**Logos Universality Mentality Education Novelty,
Section: Social Sciences**

ISSN: 2284 – 5747 (print), ISSN: 2284 – 5747 (electronic)

Covered in: CEEOL, Index Copernicus, Ideas RePEc,
EconPapers, Socionet

**NICOTINE CRAVING AND CUE-EXPOSURE
THERAPY**

Ioana Monica CIOLAN

Logos Universality Mentality Education Novelty, Section:
Social Sciences, IV (1), 79-87

The online version of this article can be found at:

<http://lumenjournals.com/social-sciences/>

Published by:

Lumen Publishing House

On behalf of:

Lumen Research Center in Social and Humanistic Sciences

Nicotine Craving and Cue-Exposure Therapy

Ioana Monica CIOLAN¹

Abstract

Smoking is affecting global population, causing different cardiovascular disease, respiratory disease, cancer, asthma and kidney problems. Although it can be prevented, smoking is one of the major causes of death all over the world.

Smoking is a social activity that depending on the context may have different meanings for smokers even if they are aware of the risks they are exposed. Smokers may use different methods of intervention to help them get rid of nicotine addiction. One method is referring to the cue exposure therapy performed using virtual reality. Virtual reality is a new technology used in the treatment of nicotine addiction that involves immersing smokers in environments with specific stimuli in order to reduce the level of craving.

This article aims to present the main environments that cause smokers from Romania to feel a greater desire to smoke compared to other environments. Identification of specific stimuli in front of which smokers experience a higher level of craving is the first important step in designing interventions that are based on cue exposure therapy through virtual reality.

Keywords:

cue exposure therapy, virtual reality, smoking dependence, craving, specific stimuli.

¹ Ph.D Student, Faculty of Psychology and Education Science, Alexandru Ioan Cuza University, Iasi, Romania, ioana.monica.ciolan@gmail.com, 0740990300.

Introduction

Tobacco is the only legal drug that kills most of its consumers. Smoking is currently responsible for the deaths of 5 million people (Mathers, Loncar, 2006) worldwide each year, and many of these deaths occur prematurely and at a young age. In addition, it is estimated that approximately 600,000 people die from exposure to passive smoking (Oberg, Maritta Jaakkola, Woodward, Perugia, Pruss-Ustun, 2011). For the next 20 years, it is estimated that the number of deaths due to smoking will increase to 8 million, and over 80% of these deaths will occur in poor countries and medium developed countries (Mathers, Loncar, 2006).

If the number of smokers continues to rise, at the end of this century there will be around one billion deaths caused by smoking, most of them in medium or underdeveloped countries, and half of these deaths will occur before the age of 70 years (WHO, 2013). As in other countries, in Romania smoking is a health issue for both the passive and active consumers.

According to the Eurobarometer survey conducted by the European Commission in 2012 on tobacco consumption in Europe, in Romania 30% of the population are smokers. This percentage is very close to the European average of 29% smokers. Comparing the data obtained in 2009 when there was an average of 28% smokers, we can see that there are no major differences within Europe even though prevention measures were taken.

A strength of Romania compared to other European countries is that here is one of the highest percentages of people who never smoked, 57% (compared with the percentage of 51% across Europe). In contrast, Romania has one of the lowest percentages of people who have managed to quit smoking and continue to be abstinent, compared to other countries from Europe.

Craving

Craving is a state which is felt in all addictive behaviors and diseases, like drug use or gambling. This state can be regarded as a phenomenon, especially that many of the addicts invoke craving as a reason for encouraging addiction and as an excuse for treatment failure. Also, craving can be a way to escape from painful reality (whether

internal or external), so that the risk of relapse to addictive behaviors increase (Higley, Craney, Spadoni, 2011).

