies addresses its use in adolescents directly. Additionally, to this day, the food and drug administration (FDA) has not approved cannabis to treat any disease; therefore, the investigation for its medicinal use, focused on cannabinoids, and the evidence on its medical usefulness are still limited [4], while the discussion regarding the medical benefits of marijuana is still present. The risks associated with the medicinal use of the plant have not been determined accurately [8], and there is a lack of comparative studies to validate its use as a replacement for scientifically approved drugs [9].

Regarding the negative effects related to the early consumption of marijuana, evidence suggests that consumption before the age of 17 may cause neurobiological changes, more serious than in cases of later consumption [10–13]. A deterioration of the neuronal connectivity in specific brain zones has been described in this line of studies, such as the precuneus and hippocampus, zones involved in learning and memory, as well as in the prefrontal networks [14, 15], which can lead to a poor school performance and school desertion [4, 16]. In turn, alterations in the neuronal organization of the nucleus accumbens and the amygdala, as well as in their volume and shape, have been reported in young marijuana smokers [17]. Cognitive deficiencies and reduced IQs have been observed in adults that smoked marijuana regularly during their adolescence [18]. Some other consequences of the consumption of cannabis during adolescence (before the age of 17) that can be observed in adults are pointed out, such as underperformance in academic activities, an increase in the dependence of marijuana and other illegal drugs, as well as a greater number of suicide attempts [19]. On the other hand, in the case of genetic vulnerability, cannabis facilitates the triggering of psychosis [20, 21] and, in addition, it aggravates the course of the disease in patients with schizophrenia and fosters the first psychotic episode [22, 23].

According to the DSM-5 [24], the amotivational syndrome, pathognomonic symptom of marijuana consumption, is characterized by the loss of energy and abulia, which affects the normal performance of everyday activities. This decrease in energy, abulia and demotivation of the young consumer affects their capacity to efficiently plan and organize their time for a determined objective or life goal. This is valid, even though occidental societies have extended the period for youngsters to begin their adult lives and meet the responsibilities entailed in this new stage. This postponement is known as social moratorium.

The studies of Quiroga [25] conclude that consuming cannabis permanently may lead to a state of passivity and indifference, with a subsequent generalized dysfunction of social capabilities;

in addition, the consumption of marijuana can cause addiction: it has been claimed that one in six people that started to consume marijuana in their adolescence develops an addiction, as well as 25–50% of the daily consumers [26]. The cannabis abstinence syndrome is widely known, characterized by irritability, trouble sleeping, dysphoria, need of consuming and anxiety [4, 26].

In order to reveal the social and cultural meaning of cannabis, it is worth mentioning that in the last four decades, there has been a notable change regarding the ways and situations in which it is consumed. During 1960, consumption was relatively normal among university students that defined themselves as rebels or avant-garde, while school pupils practically did not consume. Commonly, they only experimented with alcohol and tobacco in order to look indifferent and defy the status quo. This shows that the environment and the scope of consumption have changed, from a restricted consumption culturally circumscribed to some groups for artistic, ritual or religious purposes, to massive consumption, becoming a part of the everyday lives of many youngsters [27, 28], to the point that we can claim that nowadays marijuana is the most produced, trafficked and consumed illegal drug.

Cannabis is consumed and grown in almost every country, and the produced quantities are higher than the total of other drugs [29]. Additionally, the type of marijuana that is available today for consumption is stronger, since clandestine laboratories have achieved changes at the genetic level through sophisticated biotechnology methods, achieving a higher concentration of THC. This concentration has been increasing from 3% in the 80s to 12% in 2012 [4]. This leads to the hypotheses that the negative consequences of its consumption may be greater.

Regarding risk perception, studies carried out in Spain and Chile [27, 29, 30] show that in the last 10 years the perception of risk associated with consumption has decreased considerably, especially among secondary students, this is adolescents. A report by SENDA in 2015 claims that the risk perception regarding consumption shows significant changes, decreasing from 46.8% to an even lower 34.4%. These data coincide with the findings of recent investigations, such as data in the study on marijuana and learning disorders carried out in 2007 [31], in which the risk perception associated with marijuana consumption was very low. This decrease in the risk perception among youngsters contributes to the fact that in Latin America there is a significant number of free magazines that advertise the benefits of marijuana consumption, ways to consume and acquire the product and different ways of cultivating it, in order to grow better plants at home, or even for commercial production. These magazines are distributed in places with high concentration of youngsters and adolescents, such as concerts, cinemas, art events or simply on the streets or outside schools [29].

