

Questionnaire of core beliefs related to drug use and craving for assessment of relapse risk

Cuestionario de creencias nucleares relacionadas con el consumo de drogas y el craving, para la valoración del riesgo de recaída

JOSÉ MIGUEL MARTÍNEZ-GONZÁLEZ*, RAQUEL VILAR LÓPEZ**, OSCAR LOZANO-ROJAS*** AND ANTONIO VERDEJO-GARCÍA**, ****.

*Centro Provincial de Drogodependencias de Granada. España. ** Departamento de Personalidad, evaluación y tratamiento psicológico. Facultad de Psicología. Universidad de Granada. España; CIMCYC. *** Facultad de Psicología. Universidad de Huelva. España. **** Escuela de Psicología y Psiquiatría. Universidad de Monash. Melbourne, Australia.

Abstract

This study was aimed at designing a questionnaire for the assessment of addiction-related core beliefs and craving.

The sample comprised 215 patients (85.8% males and 14.2% females) in treatment for dependence to alcohol (40%), cocaine (36.3%) and cannabis (23.7%).

Descriptive statistics were used to characterize the sample. Variance, regression and factorial analyses were conducted to study the questionnaire structure and its relation with variables such as abstinence and craving.

Items about drug-related beliefs yielded a four-factor structure: what patient think that they could not do without drug use, lack of withdrawal, conditions required to use drugs again, and use of drugs as the only way to feel good. Items related to craving yielded three factors: negative emotions as precipitants of drug use, positive emotions, and difficulties attributed to coping with craving. Furthermore, beliefs were more important to predict craving than abstinence time.

The present questionnaire allows to assess a set of significant factors to design prevention relapse programs.

Keywords: Questionnaire, core beliefs; cognitive therapy, drug dependence; treatment.

Resumen

El objetivo de la investigación fue diseñar un cuestionario para la evaluación de creencias nucleares en torno al consumo de drogas y el *craving*.

La muestra estuvo compuesta por 215 pacientes, de los que el 85.8% eran hombres y el 14.2% mujeres en tratamiento por su adicción al alcohol (40%), cocaína (36.3%) y cannabis (23.7%).

Se realizó un análisis descriptivo de la muestra, análisis de varianza, de regresión y análisis factorial con la finalidad de indagar en la estructura del cuestionario y su relación con variables como la abstinencia o deseo de consumo.

El apartado de creencias relacionadas con las drogas mostró una estructura de cuatro factores: lo que la persona cree que no podrá realizar en ausencia del consumo de drogas, la falta de renuncia al consumo, las condiciones que deben darse para volver a consumir y el consumo como única vía para sentirse bien. El apartado relacionado con el *craving* mostró tres factores: las emociones negativas como precipitantes del consumo, las emociones positivas y las dificultades atribuidas al afrontamiento del deseo. A su vez, se constata que las creencias tienen más peso en la predicción del deseo en comparación al tiempo de abstinencia.

El cuestionario permite evaluar un conjunto de creencias que muestran factores significativos para el diseño de programas de prevención de recaídas.

Palabras clave: Cuestionario; creencias; terapia cognitiva; drogodependencia; tratamiento.

Received: April 2016; Accepted: January 2017.

Send correspondence to:

José Miguel Martínez González. Centro Provincial de Drogodependencias de Granada. Hospital de San Juan de Dios. C/ San Juan de Dios, 11. 18001 – Granada. Telephone: 958202101. E-mail: jmmgonz@dipgra.es

The cognitive model of drug addiction postulates a close relationship between thoughts and the addiction itself (Beck, Wright, Newman y Liese, 1999), and an essential treatment goal is the modification of the beliefs and cognitive distortions that mediate in the processes of recovery from drug addiction (Graña, 1994). The treatment aims to modify the core beliefs underlying the impulse to consume substances as well as behaviors directly related to drug use and to the patient's lifestyle, and to show the patient different forms of control (Beck et al., 1999).

Underlying automatic thoughts are central meanings that are difficult to access and that can qualify reality. One of the greatest difficulties to detect these core thoughts is the fact that the person usually considers irrational beliefs as normal. These more central beliefs, called core beliefs, are more metaphysical and correspond to a tacit knowledge of reality. The intention of therapy is to teach the patient to access and reflect on the more profound meaning of these thoughts, opening the possibility of accessing their more symbolic or underlying meanings. The rest of a person's thoughts are supported by these core beliefs (Vázquez, 2003).

With regard to addiction-related core beliefs, it has been confirmed that they are related to the addictive history, such that people identify more with these beliefs as the time gone by since they began to consume drugs increases. However, this relation has not been found with beliefs referring to craving, which is directly involved in the strategies of coping with the desire to consume (Martínez-González & Verdejo, 2011). That is, the fact of having a long toxicological history does not prevent one from using cognitive strategies to cope with craving from the beginning of treatment.

