Pergamon

Addictive Behaviors, Vol. 20, No. 4, pp. 549–554, 1995
Copyright © 1995 Elsevier Science Ltd
Printed in the USA. All rights reserved
0306-4603/95 $9.50 + .00

0306-4603(95)00010-0

BRIEF REPORT

PSYCHOACTIVE SUBSTANCE USE: SOME ASSOCIATED CHARACTERISTICS

ALFREDO ARDILA
Instituto Colombiano de Neuropsicologia, Bogotá, Colombia

JOSÉ R. BATEMAN
Fundación Universitaria "Konrad Lorenz", Bogotá, Colombia

Abstract — A questionnaire designed to assess the prevalence of psychoactive substance use and its relation with: (a) central nervous system risk factors, (b) associated disorders (allergies, migraine-type headaches, developmental dyslexia history, smoking, suicide attempt, and sleep disorders), and (c) cognitive-type symptoms, was given to a general population sample of 1,879 university students (mean age = 24.0) from Bogotá (Colombia, South America). A prevalence of 3.4% of self-reported psychoactive substance use was found. Results indicated that the incidence of some risk factors of minor brain injury or dysfunction, smoking, suicide attempt, and headache was higher among the self-reported psychoactive substance users than among nonusers. Cognitive-type symptoms, except suicide ideation, did not differ between drug users and nonusers. Current results point to a significant association between psychoactive substance use and depressive symptoms, and there was no significant association between psychoactive substance use and psychotic ideation.

During recent years, great importance has been placed on the medical and social analysis of psychoactive substance use (e.g., Ardila, Rosselli, & Strumbasser, 1991; Hartman, 1988; Lacayo, 1995; Pérez-Gómez, 1987, 1993). In Colombia (South America) marijuana and a base of cocaine similar to "crack," usually known as *basuco* represent the most frequent psychoactive substances. In lesser proportions, cocaine powder and solvent inhalation are generally found (Pérez-Gómez, Aja-Eslava, & Correa-Escobar, 1993; Rodriguez-Ospina, Duque-Ramirez, & Rodriguez-Garcia, 1993). During the last years, particularly the use of basuco has notoriously increased in Colombia.

Epidemiological studies of psychoactive substance use have been recently reported in Colombia. In a relatively large high-school student sample (N = 2,642), it was found that 75.9% of the subjects stated that they "never have used a psychoactive substance"; 5.0% answered "occasionally"; and 0.3%, "at least once a week" (Pérez-Gómez, 1987). In a national sample of 8,975 people, to the question "Have you used any illegal drug during the last month?" about 0.4% of the subjects reponded "yes." And to the question "Have you ever used any illegal drug?" about 6.6% of the subjects reponded "yes" (Rodriguez-Ospina et al., 1993). In Bogotá, it has been calculated that about 8.5% of males and 1.5% of females have used mari-

The authors want to express their most sincere gratitude to Carmen Rosa Niño, Elizabeth Pulido, Dora Beatriz Rivera, and Claudia Janeth Vanegas for their support in the collection of the data used in this research.

Requests for reprints should be sent to: Alfredo Ardila, Ph.D., Miami Institute of Psychology, 8180 NW 36 Street, 2nd floor, Miami, FL 33166-6612, USA.

juana, while 3.8% of males and 0.2% of females have used basuco and 3.7% of males and 0.6% of females have used cocaine (Escallón-Emiliani, Ramirez, & Pérez-Gomez, 1989). Pérez-Gómez et al. (1993) reported similar figures.

Psychoactive substance use has been associated with conduct disorders and personality disorders, with antisocial personality disorders predisposed to the development of psychoactive substance use disorders (American Psychiatric Association, 1987). However, research studies about developmental history, risk factors of brain dysfunction, and subjective phenomena eventually found in drug users are scarce (Hartman, 1988).

The specific aims of this research were to determine the frequency of (a) self-reported psychoactive substance use history in a university student sample; (b) possible risk factors of minor central nervous system injury or dysfunction; (c) associated disorders; and (d) cognitive-type symptoms in self-reported substance users.