Some authors have identified a number of craving features (Nespor, Matanelli, Pekarkova, Gregor, 2011):

- Craving is caused by specific stimuli and triggers that can be categorized into two main groups: internal (fatigue, pain, etc.) and external (environment, straining situation, etc). Craving can be triggered also by negative stimuli (anger), as well as positive stimuli (joy).
- Usually craving is accompanied by subjective states as stress, tension and exhaustion.
- When someone is experiencing craving, cognitive functions are altered, like the decision-making process.
- When someone is experiencing craving, the ability of self control is affected.

Although most cases, craving leads to maintaining the addictive behavior, it can also help to identify triggers, environments, specific stimuli that can contribute at the development of intervention strategies.

Sometimes smokers interpret the concept of craving differently because of their subjective experiences. Shadel, Niaura, Brown, Hutchinson, Abrams (2001) conducted a content analysis to investigate the various meanings of the concept of craving and proposed five key areas in which smokers report:

1. The physiological component - refers to all indicators related to a specific body part, a function of the body or an action (eg dizziness, headache)
2. Affective component - here we find descriptors that relate to emotions, mood or affective states (eg stress, anger, feeling nervous)
3. Cognitive Component - this component descriptors are linked to thoughts, expectations or thinking processes (eg when I focus, I learn)
4. Behavioral component - in this case, craving is the consequence of a certain behavior or various specific stimuli (eg after a meal, when everyone around me smokes, I go out).
5. Synonyms - in some cases smokers use different terms to refer to craving, though the meaning is different (eg, desire, need.)

Various studies (Araujo Oliveira Mansur, 2006; Araujo Oliveira Moraes Pedrosa, Port, Castro, 2007; Cox, Tiffany, Christen, 2001 Sayette, Shiffman, Tiffany, Niaura, Martin, 200; Tiffany, Drobos 1991) promotes the idea that the concept of craving isn't just an intense desire to consume a substance, but it includes more elements like: intention to satisfy a desire, anticipation of the positive effects of substance consumption, avoiding negative symptoms of withdrawal.

The majority of smokers affirm that the biggest difficulty in the process of quitting smoking is linked to the inability to resist, even if they are aware of the negative effects of this behavior. That is why craving is an important element of quitting strategies.

Cue-Exposure Therapy

Exposure to stimuli was promoted as a potentially effective method of treating addictive behaviors (Heather & Bradley 1990; Hammersley, 1992). It is well known that the use of substances and relapse are most often caused by certain stimuli and specific contexts (Drummond et al. 1995).

When an addicted person is in contact with stimuli that are associated with substance consumption, the need to consume that substance increases.

Cue exposure therapy involves a repeated exposure to stimuli which were previously associated with an addiction in order to extinct the conditioned response to those stimuli.

The argument for using exposure to stimuli to treat addictive behaviors is based on classical conditioning learning model.

Thus, in nicotine addiction, nicotine is the unconditional stimulus and the effects of nicotine are the unconditioned responses. The conditions or contexts in which a person smokes very often become conditioned stimuli that determine the appearance of conditioned responses, and this leads to craving and nicotine consumption.

Given that low levels of craving are considered to be predictors of long-term abstinence (Ferguson, Shiffman, & Gwaltney, 2006; Killen & Fortmann, 1997), the main goal of cue exposure therapy is to determine a decrease in the level of craving.

Lately this cue exposure therapy is implemented through virtual reality techniques, because it has the following advantages: the potential

of a precise control; ability to adjust the virtual environments to the individual needs of participants; opportunity to expose the client to a particular environment that normally would not have access to, or would not be safe; providing increased confidentiality by replacing in vivo desensitization with virtual reality desensitization.

This article aims to identify those environments that determine romanian smokers to feel higher level of craving than in other places, situations or contexts.

Method

1.1. Participants

126 daily smokers aged over 18 (70 men, 56 women), who smoked 10 or more cigarettes a day were invited to answer a simple task.

1.2. Procedure

Participants were asked to list the top 3 environments that cause them feel a greater need to smoke than in other situation. Before the task, smokers have offered several demographic details and details about the quantity of tobacco smoked per day.