Craving has become a central target in the treatment of addictions, constituting a risk factor for relapse, a predictor of relapse, and a marker of treatment outcome (American Psychiatric Association, 2013). Although one of the central goals of treatment is the disappearance of the desire to consume drugs, coping with craving is crucial to the continuity and success of treatment. That is why beliefs about craving are largely responsible for coping with craving, given that they can make patients identify craving as an experience they can deal with or as an insurmountable difficulty of their addiction. In the two circumstances, their evolution can be very different.

Moreover, all this indicates that when patients relapse, it is because they did not modify their core attitudes and beliefs that feed craving, so that what is pursued is that patients become aware of the beliefs that underlie the onset of craving (Beck et al., 1999). In one of our studies, we could analyze this relation, observing that the patients had less craving when this aspect is addressed in therapy, and we were able to significantly reduce the extent to which patients identified with these beliefs. Although it is assumed

that the length of abstinence time decreases the intensity and frequency of craving, after three months, craving cannot be attributed to abstinence itself but rather to the extent to which patients identify with the core beliefs related to drug use (Martínez-González & Verdejo, 2011). A later work (Martínez-González, Verdejo & Becoña, 2012) showed us that the core beliefs evaluated were related to relapse, while confirming that, to the extent to which patients identified more with this type of beliefs, the probability of relapse increased significantly. In turn, it is known that different variables are involved in the cessation of consumption and the maintenance of abstinence, but expectations of self-efficacy seem to be especially relevant to facilitate or limit coping with the challenges to which the patient is exposed during treatment (Blasco, Martínez-Raga, Carraco, & Attas, 2008; Llorente e Iraurgi-Castillo, 2008; Martínez-González, Verdejo & Becoña, 2012).

Various investigations reveal the importance of core beliefs in the maintenance of consumption or relapse after abstinence for diverse reasons: the fact that the identification of these beliefs allows us to modify them in the course of psychotherapy; the degree to which patients identify with them decreases with the intervention; some core beliefs are related to addiction and others are related to craving; patients differ in the degree to which they identify with the beliefs depending on the presence of personality disorders, such that the evolution of the beliefs differs during treatment; central factors for maintenance and relapse around which some core beliefs are grouped have been identified (Martínez-González & Verdejo, 2011, 2013; Martínez-González, Verdejo & Becoña, 2012).

According to Beck et al. (1999), basic addictive beliefs can be divided into various groups: (a) those related to beliefs that one needs the substance to maintain psychological and emotional balance; (b) the expectation that the substance will improve social and intellectual functioning; (c) the belief that the drug energizes the individual and will provide more strength and power; (d) the expectation that the drug will calm pain; (e) the assumption that the drug will relieve boredom, anxiety, tension, and depression; (f) the conviction that, unless one consumes to neutralize anxiety, it go on indefinitely and will most likely get worse. According to these authors, this series of assertions groups the core beliefs that can be identified if one follows an adequate procedure. An essential stage for intervention is therefore to ensure that the patient is aware of the deeper meanings in relevant situations of the process of recovery from addiction. Among the techniques indicated to identify this type of beliefs are direct questions or the use of questionnaires of beliefs about consumption or craving (e.g., Beck et al., 1999; Martínez-González, Verdejo & Becoña, 2012). Questionnaires allow us to know the extent to which patients identify with the core beliefs about drug use, on which the rest of the more superficial beliefs are based.

Thus, the adequate assessment of the beliefs related to addiction and craving is essential in the treatment of drug addictions. However, we currently have no test that allows us to explore these variables adequately. For this reason, the central goal of this study is to develop a questionnaire of core beliefs related to addiction and craving that can tap the extent to which people in treatment identify with certain key factors in the process of recovery from drug addictions. We wish to analyze the beliefs about three factors that are essential to understand the processes of relapse: beliefs about consumption, about the functionality of consumption, and about the final decision of not consuming again.

Method

Participants

The sample is composed of 215 people in treatment in the Provincial Service of Drug Addictions of Granada. The participants' mean age is 35.17 years ($SD = 11.80$). Concerning gender, 85.8% ($n = 182$) were men and 14.2% ($n = 30$) were women. The average time the patients had been in treatment at the time of assessment was 112.51 days ($SD = 170.80$), and the mean time of abstinence was 69.75 days, ranging from 0 to 700 days. Concerning the substance, 40% ($n = 86$) presented alcohol dependence, 36.3% ($n = 78$) cocaine dependence, and 23.7% ($n = 51$) cannabis dependence disorders.

