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Original scientific paper

The Influence of the Local and General Environment on the Use and Distribution of Drugs by Adolescents in Belgrade

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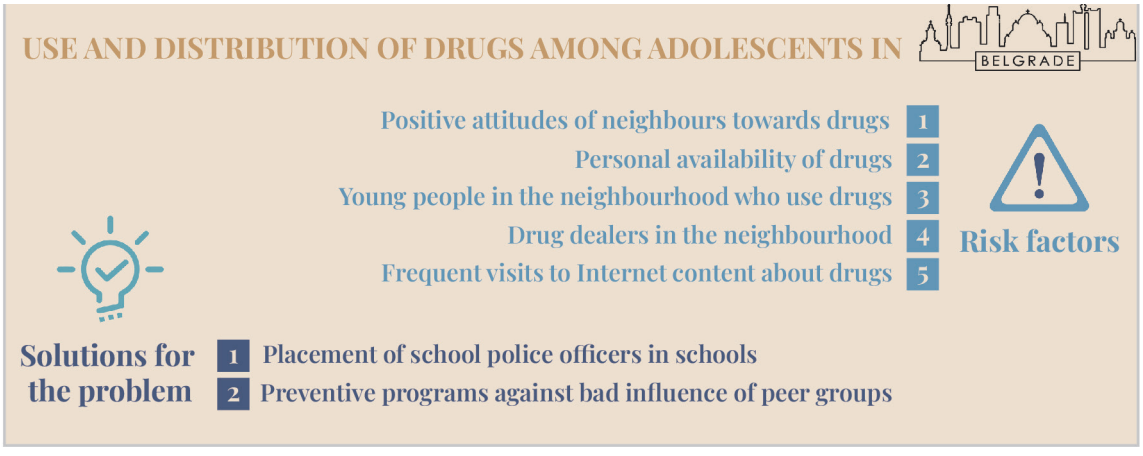
Abstract: The aim of this paper was to determine if there are significant differences in the variables of the local and general environment between adolescents who have not had any contact with drugs and those who use and distribute drugs. The examination of these differences was carried out on a two-stage random sample of 1286 high school students in Belgrade, of both sexes, between the ages of 15 and 19. All data were collected by a specially constructed questionnaire in a completely anonymous situation. Analysis of the data on the differences between drug-free and drug-using adolescents was performed by canonical discriminant analysis, especially for boys and especially for girls. In the difference analysis, one significant discriminative function was obtained for boys, whose canonical correlation was of the order of .616. That function is defined by the easy availability of drugs in the local environment, but some other variables of the local and general environment also played a significant role in the structure of that function. For girls, one discriminative function was also isolated, with the correlation of .540. That function is also defined by the ease of availability of the drug. In the structure of that function, certain differences can be observed in relation to this structure in boys. Research data undoubtedly show that when choosing preventive interventions, special attention must be paid to the form of abuse that manifests itself as the simultaneous use and distribution of drugs, and to the factors from these two environments that influence the behaviour.

Keywords: adolescents, drug abuse, risk factors, prevention.

Graphical abstract



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INTRODUCTION

According to the World Drug Report 2018 (United Nations Office on Drug and Crimes, 2018) drug use in the world is a global problem, since 5.6% of the world's population aged between 15 and 64 used drugs at least once. Among them, the largest percentage includes young people between 15 and 30 years of age. The critical period for starting to use drugs, according to that Report, is the period of adolescence. For many reasons, and primarily because of the prevention of drug use, it is important to have systematic scientific research into the factors that contribute to that behaviour and precisely in that period. This is even more so when one takes into account the constant lowering of the age limit for the first contact with drugs and the increasingly frequent use of synthetic drugs (Vlada Republike Srbije, 2014; Milosavljević & Jugović, 2008; Otašević & Kolarević, 2020).

The phenomenon of drug use is the subject of interest and research in a number of professions and scientific disciplines. Hence the rather varied names for this type of behaviour. In practice, as well as in the daily communication of experts of various profiles, the expression "drug abuse" is most often present. It refers to a series of behaviours punishable under Articles 246, 246a and 247 of Chapter 23 of the Criminal Code of the Republic of Serbia (hereinafter: CC RS) (Krivični zakonik, 2005–2019). In the sciences of medical nature, the term "abuse of psychoactive substances" is most often used, but sometimes this term is also identified with drug addiction.