The results of the investigation carried out by the Inter-American Drug Abuse Control Commission [32] show that marijuana consumption among youngsters increased in all countries in the continent, except Peru, with Chile as the country with the highest consumption in the region. In Uruguay, marijuana consumption doubled during the 2003–2014 period. An increase of roughly 20% in marijuana consumption among adolescents, 12 years and older, has been observed in Colorado and Washington [33]. Likewise, between 2008 and 2014, the Children's Hospital Colorado reported a significant increase in the number of consultations for high marijuana intake [59]. The 2015 World Drug Report published by United Nations [60]

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points out that in Chile the consumption level in 13-year-old kids reaches 15.7%, compared to 3% in 1995 and reaches 38.9% for 17-year-old youngsters, while in 1995, it reached 21.4%. It is worth mentioning that this 38.9% of consumption in 17-year-old youngsters represents the highest figure in the world related to age. According to figures reported by SENDA [27], the consumption of marijuana in the 12–18 age group increased from 6.7% in 2012 to 13.5% in 2014. With respect to the group of youngsters aged between 19 and 25, the consumption also increases significantly from 17.5 to 24%.

In Chile, the socially shared belief, especially among youngsters, is that consumption has no negative effects on behavior, mental health or school performance. However, two lines of research carried out recently in the country have empirically proven the existence of negative effects that deny the belief of harmless consumption, especially in school adolescents, who represent the most vulnerable segment of the population.

2. Two studies

Two parallel studies are carried out, one aimed at studying the subjective experience of the young consumer, through the analysis of the temporality variable [34], and a second study that analyses the effects on basic cognitive functions for the school learning process [28, 30]. These studies are carried out in a scenario where Chile is the country with the highest consumption levels in school pupils in Latin America, with a tendency to decrease the age of first consumption.

First, we have a line of research aimed at studying the subjective experience of the temporality variable in young consumers. This approach to the problem represents pioneering work in Chile in terms of addressing the problem in parallel from the individual experience of the adolescent, derived from the analysis of the information that they provide (qualitative approach), and a quantitative study with a representative sample of the consumer adolescent population.

The future experience (qualitative approach) represents a decisive variable in terms of the current behavior of the young adolescent student, their motivation to work and study, and, in general, to plan and achieve their life projects in a society that expects certain competences for them to be prepared to develop in a quintessentially competitive and individualistic world [35]. Very important future aspects are defined in this stage of life, with youngsters freely and consciously deciding the path that will give meaning to their lives.

This planning takes us to the temporal dimension as an existential category of human beings, and therefore decisive in their life history. When we talk about the temporal dimension, we refer to the experience of temporality, this is, their capacity of moving through time, shaping the past through memory and shaping the future through the present [36], in such a way that the subjective experience of time would be equal to the internal temporal happenings [37] in a synthesis of past, present and future. From this perspective, it is not the past, but the future, that determines the actions of the young adolescent. Ortega even claims that we live from the future, which comes to life in our project, and that the future forces us to select everything in our past that is related to our future [38–40].

The study of the experience of temporality in the young consumers should have privileged the qualitative methodology, based on psychological discipline and philosophy, especially in the phenomenological trends, due to its contribution to the understanding of the time experience in human beings. The key concept was the "anticipation," developed by Sutter [41], who presents the centrality of the future and the capacity to anticipate, and how it can be altered in the different psychopathological conditions.

The second parallel investigation presented uses the classic quantitative methodology procedures to study the behavior of a group of nearly 600 high school students, belonging to three schools in Santiago, Chile. These students were evaluated by psychologists through psychometric tests and by medical professionals, qualified specialists, through hi-tech neuroimaging procedures.

These two lines of research address the problem from two different disciplinary and methodological perspectives, which allows us to widen our range of view and add certainty to the conclusions related to the effects of marijuana consumption in young students in Chile.

