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Title: Motivation for change and barriers to treatment among young cannabis users

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Introduction

About 14% of scholars aged 16 in the European Union (1), and 14.3% of students aged 16-17 in the US have used cannabis in the last 30 days. Spanish figures are among the highest, with 20% reporting any cannabis use in the last month (1). This is not surprising, given the ready accessibility of this substance as perceived by young people (2). Also, high levels of cannabis use among adults (3) and their considering it as a soft drug whose dangers are slighter than those of tobacco (2) suggest that, in general, there is quite a tolerant attitude towards this drug in Spain.

Risks of Cannabis Use

The scientific literature has provided sufficient evidence on the risks of cannabis use (4). Frequent use has been associated with family problems, low productivity, procrastination, sleep problems, low self-esteem and lack of self-confidence (5), poorer academic performance (6) and impaired decision making (7). Cannabis users also present cognitive alterations (8), emotional dysregulation (9) and low motivation in experimental tasks (10). There is a modest relation between cannabis use and affective disorders, suicidal thoughts and suicide attempts (11-15), and an increased risk of psychotic alterations in vulnerable individuals (4, 13, 16-18). Moreover, paranoid ideation has been detected in users from both the clinical and the general population (19, 20), and over 10% of adolescents in mental health treatment present Cannabis Use Disorders (21).

Motivation to change

Despite the aforementioned evidence on the risks of cannabis use, the demand for professional help on the part of young people does not reflect this level of risk. According to Hibell et al. (1), 14% of European adolescent cannabis users are at high risk of experiencing severe related consequences. However, only 0.73% of all Spanish adolescent cannabis users have received outpatient treatment for cannabis use problems in their lifetime (22). Research has shown that motivation of young drug users to seek treatment appears only when multiple negative consequences arise (23). But even in this situation, many do not attend professional services (24, 25).

It might be that some cannabis users are motivated to stop using, but do not wish to do so through treatment programmes. Unfortunately, no studies have assessed the motivation to change of the general

population of adolescent cannabis users. This is a substantial limitation if we are to identify the obstacles and the alternative paths of self-recovery that may underlie the low demand for treatment. Understanding their motivation to quit is essential (26), since it would permit analysis of their disposition to modify their cannabis use regardless of the means of doing so, and contribute to developing preventive and treatment strategies for encouraging adolescents to pursue the reduction of and abstinence from drug use.

Motivation to change can be seen as a precursor of treatment-seeking and its success, as well as a precursor of self-change (27-31). Various theoretical perspectives have guided the study of motivation for change, but the most influential has been Prochaska and DiClemente's Transtheoretical Model (32). This model conceives motivation for change in drug-use behaviour as a process of transition from denial of the problem toward desire for change, and finally, commitment to the change achieved. Following this theoretical model, users can be classified in different groups based on their motivation for change (30, 33).

Research data on the stages of change of a general population of young people and their predictor factors is scarce. Most studies have been carried out in clinical samples in order to predict attrition and dropout (30). From the little extant research it has been found that the greater the number of problems experienced (33) and the more concern shown by the family (34), the greater the motivation for change. Annaheim et al. (33) also found that later onset of drug use and lower levels of use can ultimately facilitate self-change.

Barriers to treatment

Only 20% of adolescents attending cannabis outpatient treatment have a self-perceived need of help (35) since most of them come under external pressures (36). Specific reasons why adolescent problematic cannabis users do not attend these services on their own initiative remain unknown. Previous research with different populations of drug users suggests that when professional help is sought, this occurs long after the problems appear (37), and that several barriers deter users from seeking help. After understanding the factors that influence motivation to change, it seems necessary to ascertain why this motivation is not translated into treatment-seeking.

The most common barriers reported include feelings of stigmatization and denial (38), willingness to manage drug use on their own, concerns about confidentiality or unwillingness to share personal information (39). Also reported as barriers by cannabis users are feeling that treatment is not necessary to

address their cannabis use problems, not being ready to stop using or being unaware of treatment options (40). Additional psychosocial factors such as a lower educational level (41), ethnic minority status (42) or treatment affordability (39) are also associated with discarding professional help. Despite the fact that some of the aforementioned studies included adolescents in their samples, no study to our knowledge has specifically analyzed a sample of non-clinical adolescent cannabis users and their reasons for refusing to seek outpatient treatment. Improving our knowledge on the barriers perceived by young users can help us increase treatment attendance of motivated cannabis users by developing new prevention strategies, providing more accessible resources and removing existing barriers

Current Study

Research on motivation for change among young people is still thin on the ground, lagging behind the work carried out with adult populations. This is an exploratory study whose objective is first of all to analyze the distribution of the different stages of change in a Spanish population of young and adolescent cannabis users. Our second aim is to analyze the factors determining these stages of change. And finally, we set out to identify obstacles or barriers perceived by those who wish to change, and which prevent the person from seeking professional help. The results can contribute to developing programmes that help: motivate problematic users to change; promote or encourage recourse to treatment; develop more accessible services and reduce the barriers that deter adolescents from seeking help.