1.3. Results

Responses were analysed using content analysis method. We used the model proposed by Shadel, Niaura, Brown, Hutchinson, Abrams (2001), which was described above and we added one more category called specific environments. So, every response was allocated in one of the next categories: physiological dimension, affective dimension, cognitive dimension, behavioural dimension, synonyms and specific environments.

The most responses were distributed to the behavioral component, which shows that smokers associate smoking with other types of behaviors from everyday life. The most common responses in this category were: when I drink coffee, when I drink alcohol, when I have free time, when I go out.

Also, the smokers have associated craving with certain emotions and they feel a greater need to smoke when they're stressed, tired, angry

or bored. We can observe that craving is associated more frequently with negative emotions rather than with positive emotions.

Besides the responses that were included in the behavioral and affective components, smokers have listed the most common environments that determine a higher level of craving. So, the first 5 environments associated with the highest craving by the romanian smokers are:

1. At work/ at the office
2. Party
3. Home
4. Bars
5. Clubs

Certainly, these environments that cause an increase in smokers craving, have an important meaning . At work , people smoke in order to reduce stress and to socialize with other colleagues. At parties, in bars, clubs, people smoke because they want to socialize and to be integrated more easily in groups. At home, people smoke for relaxation or because of lack of occupation.

Conclusions and future directions

This study highlights the environments that cause romanian smokers to feel a higher level of craving when they are exposed to these places.

The results are similar to those from other studies in the field (Olaya Garcia-Rodrigues, Irene Pericot-Valverde, Gutierrez Jose Maldonado, Marta Ferrer Garcia, Roberto Secades-Villa, 2012; Stephen B. Baumann, Michael A. Sayette, 2006; Jung Seok Choi, Sumi Park, Jun-Young Lee, Hee-yeon Jung Hae-Woo Lee, Chong Jin-Hyeon, Do-Hyung Kang, 2011), and the most popular environment that causes a high level of craving is the bar. Among romanian smokers, the environment that was mentioned by the majority refers to the workplace.

The next step is to translate these environments in virtual reality and test their effectiveness among smokers. Finally, we want to implement and test an intervention program for smokers who want to quit using cue exposure therapy through virtual reality and hypnotic inductions.

References

- Araujo RB, Oliveira MS, Mansur MA (2006). Brazilian validation of the Questionnaire of Smoking. *Cad Saude Publica.*; 22(10):2157-67
- Araujo RB, Oliveira MS, Moraes JF, Pedroso RS, Port F, Castro MG.(2007), Validation of the Brazilian version of Questionnaire of Smoking Urges- Brief. *Rev Psiquiatr Clin.*; 34(4):166-75
- Araujo R. B., Oliveira M., Pedroso R. S., Castro M (2009) , Coping strategies for craving management in nicotine dependent patients, *Rev Bras Psiquiatr.*; 31(2):89-94
- Cox LS, Tiffany ST, Christen AG. (2001), Evaluation of the brief questionnaire of smoking urges (QSU brief) in laboratory and clinical settings. *Nicotine Tob Res.*; 3(1):7-16
- Drummond, D.C., Tiffany, S.T., Glautier, S., et al. (1995). Addictive behavior: cue exposure theory and practice. *New York: Wiley*
- European Commission, Special Eurobarometer385, Attitudes of Europeans towards tobacco. Report, Mai 2012, http://ec.europa.eu/health/tobacco/docs/eurobaro_attitudes_towards_tobacco_2012_en.pdf
- Gossop, M., Powell, J., Grey, S., Hajek, P. (1990), What do opiate addicts and cigarette smokers mean by “craving?” A pilot study. *Drug and Alcohol Dependence*, 26, 85–87.
- Hammersley R. (1992), Cue exposure and learning theory. *Addict Behav.* ;17(3): 297–300.
- Heather N, Bradley BP. (1990), Cue exposure as a practical treatment for addictive disorders: why are we waiting? *Addict Behav.*; 15(4): 335–337
- Higley AE, Crane NA, Spadoni AD (2011), Craving in response to stress induction in a human laboratory paradigm predicts treatment outcome in alcohol-dependent individuals., *Psychopharmacology (Berl.)*; 218(1): 121-129.
- Jung-Seok Choi, Sumi Park, Jun-Young Lee, Hee-Yeon Jung, Hae-Woo Lee, Chong-Hyeon Jin, Do-Hyung Kang (2011), The Effect of Repeated Virtual Nicotine Cue Exposure Therapy on the Psychophysiological Responses:A Preliminary Study, *Psychiatry Investig*; 8: 155-160
- Killen JD, Fortmann SP (1997), Craving is associated with smoking relapse: findings from three prospective studies, *Exp Clin Psychopharmacol.* May; 5(2):137-42