METHOD

Subjects

A sample of 1,879 students from different universities in Bogotá (Colombia) was selected (average age = 24.0; *SD* = 5.4; range = 17–50). The sample included 946 males and 933 females, all nonpaid volunteers. Most subjects belonged to a middle socioeconomic status.

Instrument

As a part of a larger research study (Ardila, Niño, Pulido, Rivera, & Vanegas, 1993), all the subjects received and individually answered a questionnaire designed to assess the frequency of psychoactive substance use and its relation to several risk factors, associated disorders, and cognitive-type symptoms (Table 1). The first part of the questionnaire (Items 1 through 13) included three types of questions: (a) gender and handedness data (Questions 1 and 2); (b) risk factors of possible minor central nervous system dysfunction (Questions 3–9); and (c) associated disorders (Questions 10–16). One single question (Question 14: Have you used psychoactive drugs for a period longer than a month?) was directed to determine psychoactive drug-use history. For the two last types of questions, dichotomic yes/no answers were required (however, for some questions, "I do not know" was an allowed answer).

The second part of the questionnaire (Items 17 through 23) was designed to determine the frequency of some cognitive-type symptoms. Items were rated on the following 5-point scale: 0 = never; 1 = less than once per month; 2 = at least once per month; 3 = at least once per week; and 4 = at least several times per week. For statistical purposes, only a score of 4 ("at least several times per week") was accepted as a positive indicator of the presence of the corresponding symptom.

Procedure

Subjects filled out the questionnaires in classes. Initially, the examiners explained that the questionnaire was intended to analyze the frequency of "some phenomena that eventually happen to many people." No specific reference to psychoactive substance use was made. Questionnaires were completed without names or other identifying information, and complete anonymity was assured. In only three or four of the cases students refused to participate. Examiners were university students working on their dissertations and were not known by the subjects. They stated they

Table 1. Survey questionnaire (adapted from Ardila et al., 1993)

1. *Gender:* Male or females
2. *Handedness:* Right-handed, left-handed, or ambidextrous
3. *Seizures history:* Have you ever had a seizure?
4. *Head trauma:* Have you ever had such a severe blow in your head that you have lost consciousness and/or were required to be hospitalized?
5. *Car accident:* Have you ever been in an auto accident in which your head struck even without losing of consciousness?
6. *Loss of consciousness:* Have you ever lost consciousness without any apparent reason?
7. *Febrile illness:* As an adolescent or adult, have you ever had such a high fever that you became delirious or you could not remember what happened to you for one or more days?
8. *Hospitalization:* Have you ever suffered a life-threatening illness so severe that you were hospitalized in severe condition and you have little or no memory of?
9. *Hypoxia:* Do you know if you suffered hypoxia (lack of oxygen) during your birth?
10. *Allergies:* Do you have any allergies? To what?
11. *Headache:* Do you sometimes get severe pulsating headaches and feel so bad that the light seems too bright and you become nauseated and want to throw up?
12. *Dyslexia:* Did you have with regard to the rest of your classmates special difficulties when learning to read and/or write (e.g., letter inversions, errors in the sequence of letters in a word, etc.)?
13. *Smoking:* Are you a cigarette smoker?
14. *Drug abuse:* Have you used psychoactive drugs for a period longer than a month?
15. *Suicide attempt:* Have you ever attempted to commit suicide?
16. *Somnambulism:* Do you have, or have you had somnambulism?
17. *Confusional spells:* Do you sometimes become quite suddenly and intensely confused and perplexed as if you were a different person?
18. *Environmental distortion:* Do you sometimes have an overwhelming feeling that things are weird and strange?
19. *Impending doom:* Do you sometimes feel the existence of an unavoidable and fatal destiny in life?
20. *Paranoia:* Do you sometimes feel persecuted, as if there existed an agreement for everything to go wrong?
21. *Religiousness:* Do you feel sometimes the necessity to be more religious than you usually are?
22. *Suicide ideation:* Are you regularly so depressed that you think seriously about suicide?
23. *Mental decline:* Do you feel that your memory and concentration are getting substantially worse everyday?

were representing a particular Colombian university and collaborating in a large psychology research.

Analysis of results

Chi-square tests were performed in order to compare frequencies in the different questionnaire items between substance user and nonuser groups.