Materials and methods

Study design

This study has a cross-sectional design. The data were obtained by means of a survey administered to students from 9 randomly-selected high schools offering academic and technical courses in the Principality of Asturias in Spain. The study was run under regional government approval. Those aged 18 or older gave their personal consent, and for under-18s consent was obtained through the schools following their regular protocols. Only one school was discarded due to refusal of consent. Participants were informed about the conditions and had to agree with them before they could complete the survey. All students aged between 16 and 21 took the survey, filling out the questionnaires during school time, in a classroom where no teaching staff were present. A trained researcher supervised the session,

guaranteeing that students respected the privacy of their neighbours and staying away from student's computers, so that confidentiality was guaranteed. The data were collected in October 2010.

Participants

A total of 863 participants completed the whole questionnaire. Those considered as invalid respondents according to an infrequency scale were excluded, as described below. In total, 772 participants (89.5%) provided a valid questionnaire, of whom 261 (33.8%) had used cannabis in the previous year and made up the final sample. The descriptive characteristics of participants are shown in Table 1.

Instruments and measures

The instrument was developed using the LimeSurvey® software, a program that permits the design and application of a computerized adaptive test with all the assessment instruments, storing results anonymously on-line. The program presented to participants only those questions applicable to their personal situation according to the information previously provided. Moreover, the software was set up to alert respondents if they gave an incongruent answer and to prevent them returning the questionnaire unless all the questions were answered.

In accordance with the reviewed literature that has analyzed factors determining motivation to change and seek treatment, the instrument included measures referring to five broad areas: sociodemographic characteristics, drug use, consequences of cannabis use, personal and family circumstances associated with drug use, and presence of psychopathology.

Sociodemographic information

Participants were requested to provide information on their age, sex, migration status (native or immigrant), family structure and academic performance: 1 (average scores ranging from 1 to 2), 2 (3-4); 3 (5-6); 4 (7-8) and 5 (9-10).

Substance use

Frequency and patterns of substance use (cannabis, alcohol, tobacco and illegal drugs) were assessed through the items of the European School Survey Project on Alcohol and Other Drugs Student Questionnaire 2007 (43). These questions assessed frequency of use for each drug in lifetime and in

previous year, month and week using a Likert scale (1-7) corresponding to seven alternatives (namely: Never/1-2 times/3-5/6-9/10-19/20-39/more than 40 times). Statistical analyses were carried out using direct Likert scores. Information was also collected on age at onset of use of each drug and previous attendance on drug treatment programmes (except smoking cessation programmes).

Problems due to cannabis and alcohol use

Presence of alcohol and cannabis abuse and dependence was assessed by means of two sets of self-reported items (24) on the presence of the corresponding DSM-IV-TR criteria (44). Problems related to alcohol and cannabis use were assessed with standardized tests: the Rutgers Alcohol Problem Index (RAPI) (45), 23 items assessing problems caused by alcohol with a 4-point Likert scale; the Adolescent-Cannabis Problems Questionnaire (CPQ-A) (46), with 27 dichotomous items assessing problems commonly caused by cannabis use; and the Cannabis Abuse Screening Test (CAST) (47), evaluating problems deriving from cannabis abuse through 6 items with 5 response options in Likert format. All of these are psychometrically valid and reliable instruments (45-47), validated in Spanish samples (22, 48, 49). Degree of concern about the possible negative consequences of cannabis use was assessed using a Likert-type scale of 0 (no concern) to 10 (very high concern) created *ad hoc*.

Family attitudes to drug use

We used items from the FRIDA (Interpersonal Risk Factors for Adolescent Drug Use) questionnaire (50) to obtain information from participants about the perceived reactions of their parents to finding out (in reality or hypothetically) about their cannabis use. Scores ranged from 0 ("they didn't/wouldn't mind") to 5 ("they were/would be very annoyed/upset"). We also assessed perceived quality of relationship with one's parents, participants being asked to rate it as "very good" or "not very good".

Psychopathological symptoms

Psychopathological problems were assessed by means of the Brief Symptom Inventory (51). This instrument yields scores on 9 dimensions for the following symptoms: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism.

Stages of change

The survey assessed stages of change according to the Prochaska and DiClemente model (32) using a question ("¿Which of the following statements best defines your current situation with regard to cannabis use?") with five response options, based on previous studies (52, 53). Response options included were: 1) "I am not planning to quit smoking in the next 6 months" (Precontemplation), 2) "I am planning to quit smoking in the next 6 months, but haven't made any change yet" (Contemplation), 3) "I have started making some changes as I'm thinking of quitting in the next month" (Preparation), 4) "I have successfully quit in the last 1 to 6-month period" (Action) and 5) "I have successfully quit and haven't smoked in the last 6 months or more" (Maintenance)".