No participant received any incentive. All were informed of the study and freely agreed to complete the questionnaire.

Instrument

The instrument of this study consists of two parts. The first has 17 items extracted from questionnaires used in previous investigations (Beck et al., 1999; Martínez-González & Verdejo, 2012; Martínez-González, Verdejo & Becoña, 2012). This time, we included beliefs related to drug use that refer to factors that are central in the assessment and treatment of drug addictions. The second part of this questionnaire is made up of beliefs related to the experience of craving. This part has 7 items, plus an additional item to assess the level of craving at the time of the assessment ("*Right now, I feel like consuming*"). The items that make up the questionnaire allow us to explore the essential aspects of the cognitive model of addiction (Beck et al., 1999; Martínez-González, Verdejo & Becoña, 2012) that underlies the questionnaire (Annex).

The construction of the questionnaire is based on a prior analysis of 49 beliefs that were extracted from different sources. Some core beliefs related to addiction and others referring to craving were extracted from Beck's (1995) questionnaires, others related to patients' difficulty to accept the definitive cessation of consumption come

from questionnaires used in previous investigations, and others that have not yet been studied but which emerge frequently in clinical practice: "*I have a disease*", "*I imagine my life, feeling satisfied without consuming*" or "*The professionals will teach me how to consume during the treatment*". We used a sample of 82 patients in treatment of both genders, different types of substance, time of abstinence and treatment duration. The internal consistency (Cronbach alpha) of the questionnaire was $\alpha = .81$. We conducted exploratory factor analysis to determine the factorization of all the beliefs, identifying up to 10 factors, although only one or two beliefs loaded on most of them.

The next step consisted of eliminating from the analysis all the beliefs that were isolated, which reduced the questionnaire to 32 items, with internal consistency of $\alpha = .91$. The alpha analysis if the item was eliminated allowed us to identify the items that contributed the least to the internal consistency, proceeding to delete another five items, which therefore left 27 beliefs. Subsequently, we proceeded to perform a second exploratory factor analysis, which indicated the suitability of eliminating a series of beliefs due to their lower loadings. The final outcome consisted of 19 items on which we performed a factor analysis, establishing 2 factors to be extracted. We found that 17 items that were grouped into two factors related to the so-called functionality of consumption and withdrawal. We added one more belief to investigate expectations of self-efficacy. The items related to craving were clearly grouped together.

Procedure

Six psychologists from three outpatient centers for the treatment of addictions, belonging to the Provincial Service of Drug Addictions of Granada, collaborated in the data collection of this study. All the psychologists provided the same information to the participants both about the procedure to complete the questionnaire and about the goals of the questionnaire. The patients filled in the questionnaires in presence of the psychologist during the session. The sample was established over two months with the voluntary participation of the patients, who were asked to participate in the study as they came to follow-up with their psychologists. This procedure allowed us to incorporate into the sample patients with addictions to diverse substances, different age and gender, time in treatment and time of abstinence at the time of the assessment.

Data analysis

We performed a descriptive analysis of the responses to the questionnaires of the different groups of patients. In order to examine possible differences in the scores as a function of type of substance or gender, we performed an analysis of variance and contrasted the differences of means, using for this purpose Student's *t*-test and establishing a level of significance of .05 for statistical decisions.

To determine the main factors of the two sections of the questionnaire, we performed exploratory factor analysis with varimax rotation. To study the relation between the questionnaires and craving, we conducted various simple and multiple linear regressions. Statistical analyses were carried with the statistical package SPSS 20.0. (IBM Corp, 2011).

Results

The descriptive statistics of beliefs about drugs and craving according to the type of substance consumption are shown in Table 1. The extent to which patients identify with the two questionnaires was not high. In the case of the first part of the questionnaire, corresponding to beliefs related to drug use, the group of patients that identified the most were consumers of alcohol, followed by consumers of cannabis and cocaine, in this order. In the case of the second part, beliefs about craving, patients who identified the most were consumers of cannabis, followed by consumers of alcohol and cocaine. It should be taken into account that all the patients had started treatment and at the time of the assessment are not under the effects of substances.

Beliefs related to drug use

The internal consistency (Cronbach alpha) of the scale of Beliefs related to drug consumption was $\alpha = .83$. For the group of consumers of alcohol, it was $\alpha = .81$, in the case of cocaine, it was $\alpha = .83$, and for cannabis, it was $\alpha = .86$.

