Original article

A comparative study of personality traits in college undergraduate smokers, ex-smokers and non-smokers

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INTRODUCTION

The study of smoker's personality has a long and controversial history.[1] Most of works published in the last decades have been carried out using the theoretical model proposed by Eysenck.[2] According to his approach, there are three prevailing personality traits associated to tobacco consumption: extraversion (E), neuroticism (N) and psychoticism (P). Yet, there are works based on the sensation seeking theory, which is concerned to people's needs for new and varied experiences,[3,4] and the works that follow the theoretical model of the big five traits of personality, the Big Five.[5]

There are several studies in the literature associating tobacco consumption and novelty seeking, anxiety, depression, obsessive-compulsive disorder, impulsivity, aggressiveness, shyness, social alienation, self-esteem, as well as tendency to present anti-social, non conventional and risk behaviors, locus of control, and hostility, among others.[6-14]

A general overview on studies already developed on the topic show that smokers are more extravert, tense, anxious, depressive and impulsive than non-smokers or ex-smokers. Yet, they present increased traits of neuroticism, psychoticism, hostility, sensation seeking, and tendencies to anti-social, non-conventional and risky behaviors, as well as novelty seeking and mood disorders symptoms.[8,15-25]

The literature on the issue still presents some controversial points. As example we cite a number of studies published in the last decades, which showed a strong relation between tobacco consumption and neuroticism and extraversion.[16,26,27] However, other works did not confirm, or confirmed only partially, such associations.[7,20,28] The association between smoking and psychoticism (P) has been shown in several studies carried out lately,[16,17,27,28] however, the mechanisms responsible for the associations between personality and smoking have not been elucidated. There is a number of different hypotheses on the issue.

Most of researchers suggest that further studies are required, comprising different populations from different geographic, social and cultural contexts, in order to provide more

conclusive data. Moreover, only a few studies including Brazilian and/or South-American individuals have been carried out so far. The present study shows data obtained from a survey carried out with undergraduate students at the Universidade Federal de Mato Grosso (UFMT) in 2001. Our goal is to assess which personality traits differentiate smokers, ex-smokers and non-smokers.

METHOD

Patients

The sample size of this study was calculated in a pilot study. About 1,600 students were invited to take part voluntarily in the study. They were all undergraduate students at UFMT, Cuiabá campus, in 2001, enrolled in morning, afternoon and evening courses. In 2001, UFMT had a total of about 10,500 undergraduate students. Forty-two classes were randomically selected where from 1,600 students were invited to take part in the study. Among these, 1,245 agreed to participate, resulting in a total of almost 22% of non-answer, already expected by the sample size projection.

Methods

Respondents answered a questionnaire specifically designed for this study. It included information about the sociodemographic profile and tobacco consumption pattern.

Thereafter, the Fagerström[29] Test was used to measure the degree of physical nicotine dependence of undergraduate students, and the Comrey Personality Scale (CPS) - reviewed version – was applied.[30]

CPS is a psychometric test, composed of a validity control (V) scale, and a response bias (R) scale, aimed at evaluating the responses' reliability, and eight scales aimed at measuring eight personality factors. The personality factors are: trust x defensiveness (T), orderliness x lack of compulsion (O), social conformity x rebelliousness (C), activity x lack of energy (A), emotional

stability x neuroticism (S), extroversion x introversion (E), masculinity x femininity (M), and empathy x egocentrism (E).[30]

The results of CPS were analyzed in the form of gross scores. CPS was chosen for this study for being more practical as compared to other personality inventories. The Brazilian version was adapted, validated and standardized with basis on a study comprising 15,000 individuals from all capital cities of the country.[30] Besides, the S and E scales of CPS have a proved similarity with the dimensions neuroticism (N) and extraversion (E), respectively, from the *Eysenck Personality Questionnaire*.[31] This is another reason why CPS was chosen, it makes possible to compare our results to those from studies carried out in other places.

The Research and Ethics Committee of the Hospital Júlio Muller at UFMT approved the study (protocol 030/CEP/HUJM/2001).A researcher psychologist and two auxiliary psychologists, who were given a 20-hour training, performed the data collection. Informed consent was obtained from all participants.

