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EXPLANATORY MODELS OF DRUG USE AND THEIR RATIONALITY

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Abstract

Unfortunately, illicit drug use has two alarming trends around the world: increasing the proportion of consuming adult population and lowering the age of first consumption. The social policies of most countries are concerned with diagnosis, treatment and, last but not least, with the prevention of drug use. To determine scientifically the magnitude and intensity of the phenomenon and to develop appropriate prevention strategies, from our point of view, three conditions should be met: - developing a theoretical concept that identifies the predictive factors (explanatory model);- construction of research instruments from the perspective of the explanatory model (validity);- a good investigative capacity of the tools` user (research competence).Of course, the first step of this triad is the elaboration of the explanatory model. The study examines the concept of explanatory model, its functions (epistemological, methodological, pragmatic and evaluative), classifies existing models into two broad categories - one-dimensional and multidimensional, and explores their advantages and limitations. The paper also proposes an own integrator model, consisting of four predictive variables: knowledge, attitudes, behaviour and context, related to five potential groups: abstinent, vulnerable, addicted, recuperated and relapsed. The relevance, validity and feasibility of the model are supported by theoretical and empirical arguments, the latter relying on the application of the model in a concrete research that we conducted on a higher education student population.

Keywords: Drug use, explanatory models, integrative model, optimizing research in the field.

1. Introduction

According to the last UNODC Report (2018) "about 275 million people worldwide, which is roughly 5.6 per cent of the global population aged 15–64 years, used drugs at least once during 2016. Some 31 million of people who use drugs suffer from drug use disorders ... they may need treatment. ... Roughly 450,000 people died as a result of drug use in 2015, according to WHO." (United Nations Office on Drugs and Crime**,** 2018, p. 7).

In Europe, "more than 92 million or just over a quarter of 15- to 64-year-olds in the European Union are estimated to have tried illicit drugs during their lives." (European Monitoring Centre for Drugs and Drug Addiction, 2018, p. 41)". In Romania, according to the results of the latest survey in the general population - GPS 2016, there is a lifetime prevalence of the use of any illicit drug of 7.6%. The prevalence in the last year of this type of consumption is 4.1%. " (National Antidrug Agency, 2017, p.29). Compared to the previous study (2013), there are increases in the two types of consumption.

Therefore, drug use is a serious, international and national social problem that requires complex theoretical and practical approaches: reconsidering social policies, initiating more efficient intervention strategies, developing new lines of research.

2. Problem Statement

The current state of drug use justifies the recent increasing interest in multiplying and diversifying prevention and recovery programs. The effectiveness of these programs depends, first and foremost, on the quality of the theoretically-explanatory model adopted. We note, however, that diagnostic studies or intervention programs do not often clarify the theoretical basis on which partial explanatory models are based or adopted. Under these circumstances, the magnitude and intensity of drug use are not rigorously determined scientifically, and prevention programs employ only some of the factors responsible for drug use. Let us also notice that many studies in this field focus on the effects of drug use and much less on addressing the causes of consumption. There is a need for an explanatory integrator model that can be converted into a research model and scientific diagnostic tools. Our study proposes such a perspective.

National research into the use of drugs has looked at the adult population and the student population. Rarely the student population of higher education students was an object of investigation. We intended to use our own model on a higher education student sample.

3. Research Questions

- What are the characteristics of the theoretical-explanatory models, which functions do they fulfill?
- What is the explanatory-predictive power of different theoretical models, what advantages and limits can be attributed to them?
- Is the evolution of the theoretical models of drug use in a trend of conceptual and pragmatic progress?
- Can a theoretical integrator model be developed that better fulfills the model's own functions and becomes more promising for the development of prevention programs?

4.   Purpose of the Study

The fundamental goal is to better understand the factors that drive to drug use and capitalize the results in construction and management of prevention programs.

 Specific objectives:

• Determining the meaning of the concept of the theoretical-explanatory model;

• Identifying, analysing and evaluating explanatory patterns of drug use;

• Examining the trend of the evolution of the theoretical models;

• Building a theoretical integrator model of drug use;

• Theoretical and empirical validation of the proposed model.