RESULTS

Out of the 1,879 subjects, only 63 subjects, or 3.4%, reported psychoactive drug use "for a period longer than a month," whereas 96.6% answered "no" to this question. The former group was considered the drug-user group for further analysis. Comparisons were made between these "drug users" (n = 63), and the rest of the participants, who were regarded as non-drug-users (n = 1,816).

Table 2 presents the distribution of the drug-user group according to gender and handedness. As can be seen, in the group of substance users 35 (55.5%) were males and 28 (44.4%) were females. Handedness distribution did not significantly differ between drug users and nonusers. In the total sample there were 1,610 subjects who considered themselves right-handed (chi-square = 0.49; p = NS), 121 as left-handed (chi-square = 0.86; p = NS), and 148 as ambidextrous (chi-square = 1.75; p = NS).

Table 2. Distribution of self-reported psychoactive substance use according to gender and handedness

	Drug users		Nondrug users	
	n	%	*n*	%
Gender				
Males	35	3.69	913	96.31
Females	28	3.01	903	96.99
Handedness				
Right-handers	49	77.78	1561	85.96
Left-handers	6	9.52	115	6.33
Ambidextrous	8	12.70	140	7.71

Table 3 shows the comparative data between drug abusers and non-drug-abusers regarding risk factors, associated disorders, and cognitive symptoms. Out of seven risk factors, three (Head trauma, Car accident, and Hospitalization) differed significantly ($p < .001$) between both groups. Although Seizure history was twice as frequent among drug users as it was among non-drug-users, this difference did not reach a statistical level of significance.

Out of six associated disorders, only smoking and suicide attempt presented a strong association with psychoactive substance use ($p < 0.001$). The frequency of headache was also increased in the psychoactive substance use, although with a lower significance level ($p < .05$).

Out of seven cognitive symptoms included in the questionnaire, the occurrence of only one (suicidal ideation) was significantly increased in the psychoactive substance

Table 3. Frequency of risk factors, associated disorders, and depression symptoms in self-reported psychoactive substance users and nonusers

	Drug users		Nondrug users			
	n	%	*n*	%	chi-square	*p*
Risk factors						
Seizures history	5	7.94	67	3.69	2.65	*ns*
Head trauma	25	39.68	338	18.61	12.97	.001
Car accident	21	33.33	237	13.05	17.05	.001
Loss of consciousness	3	4.76	85	4.68	0.01	*ns*
Febrile illness	7	11.11	147	8.09	0.59	*ns*
Hospitalization	36	57.14	399	21.97	30.41	.001
Hypoxia	3	4.76	32	1.76	2.75	*ns*
Associated disorders						
Allergies	20	31.75	393	21.64	2.53	*ns*
Headache	26	41.27	459	25.27	5.48	.05
Dyslexia	9	14.28	142	7.82	2.91	*ns*
Smoking	32	50.79	442	24.34	15.67	.001
Suicide attempt	12	19.05	102	5.61	17.08	.001
Somnambulism	8	12.70	215	11.83	0.02	*ns*
Cognitive symptoms						
Confusional spells	1	1.59	27	1.49	0.00	*ns*
Environmental distortion	2	3.17	23	1.27	1.55	*ns*
Impending doom	3	4.76	53	2.92	0.63	*ns*
Paranoia	1	1.59	36	1.98	0.05	*ns*
Religiousness	4	6.34	108	5.94	0.01	*ns*
Suicide ideation	5	7.94	35	1.92	9.74	.01
Mental decline	2	3.17	43	2.37	0.14	*ns*

use group. For the remainder, frequency of cognitive-type symptoms was similar in both the drug-user and the non-user subsamples.

DISCUSSION

This study has an important set of restraints, as usually happens with every epidemiological study. Analyses were made based simply on the answers given by the subjects. There are individual differences with regard to the proneness to answer in a specific way. The questionnaire has not been validated and it is possible that responses are those of individuals who tend to respond positively. Some of the questions made were not easy to answer (e.g., hypoxia), and as a result there was a high percentage of "I don't know" answers. Nevertheless, as with any study of a similar type, it is possible to distinguish overall trends and to infer significant correlations generally valid for large populations.