2.1. Qualitative study about marijuana and temporality experience in adolescents

Psychology has developed the idea that the acquisition of formal thought in the adolescent generates the dimension of future, which is expressed through the life project [42–47]. However, the philosophical phenomenological current offers an analysis of temporality experience allowing a better approach to the study of the experience of the young consumer, generally socially disadvantaged or left at the margin of the work market. This group shows a tendency to remain trapped in an "extended present," with scarce capacity to think in the future and even less to plan it [48–53].

For answering the question about the temporality experience in a group of young Chilean consumers [34], their biographic narratives are analyzed, using for it qualitative methodology validated by the scientific community [54, 58]. This methodology consists in gathering information, starting from autobiographies, about perceptions, feelings and actions and about their capacity to anticipate themselves in the realization of their projects and of their way of experiencing temporality.

The narratives of 15 young consumers [55] who meet the specifications of being school adolescents, men and women, coming from different social contexts are gathered. Among other requirements, they had to be usual marijuana consumers (and not of other drug) with ages fluctuating between 16 and 19 years old. This stage corresponds to the period of late middle adolescence, characterized by the search of reaffirmation of the project and need of social insertion for accomplishments of goals [45, 46, 56, 57].

2.2. Quantitative study with respect to marijuana consumption in pupils and its effects in cognitive functions through neuropsychological tests and Neuro-SPECT

This second study answers the question about the effects over the brain function of exclusive marijuana consumption in adolescents not labeled as addicts, by means of neuropsychological tests, such as Benton Visual Retention Test, Rey Words Memory, Rey Complex Figure Test and

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Wisconsin Test. Added to the previous, Neuro-SPECT was used and the information obtained was analyzed with the purpose of identifying regions and sub-regions of altered perfusion as consequence of the consumption.

For purposes of this study, it was considered consumer the student who declares a minimum of four episodes of exclusive cannabis consumption during the last month and minimum usual consumption of 18 months. The ages of the groups forming the sample fluctuated between 15 and 18 years old, with an average of 16 years old.

In accordance with quantitative investigation norms accepted by the scientific community, two groups were conformed: 40 exclusive marijuana consumers and 40 not consumers, and the results obtained were compared in both groups in neuropsychological tests and Neuro-SPECT technology.

3. Results

3.1. Qualitative study of the temporal variable

The so-called naive reading of the biographic narratives delivered by the adolescents show that almost all of them were a production of brief texts, in which it stands out the poverty of the descriptions of past situations, with abundance of experiences associated to losses (death of a close relative), solitude and, specially, feeling of not being recognized by significant figures (father). The temporal dimension of the present appears as richer in details, especially related with present friendships, felt as refuge. In what refers to interests, they showed lack of clarity, frequent changes of goals and objectives and a dimension of future that impresses for absences and losses in almost all the analyzed ambits: family, image of themselves, interests, relationship with pairs and goals or projects. It seemed as if the future was not related with what they did in the present, that is, as if the future was not bound to the present or to the past and as if what was done today was not related with what one wanted to accomplish in the future.

In the following stages of the process of narrative analysis, the same results are confirmed, especially lack of capacity to visualize the future in the areas related with family, pairs, image of oneself and interests. In general, the tendency corresponded to postpone the future, not to assume it, leaving it for later. It is verified that the temporality experience is characterized by centering in the immediate here and now, and an impaired experience of the future. The anticipation capacity, determinant of the acting in favor of the accomplishment of the proposed goals, is absent, is so that although in fact they have some projects, there is no way of visualizing how they anticipated their conduct to reach them.

3.2. Quantitative study of the effect of the consumption in learning

The results obtained in neuropsychological tests individually applied to the selected consumers and nonconsumers show significant differences in yield in favor of the nonconsumer group in comparison with the consumer group.

(a) Rey words memory evaluates immediate verbal memory. The consumer group yields in average 15% less than the nonconsumer group.

