

# Cannabis and tobacco use: where are the boundaries? A qualitative study on cannabis consumption modes among adolescents

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## Abstract

The purpose of this article is to identify tobacco and cannabis co-consumptions and consumers' perceptions of each substance. A qualitative research including 22 youths (14 males) aged 15–21 years in seven individual interviews and five focus groups. Discussions were recorded, transcribed verbatim and transferred to Atlas.ti software for narrative analysis. The main consumption mode is cannabis cigarettes which always mix cannabis and tobacco. Participants perceive cannabis much more positively than tobacco, which is considered unnatural, harmful and addictive. Future consumption forecasts thus more often exclude tobacco smoking than cannabis consumption. A substitution phenomenon often takes place between both substances. Given the co-consumption of tobacco and cannabis, in helping youths quit or decrease their consumptions, both substances should be taken into account in a global approach. Cannabis consumers should be made aware of their tobacco use while consuming cannabis and the risk of inducing nicotine addiction through cannabis use, despite the perceived disconnect between the two substances. Prevention programs should correct made-up ideas about cannabis consumption and convey a clear message about its harmful consequences. Our findings support the growing evidence which suggests that nicotine de-

pendence and cigarette smoking may be induced by cannabis consumption.

## Introduction

After tobacco and alcohol, cannabis is the most consumed substance among adolescents in Switzerland [1], country which has the highest consumption rate in Europe among 15-year olds [2]. As for tobacco consumption among 16- to 20-year olds, a Swiss study [1] showed that in 2002 one-third of apprentices and one-fifth of students smoked daily, and a significant increase of regular tobacco consumption among apprentices of both sexes in almost a decade (1993–2002).

A previous study [3] compared the characteristics of cannabis-consuming youth who have never been tobacco smokers and youth who use both substances. Cannabis-only consumers seemed to be more occasional cannabis users and to be managing in terms of academic performance, involvement in sports and parental relationships better than cannabis and tobacco co-consumers.

Cannabis and tobacco co-consumptions have been studied for years and Swiss data among 16- to 20-year olds indicate that 80% of cannabis users also smoke cigarettes [3]. Some researchers have examined the link between the two substances on the assumption that tobacco smokers are more likely to use cannabis than those not smoking tobacco [4–6]. This relationship has been observed in the context of the 'gateway' hypothesis [7, 8], which suggests how cigarette and alcohol consumption precede cannabis consumption which, in turn, leads to the use of other illegal substances. Others have considered the reverse, referred

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to as the ‘reverse gateway’ hypothesis, asserting that young cannabis users have a greater propensity to smoke cigarettes [9, 10]. Patton et al. [10] showed reverse gateways as weekly cannabis consumption, among adolescents or young adults who had not smoked tobacco prior to their cannabis consumption, was associated with increased risk of late initiation of tobacco use and development of nicotine dependence.

Co-consumption of the two substances has also been studied through more general behaviors. Using a holistic approach, a qualitative study put forth relations and co-dependence between cannabis and tobacco by exploring smoking behaviors and attitudes, including cessation and quitting experiences in the wider life context of mid-to-late teens [11]. Other research focused on how cannabis use appeared to sustain cigarette smoking behavior of young people whose social lives tended to be cannabis oriented and how participants related their cannabis and cigarette use behaviors to concepts of addiction, dependence and harm [9].

The growing evidence which suggests that nicotine dependence and cigarette smoking may result from cannabis consumption has thrown light on an important public health consequence of cannabis use. There is a strong need to understand in detail how cannabis is consumed and the potential consequences on tobacco consumption. Although qualitative research on cannabis consumption has been carried out [9, 11, 12], to our knowledge no study has captured in depth the issue of cannabis consumption through a qualitative method before. The aim of our study is to fill part of this gap by gathering precise narratives among adolescents about their cannabis and tobacco co-consumption modes in order to better appreciate the links between the two substances and what consumption modes tell us about the gateway and reverse gateway hypotheses. More precisely, we seek to answer the following questions: (i) what are the cannabis and tobacco consumption frequencies and onsets as well as co-consumptions?, (ii) what are the main forms of cannabis consumption and do they include tobacco?, (iii) what are the users’ perceptions of tobacco and cannabis? and (iv) are the two substances consumed at the same time and is there a substitute phenomenon between the two?