Statistical analysis

Participants were grouped in three categories according to tobacco consumption. As smokers (SM) were considered those students who declared consumption of at least one cigarette a day for at least one year; ex-smokers (ES) were those that declared they had stopped smoking; and non-smokers (NS) were those that marked this option in the questionnaire.

At first, an ANOVA variance analysis was conducted to compare the mean gross scores in each personality scale of CPS (statistically significant at $p = 0,05$) of the three groups. Then, two univariate logistic regression analyses were performed by taking the subjects categories as dependent variables. In the first analysis, sociodemographic factors (gender, age, income, marital status, major area, part of the day in which classes take place, year of course, and insertion in the job market) and the 10 scores of the CPS were taken into account. The SM x NS categories were considered dependent variables. In the second analysis, the CPS scores, the sociodemographic

factors and tobacco consumption (age at first consumption and number of attempts to quit) were considered. The SM x NS categories were considered dependent variables. Two analysis of multiple logistic regression were performed to analyze the odds ratio (with 95% confidence interval) of the association between the student's scores in the 10 CPS and the categories SM x NS and SM x ES, adjusting all CPS scales to the other variables.

RESULTS

Sociodemograohic profile and tobacco consumption pattern

Forty-six out of 1,245 students (3.69%) had their protocols invalidated for not filling their questionnaires adequately. The final sample comprised 1,199 students, 517 (44.22%) were male and 652 (55.77%) were female. The mean age was 24.5 and standard deviation was 6.9 years. Thirty students did not check the gender option in the questionnaire. The prevalence numbers found were: smokers 6.67% (80 individuals), ex-smokers 6.58% (79 individuals) and non-smokers 86.73% (1040 individuals).

Tobacco consumption varied from 1 to 40 cigarettes a day, mean was 10.6 for males and 8.9 for females. The mean age for smoking onset was 17.2 years and in general 1.2 attempts to quit were made. Among the 79 ex-smokers, tobacco consumption varied from 1 to 50 cigarettes a day, and the mean age of smoking onset was 16.1 years. Ex-smokers mean of attempts to quit was 2.1.

CPS scores

Analysis of variance (ANOVA)

Table 1 shows the mean of gross scores found in the three categories studied. ANOVA analysis revealed a difference in the means of R, E, M and O scales of CPS. In the O scale, smokers had, on the average, lower scores as compared to ex-smokers ($p = 0.056$; borderline difference) and non-smokers ($p = 0.01$). Ex-smokers had, on the average, lower scores as compared to non-smokers

(p = 0.03). Such outcomes suggest an inverse association between tobacco consumption and the O scale of CPS

Table 1 - Distribution of means and standard deviations of scores found for smokers, ex-smokers and non-smokers in the CPS scales

CPS scales	**Smokers (SM)**		**Ex-smokers (ES)**		**Non-smokers (NS)**	
	μ	**σ.**	**μ**	**σ.**	**μ**	**σ**
R Bias	44.10	8.3	41.92	9.05	41.11	8.5*
V Validity control	14.73	6.4	14.43	5.8	14.7	5.5 ns
T Trust x distrust	38.01	5.4	39.36	5.9	38.25	6.4 ns
O Order x Lack of compulsion	51.16	5.8	52.98	6.1	53.01	6,3†‡§
C Conformity x unconformity	38.45	6.8	38.31	6.09	39.11	5.7 ns
A Activity x Lack of energy	51.93	8.6	52.75	6.7	51.66	7.7 ns
S Emotional stability x instability	50.38	8.4	50.15	8.4	49.67	8.3 ns
E Extroversion x introversion	47.91	10.07	47.79	9.6	45.73	10.4‖¶
M Male x Female gender	38.83	9.2	35.25	8.7	35.42	9.4**
P Empathy x Self-centeredness	47.41	9.04	48.22	7.8	47.53	7,8 7.8 ns

ns = non statistically significant difference

* Statistically significant difference, SM x NS p = 0.002

† Statistically significant difference, SM x NS p = 0.01

‡ Borderline difference, SM x ES p = 0.056.

§ Statistically significant difference, ES x NS p = 0.03

‖ Borderline difference, SM x NS p = 0.07.