5.   Research Methods

The research is part of the logic of a qualitative, theoretical paradigm. Using as a basic method the technique of content analysis of some documents, identifies and evaluates the specialized studies. Selected and discussed variables, especially those included in our own model, are based on evidence of empirical research.

6.   Findings

6.1. Theoretical models, features and functions

The explanatory model is a theoretical option representing a set of critical variables found in certain relationships that justify the existence, development or dissolution of a phenomenon / program. From this point of view, the model can fulfill the role of a research paradigm. Evolution of models involves changes or additions of variables and inter-variable relationships.

The importance of the model is highlighted by the following features:

Epistemological function: Guides the knowledge and understanding of nature, determinants, functioning mechanism and consequences of the phenomenon in question; highlights drug predictors; suggests empirical research directions.

Methodological function: The theoretical model can be converted into a research model and investigative tools (eg questionnaire survey). Provides a benchmark for comparative analysis of profile studies (meta-analysis).

Diagnostic function: By exploiting the methodological virtues of the model, the state of operation / development of the phenomenon can be determined. Vulnerable or dependent groups can be detected. The real diagnosis presupposes, however, the discovery of the causes of consumption, the identification of risk factors and protection.

Pragmatic function: Theoretical models are also relevant for the design of drug prevention programs. It is not possible to build a program beyond a conception of critical consumption variables.

Evaluative function: To the extent that the objectives of a prevention / recovery program are evaluative criteria, and the objectives are derived from needs analysis and theoretical models, the latter are indirectly relevant to evaluation processes.

6.2. Diversity of Concepts and Patterns on Etiology of Drug Use

Over time, different models of drug use interpretation have been developed that emphasize differently the hypothetical variables. The most comprehensive synthesis paper, Encyclopedia of Substance Abuse Prevention, Treatment & Recovery (Fisher & Roget, 2009), incorporates a broad and varied spectrum of etiological patterns of drug use. In a work of this magnitude we would have expected to find "inputs" regarding the model concept, the criteria for classifying the models, as well as representative trends of evolution in this field. Such an approach has not found its place in the structure of the paper.

The careful and critical study of the specialized literature led us to the conclusion that a morphological organization of the explanatory models can be developed, structured on two classes: unidimensional and multidimensional models (figure 01).
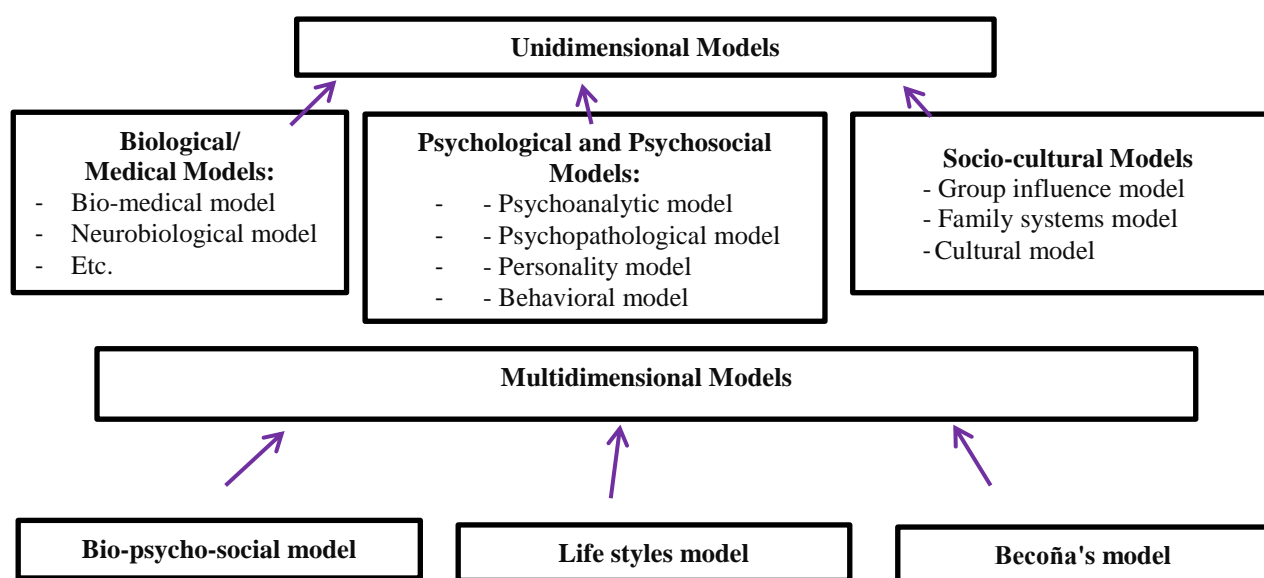
Figure 01. Uni and multidimensional explanatory models of drug use