Exploratory factor analysis of the questionnaire of beliefs related to drug use, applying Varimax orthogonal rotation, yielded four factors. The factor loadings were high and clearly different for each item and factor. On the first factor, the following items loaded: 2, 4, 5, 6, 7, 8, and 9; on the second factor, items: 10, 11, 12, 13, and 17; and on the third factor, items: 15 and 16; on the fourth factor, items: 1, 3, and 4. Item 14 was eliminated from the questionnaire and subsequent analyses because it did not load on any of the factors. Upon eliminating Item 14, the internal consistency of the questionnaire of 16 beliefs reached $\alpha = .86$.

The first factor, which groups beliefs about "what the person believes that he or she will not be able to do in the absence of the effect of the substance", presented an internal consistency of $\alpha = .84$; the second factor, called "lack of withdrawal" because it revolves around the intention of consuming again, presented an internal consistency of $\alpha = .87$; the third factor, which refers to the "conditions required to decide to use drugs again", showed an internal consistency of $\alpha = .87$; and Factor 4, which reflects the idea that "consumption makes you feel good about yourself and develops your potential" presented an internal consistency of $\alpha = .67$ (Table 2).

No statistically significant differences were found in the degree to which patients identify with this questionnaire as

Table 1

| Means and Standard Deviations of the Questionnaire of Beliefs about Drugs as a function of the Type of Main Substance | | | |
|-----------------------------------------------------------------------------------------------------------------------|------|------|-----|
| Drug | Mean | SD | N |
| Alcohol | 1.10 | .838 | 83 |
| Cocaine | .71 | .490 | 67 |
| Cannabis | .99 | .688 | 50 |
| Total | | | 200 |

| Means of the Questionnaire of Beliefs about Craving as a function of the Type of Main Substance | | | |
|-------------------------------------------------------------------------------------------------|------|-------|-----|
| Drug | Mean | SD | N |
| Alcohol | 1.27 | 1.138 | 83 |
| Cocaine | 1.23 | .960 | 67 |
| Cannabis | 1.60 | 1.219 | 50 |
| Total | | | 200 |

a function of gender ($M_{men} = .90$, $SD_{men} = .68$, $M_{women} = 1.1$, $SD_{women} = .85$, $t = 1.77$, $p = .078$).

Beliefs related to craving

The internal consistency of the scale of Beliefs related to craving was .87. The value of alpha for each kind of substance was: $\alpha = .88$ for alcohol; $\alpha = .82$ for cocaine; and $\alpha = .88$ for cannabis. The scale presented a high internal consistency for all three substances.

The exploratory factor analysis of the section of craving yielded three main factors: Items 1, 4 and 6 loaded on the first factor, which grouped beliefs about craving when faced with negative emotional states, with an internal consistency of $\alpha = .82$; Items 2 and 5 loaded on the second factor, referring to the difficulty to deal with craving, with an internal consistency of $\alpha = .73$; and Items 3 and 7 loaded on the third factor, which associated craving with positive emotional states or well-being, with an internal consistency of $\alpha = .62$ (Table 3).

No statistically significant differences were found in the degree to which patients identify with this questionnaire as a function of gender ($M_{men} = 1.37$, $SD_{men} = 1.11$, $M_{women} = 1.19$, $SD_{women} = 1.10$, $t = .790$, $p = .430$).

Relation between beliefs related to drug use and craving-related beliefs

Beliefs about consumption, taking as reference the mean of the items of the section, positively predict craving-related beliefs ($\beta = .52$, $p < .000$, $R^2 = .27$), which indicates that as the degree to which people identify with beliefs related to drug use increases, they identify more strongly with craving-related beliefs. When specifically assessed with the indicator of the presence of craving at the time of assessment, we also observed that beliefs related to drug use predict the level of craving ($\beta = .45$, $p < .000$, $R^2 = .20$).

Table 2. *Exploratory Factor Analysis Loading of the Items on each Factor**.

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|-------------------------------------------------------------------------------------|----------|----------|----------|----------|
| Drinking alcohol is the only way to increase my creativity and productivity. | | | | .46 |
| I cannot work without drinking alcohol. | .55 | | | |
| Drinking alcohol is the only way to deal with the pain of my life. | | | | .49 |
| The only way to handle my anger is by drinking alcohol. | .48 | | | .43 |
| I could not be social without drinking alcohol. | .54 | | | |
| Craving and impulses will not disappear unless I consume. | .57 | | | |
| I cannot relax without drinking alcohol. | .82 | | | |
| I cannot control my anxiety without drinking alcohol. | .84 | | | |
| I cannot have any fun in my life unless I drink alcohol. | .46 | | | |
| Someday I'll consume in a controlled fashion again. | | .79 | | |
| I think that I can consume once a day and not go on. | | .71 | | |
| Someday, I may consume even if it's only once. | | .72 | | |
| I hope to be able to learn controlled drinking. | | .74 | | |
| When I am ready, I will be able to drink alcohol in a controlled way. | | | | |
| If I feel physically good, nothing should happen if I consume. | | | .81 | |
| If I feel psychologically good, nothing should happen if I consume. | | | .78 | |
| This disease is transient. When I am well, I will be able to drink without abusing. | | .50 | .49 | |

Note. * These items are referred to alcohol dependence. Drug type varies depending on the specific dependence of the patient.