¶ Borderline difference, ES x NS p = 0.08

** Statistically significant difference, SM x ES p = 0.01 SM x NS p = 0.001

Logistic regression

Smokers x non-smokers

Through the analysis of multiple logistic regression, with all sociodemographic variables and all CPS scales adjusted, we observed that only the age and the M, O, and R scores remained associated to the SM category (Table 2). It is important to notice that regression detected an inverse association between tobacco and the O scale of CPS (*odds ratio* < 1). This is the same as saying that an increase in the O score corresponds to a decrease in the probability of the subject fitting the SM category (Table 2).

Table 2 - Multiple logistic regression according to the scores of smokers, ex-smokers and non-smokers in the CPS scales

	Odds ratio	**CI (95%)**	**p**
Sociodemographic factors			
Age	1.05	1.020-1.08	0.0005
CPS scales			
Bias (R)	1.03	1.006-1.06	0.0100
Order x Lack of compulsion (O)	0.94	0.908-0.98	0.0027
Male x Female gender (M)	1.03	1.007-1.06	0.0100

* Multiple logistic regression adjusted for all sociodemographic variables and all CPS scales.

Smokers x non-smokers

The multiple logistic regression showed that only the age, major area, age at the smoking onset and R, A and M scores remained associated to the ES category (Table 3). The inverse associations (negative) found between the ES category and the R and M scores suggest that SM had lower scores than ES in these scales. On the other hand, the association found between the A scale

and the ES category is positive (*odds ratio* > 1), suggesting that as the A scores increase, the probability of the subject pertaining to the ES category increases too (Table 3).

Table 3 - Multiple logistic regression for smokers and ex-smokers scores*

	Odds ratio	**CI (95%)**	**p**
Sociodemographic variables			
Age	1.09	1.03-1.15	0.0006
Major area	0.24	0.07-0.75	0.0100
Tobacco consumption variables			
Age at first cigarette	0.88	0.78-0.99	0.0400
CPS scales			
Bias (R)	0.94	0.9000-0.99	0.0200
Activity x Lack of energy (A)	1.04	1.0006-1.10	0.0400
Male x Female gender (M)	0.94	0.9000-0.98	0.0090

* Model of multiple logistic regression adjusted for all sociodemographic variables, tobacco consumption variables and all CPS scales.

† Humanities x Biological/Health areas

DISCUSSION

Sociodemographic profile and tobacco consumption pattern

The study reported here had a remarkable low prevalence of tobacco consumption (6.7%). According to official data, the estimated prevalence in the Brazilian population ranges between 12.9 to 25.5%.[32] We assume that people awareness regarding tobacco consumption is increasing, especially in the undergraduates population, who have a high educational level. A number of research works carried out in different social, geographic and cultural contexts have already

demonstrated that the prevalence of tobacco smoking is inversely proportional to educational level.[17,33,34]

Personality traits and tobacco consumption

Smokers x non-smokers

In the past decades, several studies demonstrated that smokers tend to obtain higher E scores as compared to non-smokers.[15,27,35] However, some works have not confirmed such an association.[36,37] Today, data found in the literature are still conflicting. The comparison between results of different studies on the matter still presents some controversies.[7,16,20,23,28,38]

Some researchers consider that the association between smoking and extraversion have been decreasing, maybe due to changes in the way how the smoking habit has been seen in the last decades. Smoking has been considered an undesirable habit in many countries. It is possible that some extravert smokers have been punished in situations of social interaction, which may have contributed to a decrease in the association between smoking and extraversion.[39-41]

Literature regarding the N factor is not consistent as well. This work has not found an association between smoking and the S scale of CPS. In a recent study developed in Brazil using CPS, no association between smoking and S scores was found.[7]

There are many studies published in the past decades demonstrating the association between high scores in the N factor and smoking.[26,27] However, some works have not confirmed such an association.[34,42] According to some experts on the topic, different from the factor extraversion, the relation between neuroticism and smoking is more consistent and it seems to have increased during the last decades in countries where tobacco consumption prevalence has been decreasing. More neurotic individuals seem to be less inclined to quit smoking, even with all the pressure the society imposes him, and can feel more intensely the effects of nicotine as compared to most emotionally stable individuals.[39,41]

However, the most recent literature is still controversial about that association.[7,16,17,20,28,33,43] Several reasons for such divergences are provided. Parkes,[44] for example, says that interactions between N and E, and between N and P, could underlie inconsistent findings. On the other hand, Patton et al.[1] suggest that comparisons between the scores of smokers and non-smokers usually do not reach statistical significance when at least one of these groups has heterogeneous characteristics.