The phenomenon investigated in this paper is of a rather different nature. It is the result of a factor analysis of behaviours contained in the mentioned articles of the CC RS, which are possible and expected at the adolescent age: occasional or constant intake of any amount and type of substances from the group of cannabinoids, CNS (Central nervous system) depressants, stimulators of CNS or group of hallucinogens; lending drugs to others; mediating the purchase or sale, and possession of drugs for sale. The starting point of that analysis are three types of mutually independent behaviours: Drug use only, Drug use and distribution, and Drug distribution only. Due to the frequency (11.27% of 1286 examined students behave this way), but also some other properties, this form was used as a dependent variable. Its operational definition will be given in the Methods section.

Separation of drug use from other behaviours from the same class was a requirement to adequately determine the subject and objectives of the research. Subject of the work is defined as research into factors from the immediate and general social environment that influence the use and distribution of drugs. The goal of the research is to determine: 1) which of those factors have the power to predict this behaviour or, in other words, based on which variables from the local and general social environment it can be predicted and forecast that such student's behaviour will occur; then 2) which of those factors has only a correlative relationship with that behaviour and finally, 3) whether there are differences in those factors that have the status of predictors depending on the gender of the adolescent.

All three stated goals are important from the point of view of organization and implementation of drug use and distribution prevention. That attitude is based on multiple pieces of evidence that the nature of the immediate and general social environment can influence adolescent behaviour in many ways, starting with socialization processes and ending with the quality of life (Spasić, 2020).

Research into the factors of drug use and distribution, which originates in the local and general social environment, is based on the postulates of several important theories in the field of behavioural disorders and crime. One of them is certainly the theory of self-control and social bonds. The authors of the most important positions in that theory are Gottfredson and Hirschi (1990). The results on the importance of the adolescent's perception of the neighbourhood's relationship to drug use and crime on their own drug use are also due to that theory (Farrington, 2000). An important influence on this research had the assumptions of the social network theory (Krohn, 1986) and its views on the relationships of so-called individual and shared environment with deviant adolescent behaviours. Numerous studies carried out from the standpoint of this theory have shown the exceptional importance of the influence of the family, school environment, and peer groups on behavioural disorders, as well as the influence of factors from the local environment and those shared with others on the availability of drugs. That last mentioned result is due to the research of Howell (2003). As will be seen later, there is absolute agreement between that result and the results of this research.

However, the theory that this research relies on the most is the problem behaviour theory (Jessor & Jessor, 1977). Its fundamental premise is that behavioural disorders are the result of the interaction between the individual and his social environment (Donovan, 2005). According to the authors of the theory, all factors that are important for these behavioural disorders come from three areas that they call systems: the personality system, the system of the perceived social environment, and the behavioural system. The research of the local and general social environment belongs to the latter – the system of perceived social environment. There has been quite a bit of research in that area, but mostly focused on the influence of family, school, or peer group factors on drug use. As examples of research that confirmed the relevance of those areas for drug use by minors are the works of Zapolski et al. (2019), Van Ruzin et al. (2012), Schleimer et al. (2019) and some other authors. Recently, those three mentioned systems have been supplemented with new content (Patrick et al., 2009; Marić, 2013), and among them are studies analysing the impact of the disorganization of the local social environment on drug use.

For this research, the work of Terek (2022) is very interesting and instructive, who, through the analysis of a large number of recent works, determined that the structural characteristics of the neighbourhood, which is an indisputable part of the local environment, have an impact on the behaviour of families, and through them on behavioural disorders in children. It is certain, for example, that neighbourhood disorganization has an impact on the creation of a subculture of crime and youth street gangs characterized by violent behaviour and drug use. Although crime and drug use in the neighbourhood are a risk factor for drug use among 12- to 14-year-olds (Shader, 2005), the most important predictor of that use belonging to the local environment is the easy availability of drugs. That accessibility is especially important for the very beginning of use (Thornberry & Krohn, 2003). As will be seen a little later, this availability is the most important predictor of drug use and distribution in this paper as well.