(b) Benton Visual Retention Test. The nonconsumer group reaches scores significantly superior in comparison to the consumers in tasks involving capacity of attention, concentration, immediate retention, perception, visual memory and visoconstructive aptitudes, confirming an alteration in the consumers with respect to integration and organization of the spatial stimuli. The adolescent consumers make in average 3.8 mistakes per test in contrast with 1.7 mistakes of the nonconsumers, which means that the quantity of mistakes made by the consuming group is 21% higher. This difference is statistically significant, which reveals an impoverishment of the capacities of attention, concentration and of work spatial memory.

(c) Rey Complex Figure Test. The scores obtained by both groups show significant differences in favor of the nonconsumers in tasks involving ability and strategies of execution in the visoperceptive level, visual memory, capacity of hierarchical structuring and organization of visual information. A difference close to 7 points was verified in the average obtained by both groups revealing clear evocation difficulties and limitations in the fidelity of the visual memory of the consumers. The scores of the test show that the consumers use execution strategies of inferior quality to that expected for age, for copy and visual memory.

(d) Wisconsin Test. It evaluates executive functions, that is, mental flexibility, planning strategies, organized inquiries and utilization of the environmental feedback to change schemes, in addition to capacity of inhibition of the answer in course. It showed that in the category total mistakes 30% of the consumer group is located in the level of moderate to intermediate impairment. In persevering mistakes, 26% scored in the level of medium or inferior impairment. With respect to the percentage of persevering answers, 17.2% of the school consumers obtain scores of impairment superior to the media.

3.3. Results of the evaluation with Neuro-SPECT

The individual results obtained were compared with normal population of the same age. The results were expressed in standard deviations (SD) over and under normal average. It is verified that there are focuses within some Brodmann areas that are hyperperfused to 5 SD over the normal average: areas 9, 10, 46 (frontal lobe) of the right hemisphere, areas 23, 30 and 31 (posterior cingulated, cognitive circuit) bilaterally, and area 17 of the left hemisphere, corresponding to the visual area of association. Hypoperfusion focuses are observed, at less than 5 SD under normal average, bilaterally in Brodmann area 24, in the left hemisphere in area 25, bilaterally in the projection of the hippocampus and Brodmann area 36 and in the frontal lobes in Brodmann areas 10 and 11. Deep hypoperfusion is also observed in bilateral temporal inferior gyrus and 23 right.

Although the understanding of these results is not within reach of everybody, it is clear that marijuana consumers showed brain alterations and dysfunctions that result consistent with

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the behavior showed in neuropsychological tests and that move them away from the results obtained by adolescents in accordance to demographic norms.

4. Discussion and conclusions

The results of the two presented studies add evidence to the negative effects of marijuana consumption both in the adolescent life project—in a moment in which that project is a key in his psychological development—and in their present school performance, base of their future social, professional, work, family development. Both studies coincide in the fact that marijuana consumption in pupils has harmful effects in the capacities for school learning and in temporality, lived without an explicit connection between the past, the present praxis and the yearning of future.

The lack of capacity for anticipating interferes with the possibility of transcending the present and confines them in themselves. This state of being in captivity in their own intimacy is translated in the evasion of obligations and responsibilities, in not assumed tasks, in largely postponed decisions, for example, with respect to what to study or to what actions to initiate for preparing themselves for adult life.

The fulfillment of the young consumers in neuropsychological tests shows an increased capacity of mistakes in the execution of the proposed tasks. These results can be transferred to situations of their school life and explain their deficient fulfillment in cognitive tests and demands in the classroom. Their diminished capacity of attention and concentration explains their omissions, mistakes and confusion in the moment of answering to the task. Their work strategies, inferior in quality to those expected in relation to their age and cognitive development, bring them to work by trial and error, to improvise answers, not to evaluate nor self-correct their work, in any way, to deliver infantile, improvised solutions, only for answering without demanding themselves farther. Without doubt, the executive functions affected by the consumption compromise learning and in general, school performance.

The results of the application of neuropsychological tests and evaluations by images (Neuro-SPECT) confirm the association between marijuana consumption in adolescents and harmful effects over brain functioning, especially in executive and cognitive functions. It is added to the previous the compromise of the immediate verbal memory or of work, indispensable in the classroom if one considers that most part of the content is orally delivered.