One difficulty may be the fact that there are different types of smokers. Different people have different reasons to smoke and individual variables and situational factors may influence them simultaneously.[1] The authors suggest that there are two types of situation that trigger the desire to smoke. One comprises boring situations, which produce a need to increase cortical stimulation. The second group seems to comprise stress-resulting situations. Variables such as situation and personality may interact and have an effect on the amount of tobacco consumed. For some individuals, as very extraverted ones, smoking would be more attractive in boring situations because tobacco creates a cortical stimulation, meeting the individual's need of getting excited. Similarly, tobacco provides people with a high level of neuroticism with support to face stressful situations, because of its stress-reducing effects.[1]

In the present study, the strong negative association (inverse) found between tobacco consumption and the O scale of CPS was remarkable. Another recent study developed in Brazil also detected an inverse association between tobacco and this scale.[7] In the 1970's, a CPS validation study carried out by its own designer revealed an inverse association between tobacco consumption and the scores obtained in the O scale.[45] Based on such outcomes, we could assume that high scores in this personality scale work as a "protection factor" against tobacco consumption. Individuals with high O scores said that they are concerned with cleanliness and tidiness. They are cautious, meticulous and enjoy routine. Individuals with low scores tend to be careless, negligent, imprudent, dislike following a systematic way of life and sometimes do not maintain personal cleanliness."[30]

At first sight, these results suggest that smokers have a tendency of being more imprudent, careless with their own health and hygiene, more relaxed and less methodic than non-smokers. The

consumption of tobacco may be a reflex of such personality traits. Many smokers are careless regarding their health, and even after knowing the risks they continue smoking. In many cases, individuals persist in smoking even after they are surprised by diseases such as myocardial ischemia or lung tumor and sequelae like pneumonectomy or tracheostomy.[6,46]

However, going further on the issue, this fact can be interpreted under different points of view. It is surprising how the general literature comprises research works (carried out under different theoretical models, based on different psychological assessment instruments and in different points in history) that present similar results to those we have found. In the study by Williams,[47] smokers presented lower scores than non-smokers in terms of order (which include concern with cleanliness, neatness and organization). Smith[48] found an inverse association between smoking and strength of character (which is represented by adjectives like fond of order, conscientious, responsible).

Lately, several studies were shown to have results that agree with this idea.[19,49] Works based, totally or partially, on the Big Five Personality theoretical model, for example, revealed an inverse association between smoking and conscientiousness.[20,49,50] All individuals with high scores for conscientiousness can be described as conscientious, careful, reliable, hard-worker, well-organized, meticulous, scrupulous, self-disciplined, neat/clean, punctual, practical, energetic, ambitious, linked to business, informed and perseverant.[5]

There are different hypothesis on the nature of such an association. According to Tucker et al.,[51] accentuated traits of conscientiousness during childhood are associated to a smaller risk of smoking and other non-healthy behavior in adult life. Some people are very likely to engage in non-healthy behavior because of their high impulsivity and lack of consideration with short and long term consequences of such behavior. Yet, the conscientiousness dimension comprises characteristics such as perseverance and discipline, which may contribute to the adoption of healthy habits.[52] For example, an individual may understand that smoking threatens his health, but his lack

of discipline or ability to stick to plans can be a barrier, preventing him to change the smoking habit.[52]

There are similarities between data found in the present work and the inverse association between smoking and obsessive-compulsive disorder (OCD) found in other studies.[22,53] In these works, the prevalence of tobacco consumption in patients with OCD was shown to be lower as compared to the general population and to population with other psychiatric disorders. The OCD can be considered a "hyperfrontality disorder, manifested by symptoms such as exaggerated attention, detailed planning, unrest, exaggerated concern, sense of responsibility, lack of spontaneity, controlled emotions, and care and neatness rituals."[22,53]

This study does not investigate the presence of OCD or other psychopathologies in the individuals included in the sample. However, the similarities between the OCD characteristics and those assessed in the O scale of CPA are remarkable, which may be further investigated in future studies. Prospective and/or cross-sectional studies investigating if normal personality traits and psychopathologic symptoms are associated, as well as the interrelationships among personality/psychopathology/smoking, can contribute to an understanding of the issue.