Types of unidimensional models

Biological / Medical Models - According to the bio-medical model, there are certain biological markers that allow anticipation of consumer behavior. On the other hand, drug use damages the person's bio-physical structure and generates various diseases. From this perspective, the drug user is no longer an offender, but a patient who needs medical treatment (Jellinek, 1960). A more recent approach places the biological model in the neurobiology of addiction area. McKim (2003) show that there are changes in the neurotransmitter's activities responsible for triggering the pleasure and reward system. Neurochemical studies suggest that there is a direct relationship between drug-induced euphoria and the user's attachment to that drug.

Psychological and Psychosocial Models - These are based on the premise that addiction is the result of a psychic problem. For example, in the Freudian version we have the following explanation of the problem: the existence of a compelling need to express aggressiveness or other strong emotion, which affects the moral code of the individual. As a result of this conflict, the individual attempts to avoid the anxiety that appears, through the drug use (Leeds, & Morgenstern, 1995). Various studies have been

initiated about the correlations between different types of psychopathology and substance use. For example, there would be a greater likelihood of lifelong addiction behavior in the case of a child diagnosed with hyperactivity or attention deficit disorder (Wilens, 2009).

Personality models attempt to explain substance use by correlating it with personality variables or different theories of personality. For example, McCrae & John, (1992) proposed a model with five dimensions: extraversion, neuroticism, agreeability, conscientiousness, and openness to novelty. Studies conducted on individuals at risk of consumption revealed that, from the perspective of the five factors model, their personality was negatively associated with agreeability and conscientiousness and positive with neuroticism and openness to novelty (Fisher, & Roget, 2009) . In the behavioral model, addiction is considered a characteristic of the learned behavior, according to the same laws applicable to the entire human behavior. Here is the theory of classical conditioning (I. Pavlov), the theory of operative conditioning (B.F. Skinner) and the theory of social learning (A. Bandura). Since the way of constructing the behavior in the view of the three authors is well known, we will not insist on them.

Socio-cultural models - According to this type of model, the consumption of illicit substances is triggered by the influence of social and environmental factors. Research has noted that initiation of consumption takes place under the pressure of the peer group, the delinquent group, or as an option for the subject to be accepted into a particular group (Freeman, & Dyer, 1993). For children or young people raised in families where one or both parents are addicted to drugs, the risk of developing their addiction is more likely (Lawson & Lawson, 1998).

Types of multidimensional models

The bio-psycho-social model attempts to explain dependence as a combination of biological, psychological and social factors, but not as a result of one factor. It is assumed that there are genetic predispositions that make some people vulnerable to drug use. Psychological as well as social factors can also trigger addictive behavior. Dependence is often associated with anxiety, depression, emotional instability, low self-esteem, poor interpersonal relationships, etc. The question is whether psychological and social characteristics are the cause or effect of addictive behavior. Another problem would be that the list seems to be too broad; almost every individual has experienced throughout life some episodes of anxiety, depression etc.

The lifestyle model, initiated by Calafat (1995), brings to the forefront previous social and individual causes, factors and behaviors that generate addiction / drug use. Values, attitudes, social relationships, leisure arrangements, previous life experiences - all of which represent a lifestyle - affect in a positive or negative direction attitudes and behavior towards drugs.