This compromise has its correlate in neuroimaging tests (Neuro-SPECT) by means of which it concluded that marijuana produces, in brain cortex, multifocal functional alterations. It is especially compromised the cognition, the mood control and the executive function for frontal abnormality in area 10 and 11 of bilateral Brodmann. It is necessary to outline that the frontal cortex participates in the range of human conducts related with the ethical dimension, function that would also influence on the work and the social conduct of the pupils consuming marijuana. Functional alterations are also observed in the form of multifocal hypofunction of disorganized distribution in marijuana smokers, although of lower statistical significance (less

severity) than the observed in cocaine consumers. These findings allow us to pose the presence of neurotoxicity in marijuana consumers since, when comparing their results with a normative data base for persons of the same age group, none of the Neuro-SPECT studies of the young consumers was normal.

The results of neuroimaging tests showing effects in brain areas related with learning are highly coincidental with the scores obtained by the same subjects in neuropsychological tests, which adds evidence to the negative effects of marijuana consumption in learning, central theme of this study. Especially important is the fact that these results correspond to adolescents who have not been diagnosed nor labeled as addicts and who, therefore, do not yet constitute a public health problem, nor are perceived as adolescents in social risk. If one considers that these youngsters come from socially vulnerable populations associated to poverty, there are aggravated consequences or effects that can have for them the school failure bound to usual marijuana consumption, thinking that education should be the medium that allows them a greater social mobility, and it is in fact a protector factor against social risk.

The nonperception of risk in consumption, the easy access to cannabis, the unquestionable harmful effect over the cognitive functions involved in learning and school performance, the increase of the number of adolescent women consumers, the evidence gathered about cannabis as inductor or facilitator of the use of other substances and the diminution of the age of beginning of consumption constitute a problem for public health policies, compromising school, adolescents and their families. In relation to this challenge, it is again confirmed the debt of the institutions, especially of the family and of the school, in the sense that adolescent consumers do not perceive risk awareness by their parents or by their teachers, nor social control over the consumption.

With respect to qualitative investigations about the altered temporality experience, the results become relevant when coinciding with the also altered functioning of the hippocampus associated to memory and to the prefrontal lobe responsible for planning. The findings about the alterations in temporality experience explain how it is that in these youngsters there is a verifiable connection between the past and the future projections or possibilities. The past, which brings the subjects toward their future and which determines the course of his actions, appears impoverished. Instead of a possible future, it is a matter of a future full of unrealizable projects, of empty possibilities, that do not consider feasibility arguments and that change with facility to replace them by others equally unrealizable. They live, then, an inauthentic future, with an irresponsible treatment of the future, without interest for reaching goals. They verbalize unrealizable and fantastic plans, such as being famous, or that the world recognizes their value, but without planning actions for reaching those unrealizable goals, imprisoned in a present without hope or yearnings.

Finally, it is not difficult to think that this attitude in front of life, this demotivation, has its correlate in school performance, that is, in the most proper task of the adolescent life stage. The circle is then closed and is fed back with negative signs: marijuana consumption, real difficulties in cognitive capacities, closing of the future experience, absence of plans, school failure, verification of the inutility of the effort, withdrawal to the present facilitated by the consumption and more consumption. The cycle is reinitiated.

Although the presented results impact the common sense of the parents and the social sensibility of the teachers who work with adolescents, it is necessary to outline that there is no real discussion on the part of the scientific community with respect to the damages and benefits carried by its use, but rather a debate at the level of public policies, which leads to confusion and to a contradictory discourse between the socially internalized and the message transmitted on one side by the authorities and on the other, by the academic and scientific world.

Cannabis consumption in adolescents is a complex and multidetermined theme, but what the population does with respect to this is simplified and dichotomic without considering the context, the age of onset, who, how much, when good or bad, legal or illegal, beneficial for health or innocuous marijuana. This lack of agreement among the responsible adults leads the young adolescent to adopt the belief and the discourse of the majority who consider themselves avant-garde in relation to the values: "it is not harmful, it is cool, it is a natural herb and the power elites are trying to prescribe it or to restrict its consumption for very determined cases and persons." This contradiction is very real and is clearly reflected in the arguments used by the youngsters: why is the cigar permitted in circumstances that it kills? Why is marijuana illegal? Finally, this situation leads to the fact that its prohibition is seen as empty, without support and believable norms.

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