The low prevalence of tobacco use in patients with OCD may be related to the neurochemical effects of nicotine in the orbital frontal cortex.[22] The prevalence of tobacco use in OCD patients and patients with schizophrenia represent two ends of a continuum. Studies based on neuroimaging revealed that patients with OCD have higher metabolic activity in the orbital frontal cortex; on the other hand, schizophrenic patients show reduced metabolic activity in the frontal lobe.[22]

Once nicotine increments the activity in the frontal lobe and also reduces the normal behavior of the sensory physiology, it is possible that smoking works as an attempt of self-medication by schizophrenic patients.

On the other hand, theoretically, nicotine would cause a deleterious effect in patients with OCD, enhancing the obsessive symptoms, which could contribute to the low prevalence of smoking

in such individuals. There are clinical cases of patients in which the obsessive symptoms get worse after they smoke a cigarette.[22,53] Besides, it has been said that the low consumption of tobacco in patients with OCD can be a reflex of an underlying genetic factor related to the serotonergic and cholinergic activities.[53] The literature on personality and tobacco consumption reveals that traits such as impulsive and high-risk behavior, extraversion, non-conventional behavior and anti-social tendencies are related to tobacco consumption and usually precede the smoking onset. Coincidently, many of those traits are rare in patients with OCD, which could explain the low prevalence of smoking in these patients.[22]

In the present study, the association found between tobacco consumption and the M scale of CPS may indicate that the high scores in this scale can be a "risk factor" for smoking. It is well-known that individuals with high scores in the M scale

> *"(…) declare themselves stubborn, tough, are not disturbed by crawling animals nor when they see blood and do not cry easily, having a little interest on love stories. Individuals with low scores in this factor are more likely to cry easily, get disturbed when they see blood and crawling and lousy animals, such as snakes and insects; they have a great interest on romantic stories."*[30]

Different from what it seems, the M scale of CPS does not investigate the subject's sexuality, but the characteristics associated to social stereotypes of masculinity and femininity.[30] A recent Brazilian study detected a significant association between smoking and the scores obtained in the M scale of CPS. The study revealed that the association between smoking and M remains even if the variable gender is kept under control.[7] This way, we can assume that women's habit of smoking tobacco can be related somehow to the internalization of the male stereotype.

Eventually, we highlight the association found between smoking and the R scale of CPS. It is well-known that

"(…) the R scale is a powerful resource to help checking the consistency of the subject's responses and it integrates, together with the V scale, the technical-scientific criterion of CPS validation. By means of this scale, it is possible to detect the simulation performed by individuals that systematically try to distort their true answers, in a way that they describe, in fact, a personality that is not their personality."

This reveals that smokers are more likely to distort the CPS protocols (consciously or unconsciously) as compared to non-smokers. It is possible that smoking undergraduates dissimulated their responses, in order to present a type of personality that is "socially accepted":

"The higher the score, higher the tendency to respond assertions in a socially desirable way, with systematic distortions, which long for a 'utopist personality'."[30]

This may also reflect an underlying desire of being socially accepted. This psychological characteristic may be related to the low prevalence of tobacco consumption found in this work. It is possible that some smokers preferred to omit the habit of smoking tobacco, so that they described themselves in compliance with socially accepted rules.

Smokers and ex-smokers

In this work, no difference was detected between the two categories of subjects in the scales E and S of CPS. A remarkable controversy in the results of different studies was found concerning the scores of smokers and non-smokers in factors E and N.[7,16,17,43,54] This is probably due to the fact that, at least partially, criteria used to define the category ES vary from one study to another.[55]

In the present work, we highlight the difference found between the scores of smokers and ex-smokers in the M scale of CPS. The increase in M scores is probably due to a decrease in the

probability of the subject pertaining to the ES category. This is the same as saying that, in the present work, undergraduates that stopped smoking are more likely to "cry easily, get disturbed when they see blood and crawling and lousy animals, such as snakes and insects; they have a great interest on romantic stories."[30] as compared to smokers.