As in previous studies (33), we grouped participants based on their motivation. In this case, and based on our interest in predicting possible future engagement in treatment, responses were used to classify the user's stage of change as follows: 1) lack of readiness to change (Precontemplation Stage); 2) readiness to change (Contemplation and Preparation Stages); and 3) Already changed, without any cannabis use for at least one month (Action and Maintenance Stages). On this basis, participants were categorized in three groups: 1) Without intention to change; 2) With intention to change; and 3) Self-changers (former users).

Barriers to seeking treatment

Participants were asked about the possible influence of various barriers to seeking treatment for controlling their cannabis use. This aspect was assessed by means of a Likert-type scale ranging from 1 ("no influence or low influence") to 5 ("high influence") on the relevance of each barrier or obstacle, with a methodology used in previous research (39, 54, 55). The list of barriers was drawn up on the basis of the reasons most commonly cited in the literature for not seeking treatment (39, 40), and given the characteristics of the sample (young people), two extra potential barriers were added: ignorance of resources available, and fear of the family becoming involved.

Infrequency scale

An infrequency scale was included in the survey with the aim of detecting those questionnaires that had been responded to in a random or erratic manner. The instrument selected was the Oviedo Infrequency Scale (INF-OV) (56), which assessed agreement or disagreement with 12 items of the type "Have you ever seen a film on television?". Following the rule established by the authors, those questionnaires with more than three erroneous responses were discarded from subsequent analyses. A significantly greater

number of invalid questionnaires was found among males (p = .041), respondents of foreign origin (p < .001) and participants in residential care (p = .011). No significant differences were found regarding age (p = .412)

Statistical analyses

First of all we carried out a descriptive analysis of the sociodemographic characteristics of the sample according to cannabis use and stage of change. We then analyzed the differences between the three stage of change levels for sex and age, variables related to substance use and the problems derived from it, family attitudes, and psychopathology. In the case of continuous variables, we first carried out a variance analysis (ANOVA) of the differences between the three groups, and in the case of finding significant differences we applied a Student t test for comparison of means between each of the stage of change groups. We also calculated Cohen's d for estimating the effect size for the Student t tests. In the case of the categorical variables, we used the χ^2 statistic for comparing frequencies between the three groups. We also used the Phi statistic for estimating the effect size. In the case of finding statistically significant differences we subsequently carried out post-hoc χ^2 analyses. On comparing frequencies we used the continuity correction and Fisher's exact statistic where necessary. Power analyses were carried out post-hoc using G*Power 3.1 (57) to determine the risk of committing Type II errors with ANOVA (two-tailed) and χ^2 tests.

We carried out a binary logistic regression analysis to ascertain the predictive capacity of the sociodemographic, psychopathological, family and cannabis use-related variables for which statistically significant differences were found (p<.05) in the bivariate analyses, between users with and without intention to change.

Results

Sociodemographic characteristics

The sociodemographic characteristics assessed are described in Table 1 according to use of cannabis and stage of change.

Stages of change and treatment services utilization

A total of 43.3% of participants had no intention to change, 18.0% showed some readiness to change, and 38.7% were self-changers. Just 1 of the 261 participants that had used cannabis in the last year was currently in treatment, though he continued to use the drug and had no intention of quitting it. Another 5 (1.9%) had undergone some type of treatment to give up cannabis and had finished the treatment at least a year ago. Of these, 4 were still using cannabis with some frequency. We now report the results for the variables in which statistically significant differences were found between stage of change groups.

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Factors related to stage of change

Sociodemographic characteristics

As can be seen in Table 2, of all the sociodemographic variables taken into account, only sex is related to stage of change. The only significantly higher value (p = .006, Phi = 0.18) is for number of girls in the self-changers group compared to users with no desire to change. No statistically significant differences were found between the three stage of change groups in age (p = .78, P = .12), school performance (p = .13, P = .28), migration status (p = .59, P = .14) or family structure (p = .19, P = .58). Power analyses indicate that risk of a Type II error regarding these variables ranges from 42% and 88%.

Variables related to drug use

The three stage of change groups did not differ significantly in frequency of alcohol use in lifetime (p = .338; P = .12) or last year (p = .578; P = .18), or in RAPI scores (p = .313, P = 1.00). Nevertheless, post-hoc power analyses are indicating that risk of committing a Type II error in alcohol use patterns is high. Regarding the other variables, power analyses yielded values ≥83%, except for frequency of drunkenness in the previous week (P = .45).