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## Methods

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In order to obtain accurate in-depth descriptions of consumption modes, we chose to conduct a qualitative research through an ethnographic approach using focus groups (FGs) and individual interviews including cannabis consumers living in Switzerland. An ethnographic approach is particularly appropriate in this context in order to acquire precise accounts from adolescents directly involved in this situation [13] and to understand the behaviors and attitudes of this particular group [14].

### Participants

Criteria to participate in the study were to be aged between 15 and 24 years old (along with the World Health Organization’s definition of youth), being fluent in French and being a current or former cannabis consumer. Recruitment of participants took place until reaching saturation of data, therefore defining the number of participants in the course of the study. From this basis, 22 current or former cannabis consumers took part in the study.

Since our research group works closely with a multidisciplinary health care unit for adolescents, seven participants were first recruited there, independently of their reason for consulting. They were then asked if they had friends who might like to join. Thus, the remaining 15 participants were enlisted using a snowball method. Among the 22 youths, nine were high school students, two were university students, five were apprentices, three were working (two were doing a sabbatical after high school and one finished an apprenticeship), two had quit their apprenticeship (dropout) and one was unemployed. In Switzerland, school is mandatory up to age 16. Afterwards, about 30% of adolescents follow high school (students), 60% vocational school (apprentices) and 10% do not continue or delay their education.

### Measuring instruments

Previous research has shown the relevance of using both FGs and interviews in a study as each method implies different types of social interactions and narratives produced [15, 16]. Interview settings offer the

possibility for a trustful and in-depth discussion between researcher and adolescent. FGs encourage participation from people reluctant to be interviewed on their own [17] and the group effect stimulates the emergence of ideas. In our case, we decided to let each participant chose to take part in one of the two methods as it is not always easy to talk about the use of illegal substances. As a result, our study included five FGs and seven individual semi-structured interviews performed between January and July 2007, including a total of 22 youths (14 males; mean age of the sample 18 years). Description of FG and individual interviews is detailed in Table I.

### Data collection

The first author conducted all individual interviews and FG in French, which lasted from 1 to 3 hours and were recorded and anonymously transcribed verbatim. A detailed interview guide was used to discuss three main themes with the participants: (i) cannabis and tobacco consumption modes including beginning of consumption, forms and circumstances of current consumption and cannabis and tobacco co-consumption; (ii) cannabis acquisition modes such as buying and selling, acquisition networks and personal production and (iii) cannabis and tobacco-quitting intentions and experiences.

The study was approved by the Ethics Committee of the University of Lausanne's School of Medicine. Contents of the research and questions to be discussed were explained at the time of the recruitment on the phone and once again prior to beginning the FG or the individual interview. Each participant signed a consent form before starting the discussion. No parental consent was necessary. To thank them for their participation, every participant received a cinema ticket worth ~15\$US.

### Data analysis

Transcripts of all FGs and interviews were transferred to the qualitative analysis software Atlas.ti (version 5.2) and narrative analysis was conducted based on grounded theory process [12, 13, 18]. The purpose of using grounded theory is to create explanatory schemes based on the experiences of those familiar with the subject of interest [14, 19].

This included creating quotes and codes for all transcripts looking for conceptual similarities and differences and predominant and relevant themes (102 codes were created). The size of the quotes—part of a sentence, a whole sentence or a paragraph—was defined according to the tackled theme. Each quote could hold several codes. The codes were then synthesized and grouped to form the different hierarchical levels offered by Atlas.ti such as memos and classified and analyzed in order to answer our pre-defined research questions.