Moreover, the positive association between the ES category and the scores obtained in the A scale of CPS must be acknowledged. It is well-known that individuals with high scores in this factor

> *"(…) enjoy physical activities, hard work and exercises, they are full of energy and perseverance, and always strive to do their best. Those who have low scores in A are more likely to be physically not active, lack vigor and energy, get easily tired and are not highly motivated to overcome their own limits."*[30]

It is possible that the success in giving up smoking is a reflex of characteristics such as energy, perseverance and effort. An individual can, for example, believe that smoking is a threat to his or her health, but the lack of discipline and ability to carry out their plans can act as a barrier, preventing him or her to change the smoking habit.[52] On the other hand, characteristics such as vigor, energy, disposition to perform physical activities and exercises may be a direct consequence of the decision of stopping smoking, which, as it has already been proved, immediately enhance the physiological and organic functions of individuals.

Eventually, the inverse association between the scores obtained in R and the ES category found in the present work suggest that ex-smokers are less likely to distort answers in the CPS protocols as compared to smokers.

CONCLUSION

Some consideration should be given to the limitations of the present study. The sample population was very specific (undergraduate students), the relatively small number of smokers and

ex-smokers reported and analyzed (n = 80 and n = 79, respectively) as well as the limits of the study universe (only one college) are factors that make it difficult do compare our study with other ones. Further studies are still required, therefore, comprising populations with different characteristics and larger sample size to confirm these results.

However, we suppose this work can contribute somehow to the programs of dependence prevention or treatment. The identification of personality traits associated to tobacco consumption can support the work of healthcare professionals and alike in the process of creating or refining therapeutic strategies to handle this matter, such as advising, for example.

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REFERENCES

1. Patton D, Barnes GE, Murray RP. A personality typology of smokers. Addict Behav. 1997;22:259-73.
2. Eysenck HJ. The biological basis of personality. Springfield: CC Thomas; 1967.
3. Zuckerman M. Theoretical formulations. In: Zubek JP, ed. Sensory deprivation: fifteen years of research. New York: Appleton Century Crofts; 1969. p. 407-32.
4. Zuckerman M. Sensation seeking: beyond the optimal level of arousal. Hillsdale: Lawrence Erlbaum; 1979.
5. Costa PT, McCrae RR. The NEO Personality Inventory Manual. Odessa: Psychological Assessment Resources; 1985.
6. Huijbrechts IP, Duivenvoorden HH, Deckers JW, Leenders IC, Pop GA, Passchier J. Modification of smoking habits five months after myocardial infarction: relationship with personality characteristics. J Psychosom Res. 1996;40:369-78.
7. Rondina RC, Botelho C, Moratelli H. Tabagismo e características da personalidade em estudantes universitários. Rev Psiquiatr Clin. 2001;28:52-9.
8. Mitchell SH. Measures of impulsivity in cigarette smokers and non-smokers. Psychopharmacology. 1999;146:455-64.
9. Adalbjarnardottir S, Rafnsson FD. Adolescent antisocial behavior and substance use: longitudinal analyses. Addict Behav. 2002;27:227-40.
10. Kerby DS, Brand MW, John R. Anger types and the use of cigarettes and smokeless tobacco among Native American adolescents. Prev Med. 2003;37:485-91.
11. Etter JF, Pélissolo A, Pomerleau C, De Saint-Hilaire Z. Associations between smoking and heritable temperament traits. Nicotine Tob Res. 2003;5:401-9.
12. Hoodin F, Kalbfleisch KR, Thornton J, Ratanatharathorn V. Psychosocial influences on 305 adults' survival after bone marrow transplantation, depression, smoking, and behavioral self-regulation. J Psychosom Res. 2004;57:145-54.

13. Kahler CW, Strong DR, Niaura R, Brown RA. Hostility in smokers with past major depressive disorder: relation to smoking patterns, reasons for quitting, and cessation outcomes. Nicotine Tob Res. 2004;6:809-18.

14. Dinn WM, Aycicegi A, Harris CL. Cigarette smoking in a student sample: neurocognitive and clinical correlates. Addict Behav. 2004;29:107-26.

15. Eysenck HJ, Tarrant M, Woolf M. Smoking and personality. BMJ. 1960;1:1456-60.

16. Aray Y, Hosokawa T, Fukao A, Izumi Y, Hisamichi S. Smoking behavior and personality: a population-based study in Japan. Addiction. 1997;9:1023-33.

17. Jorm AF, Rodgers B, Christensen H, Henderson S, Korten AE. Smoking and mental health: results from a community survey. Med J Aust. 1999;170:74-7.