No statistically significant differences (p > .05) were found between cannabis users with and without intention to change as regards frequency of the use of cannabis, alcohol, tobacco or other drugs, or drunken episodes, arriving home stoned, RAPI scores or number of years using cannabis (p > .05). However, self-changers did indeed differ from one or both of the other two groups in these variables, except for RAPI scores, and in all cases presenting lower figures for substance use.

Self-changers report a significantly lower rate of "arriving home stoned" compared to respondents with (p ≤ .001; d = .68) and without (p ≤ .001; d = .99) intention to change. The group of self-changers differed statistically significantly from those who intend to change in the future insofar as they had used cannabis on fewer occasions, both in their life (p ≤ .001; d = 1.11) and in the last year (p ≤ .001; d = 1.81). Furthermore, compared to those young people who did not intend to change, the self-changers had started their cannabis use significantly later (p = .036; d = .34) and had been using it for a fewer number of years (p = .028; d = .37).

The self-changers smoke significantly fewer cigarettes than the two groups currently using cannabis: they report a lower rate of smoking compared to those with intention to change, in their life (p = 0.002; d = 0.63), in the last year (p = 0.008; d = 0.59), in the last month (p = 0.011; d = 0.55) and in the last week (p = 0.004; d = 0.61); by comparison with those with no intention to change, self-changers report less smoking in their life (p = 0.045; d = 0.33), in the last month (p = 0.001; d = 0.52) and in the last week (p = 0.001; d = 0.52).

As far as alcohol is concerned, self-changers differ significantly from those without intention to change, reporting less drinking in the last month (p = 0.005; d = 0.43) and the last week (p = 0.006; d = 0.42), as well as lower frequency of drunken episodes in their life (p = 0.001; d = 0.54), in the last year (p = 0.003; d = 0.47), in the last month (p = 0.001; d = 0.55) and in the last week (p = 0.002; d = 0.51). However, between cannabis users with intention to change and self-changers the differences are smaller, and significant differences were found only in the lower rate of drunkenness in the last month among those who had given up cannabis by themselves (p = .027; d = 0.50).

There are statistically significant differences between the three stage of change groups in the number of participants that have taken illegal drugs, the self-changers group being that which includes fewest users. However, the post-hoc analyses reveal no significant differences (p > .05) in the comparisons between groups.

Problems associated with cannabis use

Even though cannabis users with and without intention to change did not differ significantly from one another in the variables related to drug-use patterns, the same cannot be said when we consider the

problems generated by the use of cannabis. Post-hoc power values are ≥99% for all variables, except for cannabis abuse (P = .69)

Users who are motivated to change report a significantly greater number of problems deriving from the use of cannabis according to the CPQ-A ($p ≤ .001$, d = .38). However, if we look at the scores yielded by the CAST and the diagnoses of abuse and dependence according to the DSM-IV, motivated and unmotivated users do not show statistically significant differences ($p > .05$).

As regards the group that has already made the change, the number of problems according to the CPQ-A and the CAST is significantly lower compared to that for current users with (CPQ: $p ≤ .001$, d = 1.41 and CAST: $p ≤ .001$, d = .71) and without intention to change (CPQ: $p = .030$, d = .77 and CAST: $p ≤ .001$, d = 1.14). Similarly, the number of respondents with a diagnosis of dependence is significantly lower among self-changers than among current users with motivation for change ($p ≤ .001$, d = -.39) and without it ($p = .002$, d = -.23).

Finally, and with regard to degree of concern about the effects of cannabis, users with intention to change are more concerned, with statistically significantly higher scores than those without intention to change ($p = .001$, d = .68) and self-changers ($p = .016$, d = .47).

Family variables

There are significant differences ($p < .05$) between the three groups regarding family variables, despite some power statistic values being moderate (P ≥ 69%). There are no statistically significant differences in ratings of the relationship with the mother between those without intention to change and self-changers ($p > .05$). Relationship with the mother is significantly poorer in those with intention to change than in self-changers ($p = .001$; Phi = 0.30) and those without intention to change ($p = .011$; Phi = 0.25). Perceived reaction of the father to knowledge of the respondent's cannabis use is significantly more negative among those with intention to change than in those without such intention ($p = 0.044$, Phi = 0.20). Mother's perceived reaction is significantly more indifferent in users without intention to change compared to the case of self-changers ($p = .007$; Phi = 0.20).

Psychopathological symptoms

According to the BSI, the only dimension in which the three stage of change groups present statistically significant differences is that of paranoid symptoms. The group with the highest scores is that of users with intention to change, who score higher than both users without intention to change (p = .009, d= .49) and self-changers (p = .018, d= 0.47). Differences were not statistically significant for other subscales (p > .05), but post-hoc power analyses suggest that risk of a Type II error is over 70% (P ≤ .30).