While the relevance of factors of the local environment for drug use has been proven in several studies, the situation is quite different with factors belonging to the general social environment. Probably due to the difficulties of operationalizing factors of that nature, these researches are much rarer. Research in this area, which the authors of this paper had insight into, as a rule, started from the concept of socialization, because in it, the general

social environment is given a very important role, and often the status of a special agent. Authors who study the influence of factors in this area on the behaviour of young people, including on drug use, most often cite the role of the media in that behaviour. Through them, it is believed, many and varied influences of various social phenomena and subcultures are transmitted. These influences can be more important for the behaviour of young people than other socialization agents, because they offer different identification models (primarily entertainment), and also supported by peer groups, in contrast to verbal ways of family and school influence (Lovrić, 2006; Radovanović et al., 2019). Some authors pay special attention to the phenomenon of culture in the area of the general social environment (Rot, 2010). Different definitions of that phenomenon allow for different claims about which aspects of culture are important for drug use or non-use, but it is indisputable that the predictive influence can primarily be expected from the values that belong to the phenomenon of religion. Those values are, as shown by the research of Drabble et al. (2016), Luikinga et al. (2018) and Afifi et al. (2020) a strong protective factor. This status of religion was also confirmed in this research.

METHODS

Variables in Research

The dependent variable in this research is Drug use and distribution. It includes all individuals who use drugs and who answered at least one of the six questions about drug distribution "I did once" to "I did more than once". It is therefore a question of behaviour that, apart from taking drugs into the body, also includes offering them to others, selling, reselling, giving away, lending, assisting in sales or purchases. All these behaviours are punishable under the current CC RS.

Independent variables, 23 in total, consisted of the following variables:

1. Perception of the neighbourhood security
2. Perception of police presence in the area
3. Knowing one of these cops
4. Going to church
5. Existence of cultural institutions in the area... (theatre, cinema, libraries, etc.)
6. Existence of subcultural facilities in the area (casinos, etc.)
7. Existence of available sports fields
8. Knowing neighbours
9. Perception of neighbours' attitude towards drugs
10. Perception of neighbours' attitude towards crime
11. Young people in the neighbourhood who use drugs
12. Individuals in the neighbourhood who are involved in crime
13. Availability of drugs in the neighbourhood
14. Personal availability of drugs (drugs offered to students)
15. Interest in and following of political topics
16. Reading the daily or weekly press
17. Watch trash shows on TV
18. Optimism for the future
19. Knowing the future profession
20. Number of visits to the cinema for the last 30 days
21. Number of visits to the theatre in the last 30 days
22. Number of visits to the cafe for the last 30 days
23. Number of visits to drug websites in the last 30 days

A Sample of Respondents

The sample of respondents is a two-stage random sample of secondary school students in Belgrade, with a size of 1286 respondents. In the first stage, 3 grammar schools, 6 vocational secondary schools and 1 art school were randomly selected, proportionally to the number and type of secondary schools in Belgrade. Within those schools, also by a random procedure, one class in each of the four grades was chosen. A total of 1286 students were examined in them. The average age in the sample is 17.04 years with a standard deviation of 1.147. The age distribution of students is almost perfectly normal: 10% were 15 years old, 23% were 16 years old, 30% were 17 years old, 29% were 18 years old, and 8% of students were 19 years old. The gender distribution is also normal: 611 boys and 675 girls.

Instruments, Research Procedure and Data Analysis

Data on the behaviour of students and their contacts with drugs, as well as variables of the local and general environment, were collected by a special questionnaire constructed for the needs of a wider research. That and this research were conducted with the approval of the competent educational institutions and administrations of each school, and data collection was carried out by school psychologists. Data collection was done in groups, with a total duration of one school hour or less. All answers to the questions in the questionnaire are self-statements of the students given in an anonymous situation, and the respondents were informed of the possibility of refusing to participate in the research. The basic data analysis was done using the methods of descriptive and non-parametric statistics. Differences in local and general social environment variables between adolescents who have not had any contact with drugs and those who use and distribute drugs were determined by canonical discriminant analysis, separately for boys and girls.

RESULTS

The results of the analysis of the differences in the variables of the local and general social environment between adolescents who use and distribute drugs and those without any contact with them are given in the next two tables.