18. Perkins KA, Gerlach D, Broge M, Grobe JE, Wilson A. Greater sensitivity to subjective effects of nicotine in nonsmokers high in sensation seeking. Exp Clin Psychopharmacol. 2000;8:462-7.

19. Challier B, Chau NA, Predine R, Choquet M, Legras B. Associations of family environment and individual factors with tobacco, alcohol and illicit drug use in adolescents. Eur J Epidemiol. 2000;16:33-42.

20. Kubicka L, Matejcek Z, Dytrych Z, Roth Z. IQ and personality traits assessed in childhood as predictors of drinking and smoking behaviour in middle-aged adults: a 24-year follow-up study. Addiction. 2001;96:1615-28.

21. Carton S, Le Houezec J, Lagrue G, Juvent R. Relationships between sensation seeking and emotional symptomatology during smoking cessation with nicotine patch therapy. Addict Behav. 2000;25:653-62.

22. Bejerot S, von Knorring L, Ekselius L. Personality traits and smoking in patients with obsessive-compulsive disorder. Eur Psychiatry. 2000;15:395-401.

23. Yoshimura K. The psychological characteristics of tobacco dependence in a rural area of Japan. J Epidemiol. 2000;10:271-9.

24. Burt RD, Dinh KT, Peterson AV, Sarason IG. Predicting adolescent smoking: a prospective study of personality variables. Prev Med. 2000;30:115-25.

25. Prüss U, Brandenburg A, von Ferber C, Lehmkuhl G. Patterns of behaviour of juvenile smokers and non-smokers. Prax Kinderpsychol Kinderpsychiatr. 2004;53:305-18.

26. Cherry N, Kiernon K. Personality scores and smoking behaviour − a longitudinal study. Br J Prev Soc Med. 1976;30:123-31.

27. Spielberg CD, Jacobs GA. Personality and smoking behavior. J Pers Assess. 1982;46:396-403.

28. Hopper JL, White M, Macaskill GT, Hill DJ, Clifford CA. Alcohol use, smoking habits and the Junior Eysenck Personality Questionnaire in Adolescent Australian Twins. Acta Genet Med Gemellol. 1992;41:311-24.

29. Fagerström KO. Measuring degree of physical dependence to tobacco smoking with reference to individualization of treatment. Addict Behav. 1978;3:235-41.

30. Comrey AL. Escalas de Personalidade de Comrey. [Tradução, adaptação e padronização brasileira: Aroldo Rodrigues. Versão Revisada: Flávio Rodrigues da Costa]. São Paulo: Vetor; 1997.

31. Comrey AL. Escalas de Personalidade de Comrey. [Tradução, adaptação e padronização brasileira de Aroldo Rodrigues]. São Paulo: Vetor; 1987.

32. Brasil, Ministério da Saúde, Secretaria de Vigilância em Saúde, Secretaria de Atenção à Saúde, Instituto Nacional do Câncer, Coordenação de Prevenção e Vigilância. Inquérito domiciliar sobre comportamentos de risco e morbidade referida de doenças e agravos não transmissíveis: Brasil, 15 capitais e Distrito Federal, 2002-2003. Rio de Janeiro: INCA; 2004.

33. Kendler KS, Neale MC, Sullivan P, Corey LA, Gardner CO, Prescott CA. A population-based twin study in women of smoking initiation and nicotine dependence. Psychol Med. 1999;29:299-308.

34. Cavalcante J. O impacto mundial do tabagismo. Fortaleza: Realce; 2002.

35. Seltzer CC, Oechsli FW. Psychosocial characteristics of adolescent smokers before they started smoking: evidence of self-selection. J Chron Dis. 1985;38:17-26.

36. Stanaway RG, Watson DW. Smoking and personality: a factorial study. Br J Clin Psychol. 1981;20:213-4.

37. McManus IC, Weeks SJ. Smoking, personality and reasons for smoking. Psychol Med. 1982;12:349-56.

38. Gilbert DG. Smoking: individual differences, psychopathology, and emotion. Washington: Taylor & Francis; 1995.

39. Gilbert DG, McClernon FJ, Gilbert BO. The psychology of the smoker. In: Bolliger CT, Fagerström KO, eds. The tobacco epidemic. Basel: Karger; 1997. v. 28, p. 132-50.