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Barriers to treatment and treatment rejection

On being asked about the reasons for not seeking professional help, the most commonly cited are lack of a perceived problem (50.6%), desire to solve one's problems alone (27.6%) and fear of the family finding out (24.9%); the most infrequent are shame (11.5%) and financial cost (13.3%). For those young people with intention to change, compared to those without such intention, there is significantly more influence of the desire to solve the problem alone (p = .007), ignorance of the resources available (p = .032) and fear of the family finding out (p = .002).

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Logistic regression

For the logistic regression the independent variables used were: perceived relationship with the mother, perceived reaction of the father to knowledge of the respondent's cannabis use, score on the CPQ, degree of concern, and score on the BSI paranoid symptoms dimension. As dependent variable we used stage of change, restricted to the groups with and without intention to change. The results can be seen in Table 4.

Of the variables analyzed, only a relationship with the mother rated as "not very good" emerges as predictive of change (p = .001)

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Discussion

The principal merit of this study is its contribution to improving our knowledge about the motivational stage of adolescents and young people with regard to their cannabis use. It provides relevant information

on the factors associated with motivation and the barriers that prevent it being translated into a demand for professional treatment. Despite the importance attributed to the study of motivation for change in young substance users (23), no study up to now had analyzed motivation for change and barriers to treatment in the general population of adolescent cannabis users.

The results indicate that a third of young people aged 16 to 21 had used cannabis in the last year, and that just 1.9% of them had received treatment for it, confirming the low rates found in epidemiological studies at a national level (22). Of those who had used cannabis in the last year, around half had no intention of reducing their use in the near future, just 18.0% were thinking of quitting in the coming months, and 38.7% reported having quit cannabis, without any use in the previous month and without intention to return to using it.

Sociodemographic characteristics and motivation

The results obtained in this area shed some new light on our previous knowledge. Of the sociodemographic characteristics considered, neither family structure, parents' educational level, age, or being an immigrant appear to have an influence on motivation for change. The linear increase in motivation to seek treatment as age of young drug users increases, found in previous research (29), is not confirmed in this case for motivation to change, and nor is increased motivation linked to educational level or minority status (41, 42). Post-hoc power analyses yielded values ≤58%, suggesting that sample size is preventing statistical significance being attained.

The scarce previous research (28) suggests that sex is not associated with intention to change, and this is confirmed by our results. However, we found that sex was indeed related to *self-change*. This could be explained by less severe patterns of use among girls compared to boys (58, 59), which may facilitate self-change, as we shall discuss presently. The greater number of girl self-changers is not surprising either, given the low percentages of females (around 20%) found among the young people receiving treatment for cannabis use (35).

Determinants of intention to change and self-change

As mentioned previously, stage of change can be seen as one of the relevant explanatory precursors of modification of drug-use patterns, whether such modification occurs with or without treatment. Therefore,

we discuss below the possible factors that covary with appearance of readiness to change and with self-change, according to the results obtained.

Readiness to change

The differences between young people with and without intention to change in our study indicate that motivation is associated neither with greater cannabis use nor with earlier first use; but nor is it related to greater use of alcohol, more alcohol-related problems according to the RAPI, or the use of other substances. These results do not match previous research indicating that more severe patterns of drug use had a significant impact on motivation for change in a clinical population of young users (28). It could be that severity of cannabis use here is lower than that in the study by Breda et al. (28), making it more difficult to find significant differences. Nevertheless, high values of power analyses (P=100%) for ANOVAs between groups in cannabis use frequency seem to rule out this possibility.

On the other hand, given similar levels of cannabis use, experiencing more problems does indeed emerge as related to motivation for change – in line with other findings on motivation for change (33) and treatment-seeking (23). It should be stressed that in this study only the CPQ-A emerged as a significantly sensitive instrument in the detection of problems influencing the desire to change, since neither the CAST scores nor the DSM-IV abuse and dependence diagnoses indicated differences between users with and without motivation. What does appear to be determinant of showing intention to change is greater concern about the effects of cannabis. This generalizes to cannabis users the findings from Font-Mayolas et al. (60) with tobacco smokers, where those with intention to change were more aware of its harmful effects compared to those without intention to change. This would confirm the conclusions of Ellingstad (39) that the user's consideration of cannabis as not positive is a crucial factor for change. However, according to our results, lack of perception of cannabis use as a problem is an equally important barrier to treatment. It could be that considering cannabis use as harmful is necessary for motivation to change to appear, but that perceived harm is not severe enough to motivate treatment-seeking.

Among the harmful effects of use, particular mention should be made of paranoid symptomatology, which has consistently been associated with cannabis use (19) but was not related to interest in seeking treatment in previous studies (23). In our study, and given similar rates of cannabis use, experiencing paranoid symptoms is a determining factor in the appearance of intention to change. The paranoid

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symptomatology assessed by the BSI (51) refers to projective thought, suspiciousness and delusions. These may be causing discomfort in the users, who associate them with cannabis use, and this would contribute to the development of intention to change.