The first of them contains the number of discriminative functions separately isolated in the sample of boys and girls, parameters that show that discriminative analysis is allowed, canonical correlations of those functions and their significance levels.

Table 1. *Variables of Local and General Environment and Their Impact on the Differences Between Students Who Use and Distribute Drugs and Students Who do not Have Contact with Drugs – Analysis by Gender*

Basic parameters	Number of functions	Wilks' lambda	Canonical correlation	df	Significance level
Boys	1	.620	.616	23	.000
Girls	1	.709	.540	23	.000

According to the data in this table, the discriminative functions for boys and girls are statistically significant, and the heights of their canonical correlations show that the variables of the local and general environment have a very noticeable influence on the occurrence of drug use and distribution in both sexes.

The second table contains canonical discriminative coefficients (c) and correlation coefficients (r) between variables and discriminative functions that show the structure of discriminative functions responsible for those differences.

Table 2. *Local and General Environment Variables and Their Impact on Differences Between Students Who Use and Distribute Drugs and Students Who do not Have Contact with Drugs – Gender Analysis*

Local and general environment variables	***No abuse* vs *Use and distribute***			
	M		**F**	
	c	**r**	**c**	**r**
Perception of the neighbourhood security	-.158	.005	.018	.327
Perception of police presence in the area	-.077	-.050	.216	-.033
Knowing one of these cops	.118	-.007	.045	-.091
Going to church	.120	.223	.307	.342
Existence of cultural institutions in the area	.042	.008	-.146	-.033
Existence of subcultural facilities in the area (casinos, etc.)	-.052	.132	.212	.075
Existence of available sports fields	.016	.010	-.047	.124
Knowing neighbours	-.064	.056	.037	.123
Perception of neighbours' attitude towards drugs	.173	.142	-.152	.199
Perception of neighbours' attitude towards crime	.003	.060	.218	.242
Young people in the neighbourhood who use drugs	.110	.246	.147	.362
Individuals in the neighbourhood who are involved in crime	-.032	.190	.047	.317
Availability of drugs in the neighbourhood	.081	.269	.166	.416
Personal availability of drugs (drugs offered to students)	.863	.874	.719	.737
Interest and following political topics	-.013	-.007	.033	-.110
Reading the daily or weekly press	-.119	-.053	-.274	-.149
Watch trash shows on TV	-.082	.130	.094	.015
Optimism for the future	.038	.009	.070	.124
Knowing the future profession	-.133	-.121	-.129	.027
Number of visits to the theatre in the last 30 days	-.083	-.077	.165	.147
Number of visits to the cinema for the last 30 days	-.157	.132	-.109	.030
Number of visits to the cafe for the last 30 days	.165	.213	.255	.272
Number of visits to drug websites in the last 30 days	.220	.226	.174	.329

In the second table, canonical discriminative coefficients are essential. They demonstrate the ability of each individual variable from these two sets to predict differences in Drug Use and Distribution relative to the "no contact with drugs" state when all other variables are controlled. If this is taken into account, then it is obvious that the availability of drugs for both boys and girls is the key to understanding these differences. The implications of this result are numerous but will be discussed in the Discussion section. In addition to that variable, attention should be paid to the variables going to church, to the perceptions of the neighbourhood's attitude towards drug addiction among young people, as well as to those that show the time young people spend in cafes and visiting Internet content about drugs. Finally, those variables that have no influence on the differences discussed in this paper or that show differences between the sexes must not be left out of interest.

DISCUSSION

The general attitude of the authors of this paper, when the results of the research are taken into account, would be in the middle of the imaginary continuum of satisfaction. The pole of that continuum described as satisfaction belongs to a group of variables that have the status of predictors, a total of 7 of them, among which there are also those with a very strong predictive influence. A higher level of satisfaction was not reached because in the sample of variables from the local and general social environment there is also a certain number of them whose influence on the examined behaviour is weaker and as a rule exists only in one gender. Finally, it was not reached due to the almost equal number of variables that have no influence at all on drug use and distribution. However, this was not a cause for dissatisfaction, because in the behavioural sciences, proof that a social phenomenon has no effect on criminal behaviour is just as valuable as proof that it does.