Two comments concerning terminology are in order for the sake of general comprehension. First, 'cannabis cigarette' and 'joint' are used interchangeably. Second, if not otherwise specified, the word 'consumer' is used to talk about cannabis consumption, whereas 'smoker' refers to tobacco consumption.

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## Results

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The following results are structured according to four predominant themes explaining the relations between cannabis and tobacco: cannabis and tobacco consumption frequencies and onsets as well as co-consumptions, cannabis cigarettes as the most common consumption mode, differences in perceptions of the two substances and substitute phenomena between the two substances.

### Cannabis and tobacco consumption frequencies and onsets and co-consumptions

At the time of the study, 20 interviewed adolescents were cannabis consumers (16 daily and 4 occasional, mainly on weekends). Of these, 18 also smoked tobacco (16 daily and 2 occasionally) and 2 had quit tobacco smoking. Two were former cannabis consumers and daily cigarette smokers (Table I).

The 16 daily cannabis consumers generally consumed several cannabis cigarettes per day. Some started in the morning, others during their lunch break and still others in the evening when they left school or work and continued until bedtime. Frequencies varied from person to person and day to

**Table I.** Description of the sample

Interviews and FG	Sex	Age	Age at first cannabis consumption	Frequency of cannabis consumption	Frequency of tobacco consumption	First substance used
Interview 1	M	17	15	Occasional	Daily	Tobacco
Interview 2	M	21	15	Daily	Quit (substitute) <sup>a</sup>	Tobacco
Interview 3	M	17	12	Daily	Occasional	Cannabis
Interview 4	M	19	15	Daily	Daily	Cannabis
Interview 5	F	15	13	Quit	Daily	Tobacco
Interview 6	F	18	13	Occasional	Occasional	Cannabis
Interview 7	F	16	15	Quit	Daily	—
FG 1	M	16	15	Daily	Daily	Simultaneous
	M	18	15	Daily	Daily	Tobacco
	M	16	15	Daily	Daily	Cannabis
	M	18	—	Occasional	Daily	Cannabis
FG 2	F	19	16	Daily	Daily	Tobacco
	M	21	—	Daily	Daily	Tobacco
	M	19	15	Daily	Daily	Cannabis
FG 3	F	20	15	Daily	Quit (substitute) <sup>a</sup>	Tobacco
	F	19	17	Daily	Quit	Tobacco
	M	18	14	Daily	Daily	Tobacco
FG 4 <sup>b</sup>	F	18	15	Daily	Daily	Cannabis
	F	18	15	Daily	Daily	Simultaneous
FG 5	M	—	—	Daily	Daily	—
	M	—	—	Daily	Daily	—
	M	—	—	Occasional	Daily	—

M, male; F, female and—, missing information.

<sup>a</sup>Two participants considered themselves ex-cigarette smokers, but they still used tobacco occasionally as a substitute for cannabis.

<sup>b</sup>FG4 included five females: two mentioned under FG4, the two females from FG3 and the one female from FG2.

day, but the main characteristic of daily consumers was that cannabis was part of and gave rhythm to their lives: ‘Whether it’s the weekend, whether I’m sick, whether I have 40° temperature in bed ... it’s part of the habit of the day ... yes, sort of like a habit, like eating, I smoke [cannabis]’ (male, age 16).

The four occasional cannabis users consumed mainly on weekends and vacation. Sometimes their consumption extended to weekdays, but it was not part of their everyday life and they generally did not buy cannabis themselves: ‘I never bought cannabis, it’s always friends of mine who had some’ (male, age 17) or rarely: ‘At age 16, I started buying a little bit, but it was only for going out. We would get together to buy some for the evening, and we would smoke like that during the evening’ (female, age 18), and they seemed to consume mainly when

the occasion arose: ‘Sometimes, if I have some [cannabis], I’ll smoke more often. But generally, I don’t have much so that’s it .... But I receive cannabis [from friends] most of the time’ (female, age 18). Three were also daily cigarette smokers, and one smoked occasionally:

As for the two former cannabis consumers, both had been heavy consumers for 1 year: ‘[I consumed] several [joints], several times during an evening. On weekends, it could go up to 6-7 [joints] per evening. And during the week it was something like 2 or 3[joints], depending on how many we were. I would say between 4 and 5 times a week’ (female, age 16). At the time of their interviews, both had quit 3–4 months previously, but remained daily cigarette smokers.