Another potential source of pressure for change is the family context (34). Slesnick et al. found that runaway adolescent drug users are more motivated as a consequence of less family pressure resulting from the depressive problems of both the parents and the user him/herself. Our sample largely differs from that in the study by Slesnick et al. We analyzed only the psychopathology of the users, and not that of their parents or guardians, but no differences were found between the three groups in depressive symptoms. However, low power values (≤30%) suggest that our sample size would not be sufficient to detect them. Our results suggest that among a more general population of Spanish adolescents a significant reaction in the father to the son or daughter's drug use and a difficult relationship with the mother are related to desire for change. Although the data permit no firm conclusions, they do appear to indicate that a firm attitude in the father and a poor relationship with the mother might reflect greater family pressure in favour of change. Nevertheless, the study by Breda and Heflinger (28) with clinical population suggests that such pressure is counter-productive for motivation for change. It seems from our results that parental attitudes play a significant role in encouraging adolescents to stop using, but it is necessary to carry out more studies in this area to be able to be more conclusive about the mechanisms of family influence.

Self-change

Of particular interest are the differences found between users with the intention to quit and those who have already achieved change, since they may indicate which factors are related to successful quitting. We found that a lower rate of cannabis use and later first use are associated with self-change, in line with previous research in other European populations (33). It might be that, as occurs with young adults, greater use of cannabis is a substantial risk factor for developing dependence (61) – a diagnosis that has been associated with difficulties for reducing or quitting cannabis use independently in this population (62, 63). It seems that young people who use more cannabis, for a longer period, and who first use it at an earlier age might experience more difficulties when translating their intention to change (eventually) into actual self-change. The lower frequency of arriving home under the effects of cannabis among self-

changers found in this study also suggests that in this group cannabis use was lower, and they had fewer difficulties circumscribing it to particular contexts.

As regards problems deriving from cannabis use, the self-changers group appears to have significantly fewer problems according to the CPQ-A and CAST, as well as lower rates of dependence, compared to users with intention to change. This may be due, on the one hand, to the fact that they had quit the drug at least a month previously, but also to the fact that their use was significantly lower, as already described. Rates of abuse, however, do not vary between those with intention to change and self-changers. This may be a consequence of the fact that, in the case of abuse, a larger sample size is needed to find significant differences, as indicated by moderate power values (P = .69). It can also be interpreted as indicating that self-change emerges after experiencing certain drug-use related problems. Also, use of this diagnosis with adolescents presents limitations (64)..

As far as the role of other drug use is concerned, the most notable differences concern the higher rate of tobacco smoking in those who wish to quit cannabis compared to those who have already given it up. This suggests that cigarette smoking may constitute an added difficulty at the moment of quitting cannabis in this population. Some previous studies found that tobacco smoking was indeed associated with cannabis smoking (65), and increased the probabilities of developing dependence on the latter (61). On the other hand, neither alcohol use nor alcohol-related problems (according to the RAPI) differ significantly between those who wish to quit cannabis and those who have already done so. This suggests that the use of alcohol and problems derived from it are not hindering users from giving up cannabis.

With regard to paranoid symptomatology, the self-changers group had lower scores compared to the group with intention to change. From the present study we cannot draw firm conclusions about the reasons, since these symptoms may have become attenuated on the reduction of drug use or may not actually have been as serious as in the group with intention to change. Future research should analyze the evolution of this symptomatology and its influence on cannabis users' desire to change. Previous studies (63) had found that depression and stress were also related to unsuccessfully quitting in adult treatment samples. These results were not confirmed in our studies, but post-hoc power values are too low to rule out this option.

As for the role of family context, self-changers and users with intention to change do not differ in their relations with the family, or in perceived reactions from parents. Therefore, these variables appear to be associated with intention to change, but not so much with achievement of self-change. We cannot rule out the possibility, however, that larger sample sizes would help detect significant influences, since post-hoc power analyses yielded moderate-to-high values regarding differences in family variables, ranging between 69% and 94%.

Self-changers and users without intention to change

These two groups of young people reflect opposite attitudes towards cannabis use. Self-changers appear to have used cannabis somewhat less frequently (though not significantly so) and began using it later, have been using it for less time, and experience fewer problems related to it. The fact of their reporting fewer drug-related problems is not surprising, though, considering that they have already given it up. Self-changers, moreover, report lower rates of cigarette smoking, drinking, drunkenness and use of illegal drugs. This could indicate that self-changers presented a less severe pattern of drug use compared to unmotivated cannabis users, but further research is needed.

Barriers

This study provides relevant information on the barriers perceived by adolescent cannabis users to seeking professional help, and particularly on the differences between users motivated and unmotivated for change. The most common barrier is lack of perception of a cannabis use problem, followed by the desire to solve one's problems alone and reluctance to risk the family becoming involved.