Table 3. *Exploratory Factor Analysis of the section of craving.*

| | Factor 1 | Factor 2 | Factor 3 |
|-------------------------------------------------------------|----------|----------|----------|
| 1. I feel like consuming when I feel bad physically. | .53 | | |
| 2. When I get the idea of consuming, I cannot avoid it. | | .56 | |
| 3. I feel like consuming when I feel good. | | | .46 |
| 4. I feel like consuming when I have problems with someone. | .74 | | |
| 5. It is difficult for me to cope with craving. | | .53 | |
| 6. I feel like consuming when I feel bad psychologically. | .80 | | |
| 7. I feel like consuming when I have money. | | | .41 |

The regression analysis of the four factors of the section of core beliefs related to drug use shows that they all predict the level of craving, evaluated with the item “*Right now, I feel like consuming*”. That is, in the first factor with an $R^2 = .281$, $\beta = .530$, $p < .000$, in the second factor with $R^2 = .082$, $\beta = .287$, $p < .000$, in the third factor with $R^2 = .035$, $\beta = .187$, $p = .006$, and in the fourth factor with $R^2 = .157$, $\beta = .396$, $p < .000$. In all cases, the factors of the beliefs related to consumption positively predict the level of craving.

The multiple linear regression in which the criterion variables were the values of each one of the factors of the questionnaire of beliefs, and the dependent variable was the level of craving at the time of assessment, showed that the first two factors were the only significant ones in the prediction of craving: with an $R^2 = .319$, the first factor obtained $\beta = .440$, $p < .000$; the second factor obtained $\beta =$

.184, $p = .009$; the third factor obtained $\beta = -.013$, $p = .854$; and the fourth factor obtained $\beta = .090$, $p = .215$.

In the multiple regression analysis in which criterion variables were the three factors of the section of craving-related beliefs, and the dependent variable was the level of craving at the time of assessment, we observed that the third factor, corresponding to positive emotional states, had more weight in the prediction in comparison to the other two: $R^2 = .292$; the first factor obtained $\beta = .182$, $p = .023$; the second factor obtained $\beta = .157$, $p = .045$; and the third factor obtained $\beta = .291$, $p < .000$.

Relation of days of abstinence, time in treatment and beliefs

The correlation between the days of abstinence at the time of assessment and the score of the scales of beliefs re-

lated to drug use and beliefs related to craving showed that in both cases, it was negative and statistically significant. This indicates that, as the time of abstinence increases, patients seem to identify less with beliefs related to drugs ($r = -.342, p < .000$) and to craving ($r = -.37, p < .000$).

The correlations of the beliefs and the time that the patient had been in treatment at the time of assessment were also negative and statistically significant both in the case of beliefs related to drug use ($r = -.26, p = .006$) and to craving ($r = -.22, p = .023$).

The days of abstinence predicted the level of craving presented by the patient at the time of evaluation, and this relationship was negative. Thus, as the patient becomes abstinent for longer periods of time, craving decreases ($R^2 = .158, \beta = -.158, p = .024$).

We performed a multiple regression analysis in which the criterion variables were the days of abstinence and the mean score of the questionnaire of core beliefs about drugs, and the dependent variable was the level of craving, finding that the core beliefs had more weight in the prediction of craving in comparison to the time of abstinence, although both variables were significant ($R^2 = .214$; days of abstinence: $\beta = .005, p = .412$; beliefs: $\beta = .464, p < .000$).

Discussion

This work has allowed us to design a questionnaire of core beliefs related to drug use and craving, whose factors are essential (Beck et al., 1999; Martínez-González, Verdejo & Becoña, 2012) in the assessment drug addiction and in the process of recovery. In general, it can be observed that the scores of the patients are not very high, which can be explained by the fact of that the patients were already in treatment and had been abstinent for some time at the time of assessment. The results of the study indicate that this questionnaire can be used with patients in treatment and not only with people in the active phase of consumption, who presumably will identify more easily with thoughts like those described in the questionnaire.

The internal consistency analysis of the questionnaire for each group of patients as a function of the type of main consumption substance shows that this questionnaire can be used with consumers of alcohol, cocaine and cannabis.