Overall, participants began their cannabis consumption between 12 and 17 years of age (median

15) and all consumed tobacco as well at one point or another. Nine started with tobacco, seven with cannabis, and two with both simultaneously (information is missing for four participants) (Table I).

### **Cannabis cigarettes**

The main consumption mode among all consumers was cannabis cigarettes. Other ways of consuming such as food preparations, pipes and water pipes were rare and experimental. Consumers were unanimous in their lack of appreciation for using water pipes on a regular basis because its effect was too powerful: 'A water pipe is like a half a joint in your face in half a second, so it goes up directly and then it's like a little delirious crisis for 30 seconds, but it's really strong, it's more for people who really want to get totally high' (male, age 16). They were often considered as methods to be tried once or twice or used only on special occasions.

Joints were always presented as a mix of cannabis and tobacco for three reasons: (i) pure joints are too strong: 'I add tobacco [in joints] because pure cannabis is too much for the lungs; it makes you cough too much' (male, age 21); (ii) it is too expensive to smoke pure joints: 'That's also why people put tobacco [in joints], to save a little on the pack of weed, which goes down fast if we do only pure joints' (female, age 20) and (iii) pure joints do not burn correctly: 'A joint without any tobacco is very difficult to smoke because one has to keep lighting it over again' (female, age 19). Consequently, cannabis was never consumed without tobacco, which implied that co-consumption of these two substances always took place whether or not a cannabis consumer smoked cigarettes. As one participant stressed: 'Dependency is different between cannabis and tobacco, but one has to say that we always smoke joints with tobacco, so the boundary is pretty ambiguous' (male, age 21).

However, the proportion of tobacco and cannabis varied according to different criteria. One was personal taste, as some people preferred feeling the taste of tobacco as little as possible while smoking a joint: 'I try to put less tobacco than cannabis [...] because [when there is] too big a proportion of tobacco, of the taste of tobacco, I don't have any

pleasure' (male, age 21). Another condition was the amount of cannabis left over or available although there was a limit to the quantity of added tobacco: 'According to the amount of stuff [cannabis] left, I'll add up to ½ [a cigarette] but I never go above' (male, age 20). A third factor was the number of people present to smoke the joint which, in turn, determined its size: 'It depends also, if there are more people, I try to put in more tobacco [in the joint] so everyone can smoke' (male, age 17). Finally, it depended on the expected effect; the more the consumer wanted to 'get high', the more cannabis was added: 'It also depends if we want to be totally stoned, we just put a little bit of tobacco' (female, age 15). The proportion of tobacco and cannabis thus varied from one person to another and according to context.

There seemed to be consensus around marijuana (cannabis leaves) as the most consumed type of cannabis. It was the most available in Switzerland and appreciated in terms of its taste and effect: 'Effects are different. Weed is more ... one feels more euphoric, whereas hashish puts you completely to sleep' (female, age 18). Moreover, cannabis cigarettes were stated as easier to prepare with marijuana than with hashish: 'It's easier [to roll] because hashish needs to be crumbled, and to crumble it when it's hard, one has to heat it with a lighter, it takes more time; and when you're outside it's less practical, whereas with marijuana it's easier' (female, age 15).