As regards the influence of these barriers, among those young people with intention to quit, the desire to solve their problems alone, fear of family involvement and ignorance of the available resources are, to a significant degree, the most influential. As discussed above, lack of perception of the problem is an equally important barrier regardless of intention to change. This may indicate that adolescents consider current available resources as oriented towards drug users with more severe problems. Desire to control the situation, which has been shown to facilitate change (66), also appears as an important barrier to changing with external help among our sample of adolescents.

Resources must be better tailored to the needs and perceptions of adolescents. More information should be provided about characteristics of available resources, which might become more accessible if specifically oriented towards adolescents. Informing them about details on the extent of possible family involvement and emphasizing the supportive style of these programmes is advisable to facilitate their use. In this regard, referrals for this population from medical and psychiatric services have been seen to be scarce, suggesting a lack of early detection for cannabis use disorders (67). Using screening tools such as the CPQ-A and thorough information provided by professionals about the characteristics of available resources might also help increase referrals.

Limitations

This study has certain limitations deriving from the methodology employed. Its cross-sectional nature precludes us from making causal inferences about the determining factors identified, as well as from ruling out that some factors might be interrelated. However, it is in support of further longitudinal research on motivation for change with young cannabis users to identify significant factors related to motivation for change. The classification of participants in three categories also limits the accuracy of our results, since different attitudes or intended timeframes for change might be coexisting in each category. More detailed questions on attitudes toward change should be used in future studies. Despite the existence of several instruments for assessing motivation to change, such as URICA (68), there is as yet no version validated for Spanish population available. This limitation obliged us to use a simplified version of the Transtheoretical Model that may be limiting our results and the interpretations derived from them. Post-hoc power statistics are indicating that some variables require a larger sample size to detect additional differences, as occurs with family variables or psychopathological symptomatology. Longitudinal studies are needed to corroborate these findings, and it would be useful to assess at first hand sources of formal and informal pressure. Lastly, a significant number of participants were lost due to invalid questionnaires as assessed by the Infrequency Scale, and at least part of them arguably due to language difficulties, suggesting that adapting instruments to different languages for immigrant population could help increase the cultural diversity of the sample. Participants in residential care were also underrepresented, and this meant a loss of interesting information given the high rates of substance use and related problems in this population (69). Future studies should address these accessibility limitations in order to approach these high-risk populations.

Conclusions

Our study confirms the low motivation for change, poor use of clinical resources and large numbers of problems experienced by young and adolescent cannabis users in Spain, resembling the situation found in other Western countries. As regards motivation for change, this study contributes to the understanding of a construct scarcely studied among young users of this substance. Experiencing more problems according to the CPQ-A, paranoid symptomatology, and users' concern about their drug use are associated with intention to change, together with a significant reaction from the father toward the drug use and a poor relationship with the mother. Level of cannabis use is not related to reporting intention to change, but it is associated with self-change, which might be facilitated by lower rate of use and later onset of use. On the other hand, use of tobacco (smoking) and cannabis dependence appear to be hindering self-change. It is necessary, first of all, to study in longitudinal fashion the influence of these factors throughout the change process, as well as to assess at first hand the possible external factors affecting motivation. Secondly, there is a need to improve early detection of motivated users and to increase motivation in those without intention to change, reducing the identified barriers to seeking professional help.

Acknowledgements

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Table 1: Sociodemographic characteristics of the sample, cannabis use and stages of change

Variable	N	Last year users	Stages of change		
			Without intention to change	With intention to change	Change under way
Total (%, n)	100 (772)	33.8 (261)	43.3 (113)	18.0 (47)	38.7(101)
Sociodemographic					
Sex (% males)	59.2	66.3	75.2	66.0	56.4
Age (M, SD)	17.24 (1.3)	17.55 (1.4)	17.59 (1.3)	17.62 (1.6)	17.48 (1.4)
Immigrant status (%,n)	8.4 (65)	7.3 (19)	8.8 (10)	4.3 (2)	6.9 (7)
Family structure (%,n)					
One-parent family	9.3 (70)	10.9 (28)	10.8(12)	17(8)	8(8)
Two-parent family	89.3 (670)	87.6 (226)	89.2 (99)	80.9 (38)	89 (89)
Other family structures	1.3 (10)	1.6 (4)	0	2.1 (1)	2 (2)
Father's education (%,n)					
Basic / None	26.2 (169)	31.9 (69)	35.8 (34)	23.7 (9)	31.3 (26)
Intermediate	48.7 (314)	47.7 (103)	46.3 (44)	57.9 22)	44.6 (37)
University	25.1 (162)	20.4(44)	17.9 (17)	18.4 (7)	24.1 (20)
Mother's education (%,n)					
Basic / None	22.9 (161)	22.1 (53)	23.5 (24)	13.6 (6)	24.5 (23)
Intermediate	53.9 (379)	56.7 (136)	55.9 (57)	61.4 (27)	55.3 (52)
University	23.2 (163)	21.3 (51)	20.6 (21)	25 (11)	20.2 (19)

Table 2. Determinants of stage of change. Variables with statistically significant differences.