Becoña's model (1999) is concerned not so much with the determinants or conditions of initiation of drug use, but with the stages that have passed through the establishment of addiction. Six stages are emphasized: predisposition, knowledge, experimentation and initiation, consolidation, abandonment or maintenance and relapse.

Some conclusions: One-dimensional models centered on a single category of explanatory factors have generally deepened an important facet of drug use. A facet does not fully cover the complexity of the domain. However, the epistemological and practical value of unidimensional, analytical models should not be underestimated. If the characteristics of a particular situation lead to the hypothesis that there is some

explanatory dominance (social, psychological, medical, etc.) of drug use then the selection and valorisation of the model centered on that dominance could be beneficial, especially if the model is interested in the mechanism and control of this influence.

Is it possible for multidimensional models to be more promising? The models we have called "multidimensional" represent a legitimate attempt to overcome the paritiality of analytical perspectives. We think they have a particularly descriptive value, partly heuristic and far too little operative. If our perception is correct, we could conclude that most models in this category fail to effectively achieve an integrative vision; the presumed interactions are more juxtaposing relationships between biological, psychological and social factors. Identifying the nucleus of the mechanisms by which the fusion of heterogeneous factors arises requires special clarifications.

6.3. An integrative explanatory model
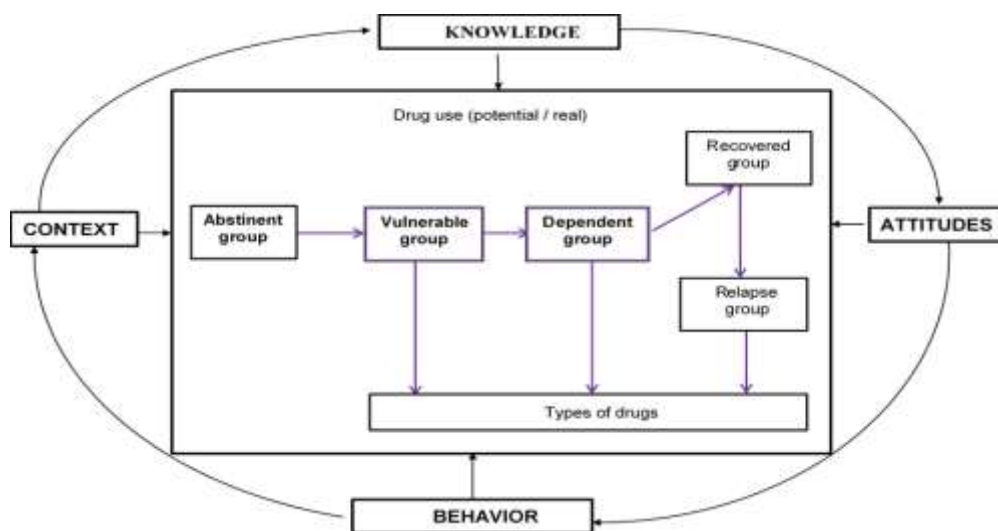
Figure 02. An integrative explanatory model of drug use

The model differentiates, from the point of view of drug consumption, three major categories of groups (abstainer, vulnerable and dependent) and two adjacent groups (recovered and recurrent). The model suggests the study of relationships and interactions between these types of groups from the point of view of preventing, reducing or eliminating drug use (figure 02). Drug typology is integrated as a distinct component of the model. Vulnerable and dependent groups define their profile according to drug typology; for example, a group may be more vulnerable, open to certain drugs and less to others.

Drug use, irrespective of its form - experimental, occasionally or systematically, is determined at the causal and conditional level by four categories of factors: knowledge, attitudes, behavior, context. These can be considered predictors of consumption:

The knowledge factor includes cognitive variables related to drug types, sources, consequences, critical analysis capacity of drug use-related situations. Knowledge is not limited to information but engages cognitive-interpretive structures.

The attitude-affective factor focuses on value orientations, attitudes, opinions, beliefs and feelings about consumption and consumer.