### **Substance perceptions**

Overall, study participants considered cannabis to be 'natural', and therefore not necessarily harmful to health, in contrast to a predominant negative perception of tobacco consumption. Participants discredited tobacco for several reasons. First, it is regarded as unnatural: 'Fags, there is so much crap inside; cannabis at least is natural' (male, age 16). Second, it is considered harmful to health unlike cannabis: 'I think cannabis is better than fags, at least in terms of health' (female, age 16). Third, it is considered unethical in the light of the tobacco lobby: 'In fact, I'm very much against the tobacco industry especially since I know [...] how they try

to attract young people, so I try not to invest any money in that' (male, age 21). In view of this negative opinion of tobacco, four informants continued using cannabis daily while quitting cigarette consumption. For the same reason, two of these ex-cigarette smokers declared they used rolling tobacco in their joints to avoid some of the added substances present in regular cigarettes: 'Once one quits [cigarette] smoking, when you smoke joints, the taste of marijuana is destroyed if you put tobacco with disgusting added chemical substances. Whereas rolling tobacco has fewer [chemical substances]' (female, age 19).

Given these perceptions, the tendency to consider cannabis more positively than tobacco also stood out among the majority of participants when they were asked about future consumption intentions. In contrast to their cannabis consumption and the fact that only four participants actually quit cigarette consumption, many users described their wish to stop consuming tobacco in the long term. Compared with tobacco, cannabis was once again considered a natural substance: 'I say to myself, I already smoke a lot of cannabis, I should at least stop fags; otherwise, I say to myself, both are really bad. It's already bad, so at least I quit that, I think cannabis is better than fags, in terms of health' (male, age 16); and tobacco was considered as a toxic substance harmful to health: 'A cigarette has no purpose at all, it's smoke that just destroys, there is nothing else to it' (female, age 20). It was also believed to create strong dependency: 'It's much easier to quit joints than to quit fags, because dependency is different' (male, age 21). Furthermore, contrary to cigarettes, cannabis has the substantial advantage of having a psychoactive effect: 'In fact, I think fags are disgusting, they have a disgusting taste and don't have any effect, so for me there is no appeal to smoke' (male, age 21). As a result, they did not necessarily exclude future occasional cannabis consumption: 'Considering that there isn't a real dependence relation to the substance, it's more a pleasure. I wonder if one day I will really want to quit .... It's like someone who drinks a glass of wine every day at dinner' (female, age 19). And some easily imagined consuming during adulthood parallel to a professional occupation

as a way of relaxing: 'I can see myself smoking joints when coming home from work in the evening, after taking my shoes off' (male, age 18).

### **Substitute phenomena**

Despite these differences in consumer perceptions of tobacco and cannabis, the two substances were often consumed in parallel. Given that cannabis cigarettes were the main way of consuming cannabis and that they systematically included tobacco, the implication was a use of tobacco cigarettes as a substitute. In fact, all participants declared that they smoked cigarettes to compensate for cannabis: 'Fags came along slowly like that ... anyway, as for joints, either you smoke them pure, but that means you need a lot of weed, or you're obliged to have tobacco. So then automatically, every once in a while you don't feel like smoking a joint, so you smoke a fag. And then, little by little, you end up smoking a pack of cigarettes a day!' (male, age 19). For some consumers, it was the nicotine present in joints that generated the substitute phenomenon: 'I think dependency on joints is only a dependency on pure tobacco' (male, age 16). For others, compensation was generated by the fact that both substances involved the act of smoking, the identical gestures and the feeling of smoke going through the mouth and throat: 'It's linked to small gestures, take a puff, let the smoke go through your throat ... so you find yourself with a fag, but you just don't have the effect' (male, age 18).