Variable	Stage of change			F	χ^2	P	Phi
	Without intention to change (A)	With intention to change (B)	Change under way (C)				
Sociodemographic							
Sex			[a]				
% Males	75.2%	66.0%	56.4%		8.42	.015	.18
Drug use							
Frequency of cannabis use							
Lifetime	4.41	4.66	2.73 [b]	31.19		<.001	
Last year	3.71	4.00	1.55 [b]	58.38		<.001	
Frequency of tobacco use							
Lifetime	5.23	5.67	4.68 [a b]	6.46		.002	
Last year	4.71	5.28	4.11 [b]	4.99		.007	
Last month (cigarettes/day)	2.90	2.91	1.97 [a b]	8.32		<.001	
Last week	3.16	3.33	1.98 [a b]	8.71		<.001	
Frequency of alcohol use							
Last month	2.91	2.68	2.30 [a]	5.09		.007	
Last week	1.36	1.11	0.92 [a]	4.89		.008	
Frequency of drunkenness							
Lifetime	3.91	3.63	2.98 [a]	7.44		.001	
Last year	2.88	2.78	2.06 [a]	5.90		.003	
Last month	1.12	1.07	0.56 [a b]	7.34		.001	
Last week	0.51	0.37	0.22 [a]	5.88		.003	
Other illegal drug use	29.2%	27.7%	9.9%		13.10	.001	.22
Age at first cannabis use	15.29	15.30	15.78 [a]	3.69		.026	
Years using cannabis	2.30	2.31	1.69 [a]	4.06		.018	
Frequency of arriving home stoned	1.28	1.51	0.50 [a b]	17.13		<.001	
Problems due to cannabis use							
CPQ-A	4.17	5.87 [a]	2.53 [a b]	27.42		<.001	
CAST	3.80	4.60	1.10 [a b]	17.66		<.001	
Cannabis Abuse DSM IV	35.4%	34.0%	18.8%		7.95	.019	.17
Cannabis Dependence DSM IV	26.5%	42.6%	8.9% [a b]		22.52	<.001	.29
Degree of concern	2.90	4.98 [a]	3.30 [b]	6.34		.002	
Family							
Very good relationship with mother	75.2%	44.7% [a]	69.3% [b]		15.09	.005	.24
Father's reaction to cannabis use perceived as significant	87.3%	100% [a]	93.6%		6.78	.034	.17

Variable	Stage of change						
	Without intention to change (A)	With intention to change (B)	Change under way (C)	F	χ^2	P	Phi
Mother's reaction to cannabis use perceived as significant	87.2%	97.9%	98.0%[a]		11.89	.003	.21
Psychopathological symptoms							
Paranoid Ideation	0.3554	0.6305 [a]	0.3713 [b]	4.94		.008	

[a]: Statistically significant differences (p < .05) compared to group without intention to change. [b]: Statistically significant differences (p < .05) compared to group with intention to change.

Table 3.-Barriers to treatment and stage of change

Perceived barriers	n	Without intention to change	With intention to change
	%	M (SD)	M (SD)
Shame	11.5	1.18 (.67)	1.30 (.87)
Social stigma	13.8	1.26 (.87)	1.52 (1.15)
Negative opinion of treatment, hospitals, etc.	18.0	1.39 (1.04)	1.78 (1.35)
Reluctance to share problems	18.8	1.35 (.88)	1.74 (1.22)
Financial cost	13.3	1.25 (.79)	1.44 (.86)
No problem perceived	50.6	2.97 (1.94)	2.96 (1.80)
Solve problems by oneself	27.6	1.56 (1.26)	2.30 (1.60)*
Ignorance of treatment options	15.3	1.32 (.96)	1.50 (.96)
Ignorance of available resources	15.3	1.23 (.80)	1.57 (.91)*
Fear of family involvement	24.9	1.58 (1.32)	2.50 (1.70)*

*Statistically significant differences for p < .05

Table 4. Results of the Logistic Regression of variables related to readiness to change the cannabis use habit

	B	S.E.	Wald	df	Sig.	Exp(B)	C.I. 95,0%	
Variables							Lower	Upper
Father's reaction perceived as significant	-19.972	10730.093	.000	1	.999	.000	.000	.
Paranoid ideation	.280	.375	.554	1	.457	1.323	.634	2.760
CPQ-A	.030	.052	.327	1	.567	1.030	.930	1.141
Degree of concern	.100	.068	2.149	1	.143	1.105	.967	1.264
Very good relationship with mother*	-1.458	.429	11.528	1	.001	.233	.100	.540

*Statistically significant for p < .05