As can be seen from this brief introduction to the discussion of the obtained results that there are three groups of variables from the area of the local and general social environment whose results deserve comment. The first group are predictors of drug use and distribution. In that group there are the variables which refer to the so-called drug availability; to neighbourhood disorganization; to some influences we owe to frequent visits to coffee shops and use of the Internet for drug information and the only variable with a protective effect related to religiosity operationalised by the frequency of church attendance. From a research point of view, the most interesting results are obtained with the variables that belong to the so-called disorganization of the neighbourhood, then about going to church and about the availability of drugs. The variables related to neighbourhood disorganization are actually the perceptions of adolescents about the attitudes of their neighbourhood towards drug use. Research by a number of authors, among them Farrington (2000), Walker-Barnes and Mason (2004), Shader (2005), showed the validity of the claim that neighbourhood disorganization is a risk factor for drug use. In this research, it was also shown that these perceptions of neighbourhood attitudes towards drug use are risk factors for both drug use and distribution. The predictive coefficients are not high, but they are statistically significant. However, unlike other researches, the perception of neighbours' attitudes towards crime has no effect on boys, but only on girls. More will be said about this when the predictive differences of variables depending on gender are analysed.

In addition to neighbourhood disorganization, the variable going to church deserves special attention. Of course, the frequency of going to church is not the only indicator or measure of religiosity, but it is a reliable indicator that it exists. Religiosity is a system of values, moral and other, that are incompatible with the use of drugs in any form, even in the form of use and distribution. The result of this research, according to which "going to church" is an indicator of religiosity, clearly confirms this. Of course, the influence of religiosity is qualitatively different from other variables because it has the status of a protective factor. The obtained result is completely in agreement with the results of the already mentioned authors Drabble et al. (2016), Luikinga et al. (2018) and Afifi et al. (2020). This protective status exists in both sexes, but it is more pronounced in girls. Why this difference exists is not entirely clear, but it can be assumed that it is the result of different socialization and upbringing in comparison with boys.

The most important result in this research is certainly the predictive influence of drug availability variable, of course in the direction of Use and distribution. To recall, the availability of drugs was examined in two ways: 1) by the respondent's perception of the availability of drugs in the local community, more precisely by knowledge of the existence of dealers in the area where the respondent lives, and 2) by the experienced offering of drugs by other persons, the so-called personal availability of drugs. Availability, examined as "the presence of dealers in the area" is also a predictor of this behaviour, but not as strongly as in the case when accessibility was examined as "experienced drug offering". This second form of availability in both boys and girls is a very strong predictor of drug use and distribution, which is clearly seen from the corresponding coefficients of the order of .863 for boys and .719 for girls. Other authors, for example Thornberry and Krohn, (2003), Howell (2003), and some others before them, obtained similar or the same results in the direction of drug use (only without the distribution component). This paper did not examine the mechanisms or ways in which this type of availability leads to this behaviour, but in the works of individual authors it was shown that availability is most often the result of direct pressure from peer groups. In the literature namely, it is considered that they gradually assume the most important role in the behaviour of adolescents in all areas, including deviant behaviours (Bartol & Bartol, 2009; Dodge & Pettit, 2003; Knežević, 2003; Nawi et al., 2021). Concrete evidence on the effects of peer pressure when it comes to drugs can be found in the works of Zapolski et al. (2019), Van Ruzin, et al. (2012), Stojković et al. (2013). And other researchers that start from similar theoretical concepts emphasize the importance of these pressures for the availability phenomenon, for example Conn and Marks (2014), Mason et al. (2014), Tucker et al. (2011). These pressures must be reduced to the minimum possible extent in preventive programs if a result is to be achieved in reducing drug use in the adolescent population.

The second group of variables that attract attention has significantly lower prediction coefficients than the previous ones. They refer to the perception of the presence of the police in the area, the perception of the neighbourhood's positive attitudes towards crime, and the existence of subcultural facilities in the area of residence (casinos, etc.). Their predictive coefficients are very low and exist only in girls. That fact, that is the existence of gender differences in attitudes towards drug use and distribution, is what makes them interesting. Admittedly, these gender differences also existed when it came to availability of drugs and going to church, but they are of a different nature: the difference was in the number

of predictive coefficients, but what is even more important, these variables acted in the same direction for both boys and girls. girls. For these three variables, its influence exists in girls, but not in boys.