As could be expected, it has been confirmed that the time of abstinence and the time in treatment are inversely related to the beliefs. Moreover, we confirmed that the beliefs have more weight in the prediction of craving than the time of abstinence.

The seventeen beliefs about drugs are grouped around four factors: what a person believes that he/she cannot do in the absence of the effect of the substance, the lack of withdrawal, the conditions required for the person to decide to consume again and the idea that consumption is the only way to feel good about oneself and to develop one's potential.

The first factor groups beliefs about what the person thinks he/she cannot do if he/she stops taking drugs, such as, for example, dealing with anger, craving, tension, difficulties relating to other people, anxiety or boredom. We think that these beliefs correspond to a global concept about patients' idea of general functioning.

The second factor, which we call lack of withdrawal, refers to beliefs that show that the person still desires to experience the effect of the substance on which he/she was dependent. According to previous studies, this factor is significantly related to craving, confirming that patients who identify with this type of core beliefs verbalize their craving to consume, regardless of the time of abstinence (Martínez-González & Verdejo, 2012; Martínez-González, Verdejo & Becoña, 2012). This link shows the weight of these beliefs as a direct risk factor for relapse.

The third factor refers to the conditions required for the person to consume again; that is, the person should feel good, physically and psychologically. As seen, these beliefs play down the negative consequences of re-consuming, among them, relapse itself. Beliefs about relapse itself seem to play a central role (Lavimer, Palmer & Marlatt, 1999). This factor somehow perpetuates the idea that the substance itself is not so bad if the person feels good, attributing the harmful impact of substance use to poor personal management. This concept feeds the desire to repeatedly experiment in order to achieve controlled consumption, that is, the fallacy of control. From these schemata follows the idea that a non-addictive consumption pattern can be learned, and this is precisely what some patients demand when beginning treatment.

The fourth factor groups beliefs about the idea that substance use is the only way to feel good about oneself and to develop one's potential, that is, to deal with general psychological distress or to develop one's creativity or productivity when performing tasks. As shown by Marlatt (1987) and Marlatt & Rosenhow (1980), expectations of positive consequences are the main determinant of alcohol use and of other forms of substance abuse.

We once again note the fact that beliefs related to drug use predict patients' level of craving, such that, as they identify more strongly with these beliefs, their craving to consume increases. This relation is also described with regard to beliefs about craving (Beck et al., 1999; Martínez-González & Verdejo, 2011).

One could expect that the time of abstinence would help to decrease craving but we know that beliefs significantly influence craving. The multiple regression analysis has allowed us to confirm that, although both variables predict the level of craving, core beliefs related to drug use have more weight than time of abstinence. This relation explains the fact that the time of abstinence alone does not dilute the challenge of dealing with craving or the conflict undergone by patients when they want to deal with

craving only by supporting it passively. Moreover, the time of abstinence alone does not ensure that the patients will stop having this kind of convictions (Martínez-González & Verdejo, 2011). The essential aspect of the process of change and, specifically, the disappearance of craving, requires a cognitive intervention to modify the dysfunctional core beliefs and replace them with beliefs of control (Beck et al., 1999; Becoña et al., 2011).

Factor analysis of the set of beliefs related to craving shows that these convictions are related to people's image of their own experience of craving and of the difficulty associated with managing it, a central aspect of treatment. The study of Cano, Araque, and Cándido (2011) shows the association between the patients' perception of their own experience of craving and relapse, such that beliefs about craving can draw patients near to or protect them from relapse. Three factors were identified: precipitants of craving, among which are positive emotional states, negative states, and the difficulty attributed to coping with craving. It is known that the beliefs to which we refer increase craving on the one hand, and hinder coping with it, on the other, operating in the opposite direction to beliefs of control. The identification of core beliefs that underscore the weight of emotions therefore constitutes an essential therapeutic target in programs of relapse prevention, as postulated in the model of Hendershot, Witkiewitz, George, and Marlatt (2011). Some investigations show that negative emotional states are particularly relevant in alcoholic patients with personality disorders (Martínez-González, Graña & Trujillo, 2009), although it should be noted that not only negative emotional states constitute a risk of relapse, but also positive states (Marlatt, 1985; Marlatt, 1993; McCrady, Rodríguez, & Otero-López, 1998). Of the three factors identified as predictors of the level of craving, the factor that refers to positive emotional states has greater weight, probably because they somehow neutralize the perception of risk.

As found in previous studies, in this investigation, we again confirm the relation between the core beliefs related to drug use and those referring to craving, showing that the degree to which patients identify with one of these groups increases according to the degree to which they identify more strongly with the other group (Martínez-González & Verdejo, 2011). The fact that the patients' awareness of craving and of the behavior of consumption are not necessarily linked (Merikle, 1999) can facilitate patients' understanding the impact of core beliefs on their craving and on their image of their addiction. Otherwise, it seems that craving lasts for a long time.