The behavioral factor synthesizes the variety of consumption forms. These can be studied as a state of fact, prevalence of consumption, but also in the hypothesis of predictive factors. Experimental or occasional consumption can predict the transition from vulnerable groups to those dependent or the initiation of consumption of other types of drugs.

The contextual factor focuses the family environment, the entourage, the group of belonging, the educational context, the legislation, the ease or not of obtaining the drugs.

Categories are bivalent: they act under certain circumstances as a risk factor and under other conditions as a protective factor. For example, we can assume that a lack of knowledge - absent, partial, incomplete or even distorted information (knowledge factor), exacerbated consumtion and consumer tolerance (attitude factor), inability to withstand the temptation to test drugs (behavioral factor) , highly permissive legislation or belonging to a drug interest group (contextual factor), each and in a correlated way, can stimulate and sustain consumer behavior. On the other hand, the ability to critically analyze the effects of drug use (knowledge factor), strengthened self-esteem (attitude factor), vulnerability of direct experiences (behavioral factor) and possible social penalty (contextual factor) may reduce or eliminate drug use.

Identifying, measuring and assessing the negative or positive valencies of the four categories of factors involves their operationalization and the development of appropriate control tools.

6.4. Theoretical and empirical validation of the model
6.4.1. Theoretical validation

The model of the four factors is theoretically and consistently supported by previous and more recent research. Probably one of the most important synthesis studies is West's *Models of Addiction* (2013). The author's contributions are two-fold: the development of a new model classification scheme and the development of a COM-B System model and the PRIME theory that supports the model. We will refer strictly to the COM-B System (figure 03). In the view of the author and his collaborators, addictive behavior, like any human behavior, results from the interaction between capacities, motivations and environmental opportunities.
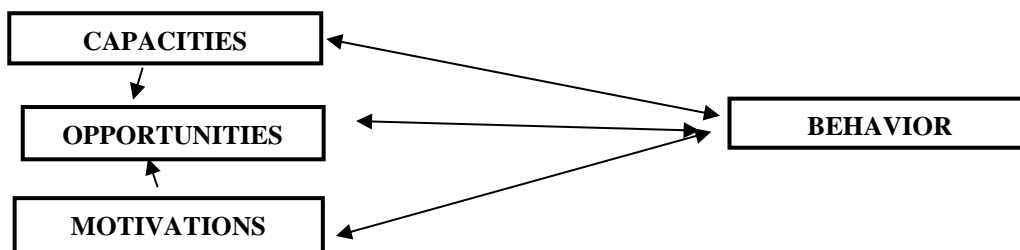
Figure 03. COM - B system for behavior analysis in context

Capacities indicates the physical and mental skills required by behavior, availability to respond or resist to stimuli that promote addiction.

Opportunities mean physical, social and environmental factors that promote or support behavior.

Motivation, with the role of mobilizing resources and directing behavior, operates in two ways:

- reflexive - decision to engage in behavior results from a deliberative analysis

- automatic - impulses, desires that stimulate behavior outside of a critical exam.

Strong motivation is seen as the most important lever in triggering and maintaining consumer behavior.

Behavior translates into specific actions; it is the result of the interaction between motivation, capacities and circumstances and is governed by inhibitory stimuli and processes.

PRIME is an acronym for the terms that indicate five steps / components of the author's motivational system: P - plan, intent; R - result, behavior; I - impulses and inhibitors; M - motives, desires and needs; E - evaluation, conception of what is good or bad.

According to West's view, the risks of dependence occur when a "motivational provision" system that distorts the natural motivational system functions: inappropriate plans, inappropriate assessments, defective motivations and inadequate impulses and control.

What is the significance of the West model for our own research? The monography in question was published when we had already developed an etiological model that we have transformed into a research model and initiated some empirical research in according with it. That is why the West model could not have an influence on the conception and design of our research; this, along with other interpretations, validates, in good measure, the pattern that we have set up, but it does not cover it entirely.