- Kozlowski, L., Pillitteri, J., Sweeney, C., Whitfield K., Graham, J. (1996), Asking about urges or cravings for cigarettes. *Psychology of Addictive Behaviors*, 10(4), 248–260.
- Kozlowski LT, Wilkinson DA.(1987), Use and misuse of the concept of craving by alcohol, tobacco, and drug researchers. *Br J Addict.*; 82(1):31-45
- Mathers CD, Loncar D. (2006). Projections of global mortality and burden disease from 2002 to 2030, *PloS Medicine*, 3(11):e442
- Nešpor K, Matanelli O, Pekárková G, Gregor P. (2011) - Classification of Anticraving Techniques, *Prakt. Lék.*, 91(12):703–706
- Oberg M, Jaakkola Maritta S, Woodward A, Peruga A and Pruss-Ustun A (2011), Worldwide burden of disease from exposure to second-hand smoke: a retrospective analysis of data from 192 countries. *The Lancet, Volume 377, Issues 9760*
- Olaya Garcia-Rodrigues, Irene Pericot-Valverde, Jose Gutierrez Maldonado, Marta Ferrer-Garcia, Roberto Secades-Villa (2012), Validation of smoking-related virtual environments for cue exposure therapy, *Addictive Behaviours* 37 (2012), 703-708
- Sayette MA, Shiffman S, Tiffany S, Niaura R, Martin CS, Shadel W. (2000), The measurement of drug craving - Methodological approaches to craving research. *Addiction.*;95Suppl 2:S189-210.
- Shadel W.G., Niaura R., Brown R. A., Hutchinson K. E., Abrams D. B. (2001), A content analysis of Smoking Craving, *Journal Of Clinical Psychology*, Vol. 57(1), 145–150
- Shiffman S., Ferguson SG., Gwaltney CJ (2006), Immediate hedonic response to smoking lapses: relationship to smoking relapse, and effects of nicotine replacement therapy, *Psychopharmacology (Berl)*. Mar; 184(3-4):608-18. Epub 2005 Nov 11
- Stephen B. Baumann, Michael A. Sayette (2006) , Smoking Cues in a Virtual World Provoke Craving in Cigarette Smokers, *Psychology of Addictive Behaviors*, Vol. 20, Nr.4, 484-489
- Tiffany, S. T., Drobes, D.J. (1990), Imagery and smoking urges: The manipulation of affective content. *Addictive Behaviors*, 15, 531–539.
- Tiffany ST, Drobes DJ. (1991), The development and initial validation of a questionnaire on smoking urges *Br J Addict.*; 86(11): 1467-76.

WHO report on the global tobacco epidemic, 2013: enforcing bans on tobacco advertising, promotion and sponsorship. *Geneva: World Health Organization*, 2013,
http://www.who.int/tobacco/global_report/2013/en/

Biodata

Ioana Monica CIOLAN received the B.S. and M.S degrees from “Alexandru Ioan Cuza” University of Iasi Romania in 2008 and 2010, respectively. From 2012 she started his doctor course at the Faculty of Psychology and Education Sciences from “Alexandru Ioan Cuza” University of Iasi in the field of Psychology. She is psychologist, psychotherapist, and professional counsellor for medical students in “Gr. T. Popa” University of Medicine and Pharmacy Iasi. She is interested in applications of virtual reality in clinical psychology and psychotherapy.