This work has allowed us to develop a questionnaire with acceptable psychometric parameters. It is adequate for the assessment of core beliefs that are key aspects in the process of recovery from drug addictions. A limitation of the study is the lack of data about the patients' psychopa-

thology, so that, for future studies, deepening in the study of their psychopathology to examine the relation of these beliefs with the phenomenon of dual pathology will be a priority.

Acknowledgements

This study was funded by the COPERNICO project of the Plan Nacional sobre Drogas [National Drugs Plan] (Summons 2009) and the Red de Trastornos Adictivos [Network of Addictive Disorders] (Summons RETICS 2012, Instituto de Salud Carlos III [Carlos III Health Institute]), and the University of Granada Group.

We wish to thank Carmen Caballero, Gracia González, Miguel Ángel Ruiz, Remedios Gómez, and Manuela Rivero, psychologists of the Provincial Center of Drug Addictions of Granada and of the County Center of Drug Addictions of Motril, for their collaboration in this research.

Conflict of interest. The authors report they have no conflict of interest.

References

- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*. Washington, DC: Author.
- Blasco, J., Martínez-Raga, J., Carraco, E. & Attas, D. (2008). Atención y craving o ganas compulsivas. Avances en su conceptualización y su implicación en la prevención de recaídas. *Adicciones*, 20, 365-376. doi:org/10.20882/adicciones.259.
- Becoña, E., Cortés, M., Arias, F., Barreiro, C., Berdullas, J., Iraurgi, I., Llorente, J., ... Villanueva, A. (2011). *Manual de adicciones para psicólogos especialistas en psicología clínica en formación*. Barcelona: Socidrogalcohol.
- Beck, A.T., Wright, F.D., Newman, C.F. & Liese, B.L. (1999). *Terapia cognitiva de las drogodependencias*. Barcelona: Paidós.
- Cano, G., Araque, F. & Cándido, A. (2011). Adicción, impulsividad y curvas temporales de deseo. *Adicciones*, 23, 141-148.
- Graña, J.L. (1994). *Conductas adictivas. Teoría, evaluación y tratamiento*. Madrid: Debate.
- Hendershot, C., Witkiewitz, K., George, W. & Marlatt, G. A. (2011). Relapse prevention for addictive behaviors. *Substance Abuse Treatment, and Policy*, 6, 17. doi:10.1186/1747-597X-6-17.
- IBM Corp. (2011). *SPSS Statistics for Windows*, Version 20.0. Armonk, NY: IBM.
- Lavimer, M.E., Palmer, R.S. & Marlatt, G. A. (1999). Relapse prevention: An overview of Marlatt's cognitive-behavioral model. *Alcohol Research and Health*, 23, 151-160.
- Llorente, J.M. & Iraurgi-Castillo, J. (2008). Tratamiento cognitivo-conductual aplicado a la deshabituación en la

- deshabitación de cocaína. *Trastornos Adictivos*, 10, 254-274. doi:10.1016/S1575-0973(08)76374-8.
- McCrary, B., Rodríguez, R. & Otero-López, J.M. (1998). *Los problemas de la bebida: Un sistema de tratamiento paso a paso*. Madrid: Ediciones Pirámide.
- Marlatt, G.A. & Rohsenow, D.R. (1980). Cognitive processes in alcohol use: Expectancy and the balanced placebo design. In N.K. Mello (Ed.), *Advances in Substance Abuse* (pp. 159-199). Greenwich, CT: JAI Press.
- Marlatt, G.A. (1985). Relapse prevention: Theoretical rationale and overview of the model. In G.A. Marlatt & J.R. Gordon (Eds.), *Relapse prevention*. New York: Guilford Press.
- Marlatt, G.A. (1987). Alcohol, the magic elixir: Stress, expectancy, and the transformation of emotional states. In E. Gottheil, K.A., Druly, S. Pashko, & S.P. Weinstein (Eds.), *Stress and addiction* (pp. 302-322). New York: Brunner/Mazel.
- Marlatt, G.A. (1993). La prevención de recaídas en las conductas adictivas: Un enfoque de tratamiento cognitivo-conductual. In M. Casas & M. Gossop (Comps.). *Recaída y prevención de recaídas* (pp. 137-160). Barcelona: Ediciones en Neurociencias.
- Martínez-González, J. M., Graña, J. L. & Trujillo, H. M. (2009). Influencia de los trastornos de la personalidad y patrones de consumo en la eficacia de un programa de prevención de recaídas para el tratamiento del alcoholismo. *Adicciones*, 21, 105-112. doi: <http://dx.doi.org/10.20882/adicciones.237>
- Martínez-González, J.M. & Verdejo-García A. (2011). Creencias básicas adictivas y craving. *Adicciones*, 23, 339-352. doi:10.20882/adicciones.166.
- Martínez-González J.M. & Verdejo-García A. (2012). Evolución de las creencias nucleares relacionadas con la adicción en drogodependientes con y sin trastornos de personalidad. *Adicciones*, 24, 229-238. doi:10.20882/adicciones.94.
- Martínez-González, J.M., Verdejo, A. & Becoña, E. (2012). Estudio exploratorio del impacto de las creencias nucleares relacionadas con la adicción en el consumo tras la abstinencia. *Trastornos Adictivos*, 14, 105-11. doi:10.1016/S1575-0973(12)70053-3.
- Merikle, E.P. (1999). The subjective experience of craving: An exploratory analysis. *Substance Use and Misuse*, 34, 1101-1115. doi: 10.3109/10826089909039399.
- Vázquez, C. (2003). *Técnicas cognitivas de intervención clínica*. Madrid: Síntesis.