The similarities found are notable for the main categories of variables. The capabilities of the West model correspond to the area of knowledge and the cognitive variables in our model; opportunities find their equivalent in contextual factors, and motivation overlaps to a large extent with the attitude-affective factor. In addition, our model integrates behavior (experimental and occasional) as the predictive factor of a possible dependent behavior.

The West model is centred on addictive behavior, its development, recovery or recurrence processes, and is primarily based on previous addictive behavior. Our model is concerned with the phenomena that precede the addictive behavior, it is interested in identifying vulnerable groups and their transformation into abstinent groups.

From our point of view, the West model also raises some debatable issues:

• Although the author uses the comprehensive attribute for the elaborated construction, the interpretative dominance is a psychological one; social and cultural factors do not benefit from the same treatment.

• The concept of motivation should probably be integrated into a wider framework of causality. Why does a person engage in a particular behavior or not? The answer can also be provided by the components that the author calls capabilities and opportunities. For example, reduced capacity of assessment and self-analysis may "motivate" the temptation of consumption; the easy availability of drugs on the market can also cause (motivate) the use of drugs. So, the motivational dimension actually crosses all three components of the model.

• The reflexive and automatic level of motivation invoked by the author could be considered as two levers that regulate consumer behavior (potential or real). Perhaps switching to systematically consumption is based on more automatic, imitative reactions, impulses, immediate gratification expected, than on analysis and deliberative decisions - carefully examining the costs, benefits and risks. If for the practice of consumption, the accentuation of the reflexive approach might be overestimated, instead for prevention

programs, the cultivation of reflexive attitudes becomes a major ingredient in the adoption of decisions to reject the consumption of illicit substances.

6.4.2. Empirical validation

The validity of our developed etiological model has also been verified by initiating a series of our own empirical research, correlated with the four factors and the relationships between them (Porumb (Potolea), 2015).

The sample consisted of 1530 students (1432 valid answers) from 3 different types of universities. For the present context, we have chosen as an example some aspects of attitude factor investigations.

We have adopted some assumptions. Attitudes to drug use - pro or contra varies differentially and significantly in relation to the following variables:

1. Gender characteristics (masculine or feminine)

2. Areas of specialization (social-human, humanities, scientific, technical, etc.)

3. Student's origin (urban / rural)

4. Place of residence (home, dorm etc.)

5. Family level of education (general, professional, higher education)

Attitudes were measured by a special questionnaire (Diagnosis of Drug Use to Students) developed by us which comprise the following statements (Porumb, (Potolea), 2015, p. 1430):

„a. A young man should not consume drugs in any way;

b. Many activities are much more dangerous than drug use;

c. Smoking marijuana does not lead to psychological dependence;

d. Laws that restrict the drugs consumption and trafficking should be more restrictive;

e. Drug consumption is funny;

f. Drug consumption is one of the greatest evil that was going on in our country;

g. Drugs help people live life to the fullest;

h. The police should not aim at young people who experience drug use."

We used the Likert technique with five scales, but finally acceptance / rejection grades were compressed into two distributions: agreement vs. disagreement. The results obtained were subjected to a factorial analysis which revealed two factors: F1 - positive drug use valences (5 factorially saturated variables) and F2 - negative valences of drug use (3 variables). The use of the ANOVA technique allowed corroboration of F1 and F2 with the independent variables (for more details see Porumb (Potolea), 2015).

The interpretation of the obtained data leads to some conclusions:

More favourable attitudes towards drug tolerance and minimizing their effects have: male students than their female colleagues, students from urban areas, rather than rural one, students living in student residences (dorms) than those who lives in other places. The differences between the exact sciences - natural sciences and socio-human sciences specializations are relatively equivocal, yet with an "advantage" for drug-related attitudes to students from the exact sciences. Surprisingly, the higher education level of parents is not correlated with students' negative attitudes towards drugs.

The subjects in the above categories together with the undeclared are a legitimate target of prevention programs.

Our research has also shown that the genesis of attitudes derives from the quality of knowledge about the nature and effects of drug use, from occasional consumption and the interpretation of this moment, and from the social context that can stimulate attitudinal changes in a positive or negative direction.