40. Eysenck HJ. A note on smoking, personality and reasons for smoking. Brief communication. Psychol Med. 1983;13:447-8.

41. Gilbert DG, Gilbert BO. Personality, psychopathology and nicotine response as mediators of the genetics of smoking. Behav Gen. 1995;25:133-47.

42. Eysenck HJ. Smoking, personality, and psychosomatic disorders. J Psychosom Res. 1963;7:107-30.

43. Kawakami N, Takai A, Takatsuka N, Shimizu H. Eysenck's personality and tobacco/nicotine dependence in male ever-smokers in Japan. Addict Behav. 2000;25:585-91.

44. Parkes KR. Smoking and the Eysenck personality dimensions: an interactive model. Psychol Med. 1984;14:825-34.

45. Comrey A, Backer T. Construct validation of the Comrey Personality Scales. Mult Behav Res. 1970;5:469-77.

46. Pomerleau OF. Nicotine dependence. In: Bolliger CT, Fagerstrom KO, eds. The tobacco epidemic. Basel: Karger; 1997. v. p. 122-31.

47. Williams AF. Personality and other characteristics associated with cigarette smoking among young teenagers. J Health Soc Behav. 1973;14:374-80.

48. Smith GM. Relations between personality and smoking behaviour in preadult subjects. J Consult Clin Psychol. 1969;33:710-5.

49. Terraciano A, Costa PT. Smoking and the five-factor model of personality. Addiction. 2004;99:471-81.

50. Paunonen SV. Hierarchical organization of personality and prediction of behavior. J Pers Soc Psychol. 1998;74:538-56.

51. Tucker JS, Friedman HS, Tomlinson-Keasey C, Schawartz JE, Wingard D, Criqui MH, et al. Childhood psychosocial predictors of adulthood smoking, alcohol consumption, and physical activity. J Applied Soc Psychol. 1995;25:1884-99.

52. Hampson SE, Andrews JA, Barckley M, Lichtnstein E, Lee ME. Conscientiousness, perceived risk, and risk-reduction behaviors: a preliminary study. Health Psychol. 2000;19:496-500.

53. Bejerot S, Humble M. Low prevalence of smoking among patients with obsessive-compulsive disorder. Compr Psychiatry. 1999;40:268-72.

54. Wijatkowski S, Forgays DG, Wrzesniewski S, Gorski T. Smoking behavior and personality characteristics in polish adolescents. Int J Addict. 1990;25:363-73.

55. Forgays DG, Bonaiuto P, Wrzesniewski K, Forgays DK. Personality and cigarette smoking in Italy, Poland and the United States. Int J Addict. 1993;28:399-413.

ABSTRACT

Introduction: *The study of the relationship between personality and smoking behavior can be useful in the treatment of tobacco dependence.*

Objectives: *To identify personality traits in smokers, ex-smokers and non-smokers.*

Methods: *A total of 1,245 students enrolled at Universidade Federal de Mato Grosso were selected. A standard questionnaire was applied aiming at identifying sociodemographic characteristics and tobacco consumption patterns in the students, followed by the revised version of the Comrey Personality Scales (CPS). ANOVA analysis of variance was used to compare the mean*

scores obtained in smokers, ex-smokers and non-smokers, and two multiple logistic regression analyses were used to determine the associations between CPS results and smoking behavior.

Results: *A prevalence of 6.67% of smokers, 6.58% of ex-smokers and 86.73% of non-smokers was found. The first logistic regression analysis revealed a positive association between the smoker category and the scores obtained in the masculinity x femininity (M) and response bias (R) scales, as well as a negative association with the order x lack of compulsion (O) scale. The second analysis detected a negative association between the ex-smoker category and the R and M scales, as well as a positive association with the activity x lack of energy (A) scale.*

Discussion: *Smokers presented biased responses and tended to adopt the social stereotype of masculinity more often than non-smokers and ex-smokers. Smokers described themselves as more careless, negligent, imprudent, non-systematic and unorganized as compared to non-smokers. Ex-smokers showed more energy and disposition when compared to smokers. The present data are assumed to be useful to programs aimed at treating tobacco dependence.*

Keywords: *Personality, smoking, college students.*

Title: *A comparative study of personality traits in college undergraduate smokers, ex-smokers and non-smokers*

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