Our 3.4% of drug use history is in general similar to the percentages observed in other research studies carried out in Colombia (Escallón-Emiliani et al., 1989; Pérez-Gómez, 1987; Pérez-Gómez, et al., 1993; Rodriguez-Ospina et al., 1993). However, we used a quite broad criterion (to have used psychoactive substances "for a period longer than a month") that makes results difficult to compare with those of other studies. There are no specifications with regard to any particular substance.

Our subjects met only one out of three diagnostic criteria for psychoactive substance abuse (i.e., "some symptoms of the disturbance have persisted for at least one month, or have occurred repeatedly over a longer period of time"; American Psychiatric Association, 1987, p. 169). Because of that, they were considered simply as users, not abusers. Nonetheless, most likely a certain percentage of our sample may have corresponded to "substance abusers," and even "substance dependents."

It is evident that the drug-user group showed an increased frequency of some factors of minor brain injury or dysfunction. They presented a higher incidence of head traumas, car accidents with head blow, and histories of hospitalizations associated with life-threatening conditions.

A significant, but not unexpected association between drug-use history and smoking was observed. Nicotine dependence represents a type of drug addiction (American Psychiatric Association, 1987), and this highly significant association could point to a general tendency toward drug use.

Suicide attempt history as well as suicidal ideation was significantly increased in drug users. Over 19% of drug users reported suicide attempts (a percentage about five times higher than that of the general population), and about 8% stated that they were regularly so depressed that they had thought seriously about suicide (about four times higher than in the general population). A pathological depressive personality trait could be, in consequence associated, with psychoactive substance use.

None of the analyzed cognitive symptoms, except suicidal ideation, was significantly increased in drug users. The frequency of depersonalization ("Confusional spells" question) or derealization ("Environmental distortion" question) were not significantly increased in the drug-user group. Paranoia and fatal destiny feelings were not significantly associated with drug use. Religiousness and mental decline feelings were not enhanced in the experimental group. In brief, whereas depressive symptoms appeared, according to our current results, strongly associated with drug use, psychotic ideation was not evident.

Finally, it must be emphasized that the analysis of psychoactive substance use in

large unselected populations, may eventually allow a better understanding of the nature of drug use and its association with different types of variables.

REFERENCES

American Psychiatric Association (1987). *Diagnostic and statistical manual of mental disorders — Revised* (3rd ed. Washington, DC: American Psychiatric Association.

Ardila, A., Niño, C. R., Pulido, E., Rivera, D. B., & Vanegas, C. J. (1993). Episodic psychic symptoms in the general population. *Epilepsia*, **34**, 133–140.

Ardila, A., Rosselli, M., & Strumbasser, S. (1991). Neuropsychological effects of cocaine abuse. *International Journal of Neuroscience*, **57**, 73–79.

Escallón-Emiliani, A., Ramirez, G. I., & Pérez-Gómez, A. (1989). *Bogotá y el consumo de substancias psicoactiv as: un estudio, una solución* [Bogotá and the use of psychoactive substances: a study, a solution]. Bogotá: Alcaldia Mayor de Bogotá.

Hartman, D. E. (1988). *Neuropsychological toxicology*. New York: Pergamon Press.

Lacayo, A. (1995). Neurologic and psychiatric complications of cocaine abuse. *Neuropsychiatry, neuropsychology and behavioral neurology*, **8**, 53–60.

Pérez-Gómez, A. (1987). *Cocaina: surgimiento y evolución de un mito* [Cocaine: Emergence and evolution of a myth]. Bogotá: Catálogo Cientifico.

Pérez-Gómez, A. (1993). The ambulatory treatment of noncompulsive users of psychoactive substances. *Journal of Substance Abuse and Treatment*, **10**, 327–321.

Pérez-Gómez, A., Aja-Eslava, L., & Correa-Escobar, E. (1993). *Qué consumen los colombianos*? [What do Colombians use?]. Bogotá: Universidad de los Andes.

Rodriguez-Ospina, E., Duque-Ramirez, L. F., & Rodriguez-Garcia, J. (1993). *Estudio nacional sobre consumo de sustancias psicoactivas en Colombia* [National study about the use of psychoactive substances]. Bogotá: Fundación Santa Fé de Bogotá, Escuela Colombiana de Medicina, Dirección Nacional de Estupefacientes.