All partakers in the study stated that consumption of one of the substances increased when they sought to decrease the use of the other. Either cigarette use increased when cannabis use decreased: 'When I was at school I decided to stop smoking joints during school, so I realized that I was smoking more cigarettes' (male, age 17); or cannabis use intensified when the number of cigarettes diminished: 'I prefer smoking joints to cigarettes, and when I smoke joints, I don't smoke as many cigarettes' (male, age 18). The same thing happened when quitting one of the substances, which was the case for two former cannabis consumers: 'When I quit cigarettes, I was smoking more joints. And when I stopped smoking joints, I was also smoking more cigarettes'

(female, age 15); or in a situation where it was not possible to smoke a joint: ‘When I smoke a cigarette, it’s because I can’t smoke a joint’ (male, age 18). For instance, one heavy user described very precisely how he quit his cannabis consumption several times for 2 months for professional reasons. But each time he quit one habit, he took up the other to compensate: ‘Now that I quit [cigarettes], I’m happy and next time I’ll quit cannabis, I’ll try not to start smoking again’ (male, age 21).

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## Discussion

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A key element of our findings was that cannabis cigarettes containing tobacco were the main consumption mode used and therefore cannabis was never consumed without tobacco. Consequently, consumers, even if non-smokers, were systematically exposed to tobacco, which can generate nicotine addiction independent of cannabis [10]. Moreover, a substitute phenomenon between tobacco and cannabis was very common among study participants, where smoking gestures are concerned or to compensate for nicotine present in joints, which leads to parallel consumption of the two substances. However, this result concerned mainly heavy cannabis consumers rather than occasional consumers, who might have had a lesser need to compensate [3]. This trend appeared to be independent of the order of substance use onset since the number of participants starting with each substance is similar, thereby confirming the results of other studies [10, 20] showing the two substances to be intrinsically linked irrespective of this order.

Our findings therefore add to the debate over the two hypothesis of the gateway and reverse gateway. Knowledge about how cannabis always includes tobacco seems to be in line with the ‘reverse gateway’ hypothesis [10, 21] according to which exposure to nicotine through cannabis consumption is a risk for nicotine dependence. Therefore, the ways of consumption, the gestures accompanying each substance, the inhalation of smoke and the presence of nicotine for both substance uses correspond and hence create a co-consumption. This influence of the consumption of one substance on the other is

also evident through the substitute phenomenon shown in our results where quitting or decreasing the use of one substance almost always implies increasing the use of the other. As a result, despite tobacco’s negative image and a greater motivation to quit cigarette smoking (compared with cannabis), it appeared difficult for co-consumers to quit both substances simultaneously. Our findings are comparable to those presented in a Scottish study [11], where participants encountered difficulties trying to quit cigarettes while still smoking cannabis. Another possible explanation is that cannabis withdrawal raises stress levels, which can be managed by using other substances such as tobacco [10]. However, our findings sustain the growing evidence which suggests that nicotine dependence and cigarette smoking may be induced by cannabis consumption [21].

Although both substances are harmful [22], our results stress a discrepancy between the perceptions consumers have of cannabis and tobacco, the first as harmless and the second as dangerous and addictive. Participants’ perception of cannabis as a natural and less harmful substance than tobacco was noted in a previous Swiss study on representations [12] where adolescents considered tobacco and alcohol more dangerous than cannabis since addiction is quicker. The widespread desire to quit tobacco, but not necessarily cannabis, corresponded closely to what Amos *et al.* [11] already observed. In fact, they found that most cannabis users claimed wanting to quit cigarette smoking, whereas few intended to stop cannabis use, to which they ascribed a much more positive functional value. This was also the case in our study where participants valued the effect of cannabis compared with tobacco. It thus appears that messages concerning the harm of tobacco use have been clearly communicated and taken up by young people. This is probably the result of a significant sensitization of the population that has been under way in Switzerland for several years in an effort to protect non-smokers: law forbidding tobacco advertising on radio and television, prevention campaigns, increasing the price of tobacco, declaring public places smoke free, preventing passive smoking and a broad political and media debate on smoking. In contrast,

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the majority of interviewed adolescents seemed largely ignorant of the harmful aspects of cannabis use, as previously reported [22].