Gender differences in drug use are nothing new. They have been pointed out by many researchers, among them Hser et al. (2005) and Simpson and Miller (2002). The question that arises when dealing with these differences is whether they require or imply differences in drug use prevention programs. The position of the authors of this paper is that different approaches, including prevention models, are mandatory when the same variable has at least a noticeable influence[4] in one gender, but not when these predictive coefficients are minimal, as in this case. Also, the authors' position is that those differences in prevention are not mandatory when the variables act in the same direction regardless of the height of those coefficients.

The third and last group of variables that deserves attention is the one that has no influence on drug use and distribution and belongs to the local and general social environment. In this research of 23 variables from that space, seven have that kind of relationship with these behaviours. Those seven can be clearly seen in the table mentioned earlier. It is about knowing/not knowing neighbours; knowing the police officer in the area; the existence of cultural institutions in the region; sports fields; optimism about his future and interest in politics. For most of those variables, the absence of any relationship is expected, because as a rule they have "rare cases" of distribution.

Review of the Obtained Results

At the end of this paper, the authors feel the need to say a few words about their attitude towards research based on the results obtained. Two aspects of those results are worth mentioning on this occasion. The first is a rather high agreement with the theoretical conceptions from which the research was started. It refers to the postulates of the Behavioural Problem Theory and the importance this theory gives to the system of the perceived social environment. Proof of the foundation of this research in the basic principles of this theory is the agreement of the obtained results with the results of Thornberry and Krohn (2003), Drabble et al. (2016), Luikinga et al. (2018), and many others.

Another aspect is the fulfilment of the goals that were set before the researchers at the beginning of the research. In the research, namely, three sets of variables from the area of the local and general social environment were identified – variables that have the status of predictors of drug use and distribution (which was the first goal), then those that are correlated with that behaviour, but which are not predictors and they have very little influence on the prognosis of that behaviour (second objective) and, finally, variables where there is a difference in influence depending on gender (third objective).

The research, unfortunately, also has its shortcomings, which are a consequence of the nature of some variables in the area of the local and general social environment, as well as the solutions of the authors of the research. When it comes to the nature of the variables, it is about their distributions in the form of rare cases that, for technical reasons, lead to

4 In the opinion of the authors of this paper, a noticeable influence can be considered when the predictive coefficients of a variable are at least in the order of .250 or when it can explain at least 5% of the variance of the differences between two groups of adolescents.

zero or low correlations with criterion behaviour. When it comes to author's solutions, it is about choosing a certain number of variables from the space of the general social environment and/or poor operationalization of those variables. Otherwise, the problem could have been solved by selecting a very large sample of respondents, which mitigates or eliminates the distribution of "rare cases". Unfortunately, the authors did not have the opportunity for such a solution.

CONCLUSION

The most important conclusion of the research is that in the local and general environment of a social nature there is not so small a number (7 out of 23) of factors that directly affect the use and distribution of drugs. Only one of those factors (the frequency of going to church) has a protective character, and all the others act in the direction of increasing the probability of that behaviour.

By far the biggest influence is the personal availability of drugs, that is, the experienced offering of drugs by dealers in the school grounds or members of peer groups. In addition to this availability, in the direction of drug use and distribution there is influence of the perception of positive attitudes of neighbours towards drugs, the presence in the neighbourhood of young people who use drugs, the existence of drug dealers in the neighbourhood (availability of drugs in the local environment), frequent trips by adolescents to cafes, and frequent visits to Internet content about drugs.

Considering the results, especially the strong influence of personal availability of drugs, the problem of prevention comes to the fore, i.e. eliminating the possibility of immediate drug offering at school or places frequented by young people. The authors of the research see as a concrete solution first, the placement of school police officers in every school of secondary level of education with carefully defined powers and tasks. The state authorities in charge of education should do so without delay. There is research showing that school police officers are very important in drug prevention. Second, the state authorities responsible for education must also without delay solve the problem of bad influences of peer groups when it comes to drugs. There are programs in the world that achieve this and they should be applied in our conditions as well.

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