So we can say that the proposed model works productively and perhaps could guide other researches.

7.   Conclusion

7.1.   The theoretical-explanatory model, through its characteristic features - epistemological, methodological, diagnostic, pragmatic and evaluative - plays a decisive role in the knowledge, investigation, elaboration and appreciation of prevention or recovery programs. Not all the models analyzed in this text fulfil equally the functions mentioned.

7.2.   Attitudes are a fundamental factor in explaining drug use; they can act as risk or protection factors, according to their nature. The study of attitudes in relation to drug issues remains a constant problem, especially because the values of the generations are changing.

7.3.   The biography of the theoretical and explanatory models illustrates a certain progress in knowledge. Each of the two categories we have called uni and multidimensional have their own limits. The first one exacerbates an isolated explanatory factor, and most of the second category accepts the concomitant influence of several factors, but the relationships are juxtaposing, not interaction.

7.4.   The proposed model with 4 correlated factors seems to better perform the functions of the explanatory model. His theoretical and empirical validation was attempted.

References

Becoña I. E. (1999), *Bases teóricas que sustentan los programas de prevención de drogas*. Madrid: Ministerio del Interior.

Calafat, A. (1995), *Los factores de riesgo como fundamento de programas preventivos*. en Drogodependências. 4. Prevención, (coord.), Becoña, E., A. Rodrigues, I. e Salazar, Santiago de Compostela: Servicio de Publicaciones e Intercambio Científico de la Universidade de Santiago de Compostela.

European Monitoring Centre for Drugs and Drug Addiction, (2018) *European Drug Report.* Retrieve from m http://www.emcdda.europa.eu/edr2018_en

Fisher G., & Roget N., (2009), *Encyclopedia of Substance Abuse Prevention, Treatment & Recovery*, Thousand Oaks, CA: SAGE Publications, Inc.

Freeman, E.M. & Dyer, L. (1993), High risk children and adolescents: Family and community environments. *Families in Society: Journal of Contemporary Human Sevices*, *74*, 422-431, https://doi.org/10.1177/104438949307400704

Jellinek, E.-M., (1960), *The Disease Concept of addiction*, New Haven, CT: Hillhouse Press

Lawson, A. & Lawson, G. (1998), *Alcoholism and the Family: A guide to treatment and prevention*, Austin, Tx: ProEd.

Leeds, J., & Morgenstern, J. (1995), *Psychoanalytic theories of substance abuse*, în Rotgers, F., Keller, D.S., Morgenstern, J. (Eds.), *Treating substance abuse: Theory and technique*, New York: Guilford Press

McCrae, R.R., & John, O.P. (1992), An introduction to the five-factor model and its applications. *Journal of Personality* Vol. 60, 175–215, https://doi.org/10.1111/j.1467-6494.1992.tb00970.x

McKim, W. A. (2003), *Drugs and Behavior: An Introduction to Behavioral Pharmacology*, 5th ed., New Jersey: Prentice Hall.

National Antidrug Agency (2017), *National Report on Drug Situation.* Retrieve from http://www.ana.gov.ro/rapoarte%20nationale/Sinteza_RN_2018.pdf

Porumb (Potolea), M. D., (2015), Drug use - attitudinal dimensions within the student population*, Procedia - Social and Behavioral Sciences* 180 1426 – 1433, https://doi.org/10.1016/j.sbspro.2015.02.288

United Nations Office on Drugs and Crime (2018), *World Drug Repo*rt, retrieve from https://www.unodc.org/wdr2018/

West, R. (2013), *Models of Addiction,* EMCDDA, Publications Office of the European Union, Luxembourg retrieve from http://www.emcdda.europa.eu/publications/insights/models-addiction_en

Wilens, T.E. (2009), *ADHD with Substance Use Disorders* în Brown, T.E. -*ADHD Comorbidities: Handbook for ADHD Complications in Children and Adults,* Arlington, VA: American Psychiatric Publishing, Inc.