As already described in literature [23], this highlights the prevailing understanding among youth that cannabis consumption has fewer consequences, at least in terms of physical health, than tobacco use. One explanation to this can be that there is a strong political debate which focuses on the illegal aspects of cannabis [12], but a public health message revealing clearly and objectively the harmful aspects of this substance is virtually inexistent [24], contrarily to what the case is for tobacco. This encourages the spreading of myths about cannabis, such as its natural and un-harmful values. Prevention on the one hand cannot orient its strategies in the same way as it is done with tobacco because it is an illegal substance, and on the other the harmful effects of cannabis are strongly dose dependent and therefore not as apparent as for other substances [25]. However, it appears necessary to find other approaches which can allow to talk about an illegal subject and orient messages towards the harmful effects of cannabis. Prevention programs among youths should correct already made-up ideas about cannabis consumption and convey a message which is clear and coherent among all adults.

The main strength of our study is to offer a qualitative setting which provided the significant advantage of going deeply into consumption behaviors and perceptions [13, 14]. Our study represents an insight into how young consumers use cannabis as well as tobacco and what beliefs accompany their consumptions. Consequently, it contributes to understanding how cannabis consumption supports tobacco use.

However, this study has several limitations. Results are based on self-reported narratives, thus a risk of inclined responses cannot be excluded. The FGs setting tended to modulate this outcome, for instance when participants made exaggerated remarks, others corrected or moderated them. However, this form of self-regulation was absent from individual interviews, thus possibly biasing information through a social desirability phenomenon.

Still concerning the FG setting, a limitation needs to be stressed as to the number of participants per

group. Firstly, recruitment of adolescents willing to talk about illegal substance consumptions was not an easy task; consequently, the size of the FG was sometimes small due to the needs of the research. Secondly, as indicated in Table I, three females from the sample each participated in two FG, the reason being that they helped recruiting further female participants. They contributed to the research on two occasions which could have a biasing effect on the value of the data. However, meeting with them twice also represents a strength as trust was established in a stronger way than with others and disclosed more. Thirdly, in the same line, the use of a snowball method to recruit participants has the potential bias of putting together subjects with the same characteristics. Fourthly, our sample is limited to youth in French-speaking Switzerland and, thus, not necessarily applicable to other populations.

Finally, it should also be noted that the majority of this study's participants were heavy consumers. Although there was a certain consensus regarding consumption modes (use of cannabis cigarettes with tobacco, marijuana availability, quantity of both substances mixed in a joint, etc.), results cannot be generalized to all cannabis consumers given that consumption frequency and quantity can have an important influence on tobacco co-consumption [3].

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## Conclusions

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Despite these limitations, our study highlights several key issues in understanding in detail cannabis and tobacco co-consumption modes and perceptions and links between the two substances.

Given the co-consumption of tobacco and cannabis, our findings suggest that in order to help youths quit or decrease their consumption of one or the other substance, both should be taken into account in developing a global interdependent approach.

Furthermore, although the public health message concerning tobacco use seems to have been communicated successfully in the Swiss context, consumer accounts portray a context where cannabis consumption, though illegal, has become normalized and draw attention to a serious lack of awareness of the harmful consequences of cannabis consumption.



Thus, it appears important that health professionals, parents and educators convey a clear message to the youth emphasizing the harmful effects of, first, cannabis consumption and, second, the co-effects of tobacco consumption within cannabis cigarettes. It also seems essential to help cannabis consumers acknowledge that they smoke tobacco while consuming cannabis and the addiction to tobacco and cigarette use that can derive from cannabis use, despite the perceived disconnections and differences in appreciation of the two substances.

Finally, this research highlights a positive piece of information being that the prevention messages concerning tobacco consumption and its harmful effects have been communicated with success and this type of messages should be used to address cannabis too.

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### Funding

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Department of Public Health of the Canton of Vaud, Switzerland.

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### Acknowledgements

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This study could not have been conducted without the collaboration of the included adolescents, who we sincerely thank for their time and trust.

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### Conflict of interest statement

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None declared.

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Received on August 4, 2008; accepted on March 4, 2009