Annex

Questionnaire of core beliefs related to drug use and craving for the assessment of the risk of relapse

Try to indicate the degree to which you identify with each of these statements according to the following scale.

Section of beliefs related to addiction.

| | 0 Strongly disagree | 1 Slightly disagree | 2 Neutral | 3 Slightly agree | 4 Strongly agree |
|---------------------------------------------------------------------------------------------|---------------------------|---------------------------|--------------|------------------------|------------------------|
| Drinking alcohol is the only way to increase my creativity and productivity. | 0 | 1 | 2 | 3 | 4 |
| I cannot work without it. | 0 | 1 | 2 | 3 | 4 |
| Drinking alcohol is the only way to deal with the pain of my life. | 0 | 1 | 2 | 3 | 4 |
| The only way to handle my anger is by drinking alcohol. | 0 | 1 | 2 | 3 | 4 |
| I could not be social without drinking alcohol. | 0 | 1 | 2 | 3 | 4 |
| The craving and impulses will not disappear unless I consume. | 0 | 1 | 2 | 3 | 4 |
| I cannot relax without drinking alcohol. | 0 | 1 | 2 | 3 | 4 |
| I cannot control my anxiety without drinking alcohol. | 0 | 1 | 2 | 3 | 4 |
| I cannot have any fun in my life unless I drink alcohol. | 0 | 1 | 2 | 3 | 4 |
| Someday I'll consume in a controlled way again. | 0 | 1 | 2 | 3 | 4 |
| I think that I can consume once a day and not continue to consume. | 0 | 1 | 2 | 3 | 4 |
| Someday, I may consume even if it's just once. | 0 | 1 | 2 | 3 | 4 |
| I hope to be able to learn to drink alcohol in a controlled way. | 0 | 1 | 2 | 3 | 4 |
| When I am ready, I will be able to drink alcohol in a controlled way. | 0 | 1 | 2 | 3 | 4 |
| If I feel physically good, nothing should happen if I consume. | 0 | 1 | 2 | 3 | 4 |
| If I feel psychologically good, nothing should happen if I consume. | 0 | 1 | 2 | 3 | 4 |
| This disease is transient. When I am well, I will be able to drink alcohol without abusing. | 0 | 1 | 2 | 3 | 4 |
| I think I have the necessary capacity to overcome my drug addiction. | 0 | 1 | 2 | 3 | 4 |

Section of beliefs related to craving.

| | 0 Strongly disagree | 1 Slightly disagree | 2 Neutral | 3 Slightly agree | 4 Strongly agree |
|-------------------------------------------------------------|---------------------------|---------------------------|--------------|------------------------|------------------------|
| 1. I feel like consuming when I feel bad physically. | 0 | 1 | 2 | 3 | 4 |
| 2. When I get the idea of consuming, I cannot avoid it. | 0 | 1 | 2 | 3 | 4 |
| 3. I feel like consuming when I feel good. | 0 | 1 | 2 | 3 | 4 |
| 4. I feel like consuming when I have problems with someone. | 0 | 1 | 2 | 3 | 4 |
| 5. It is difficult for me to cope with craving. | 0 | 1 | 2 | 3 | 4 |
| 6. I feel like consuming when I feel bad psychologically. | 0 | 1 | 2 | 3 | 4 |
| 7. I feel like consuming when I have money. | 0 | 1 | 2 | 3 | 4 |
| 8. Right now, I feel like consuming. | 0 | 1 | 2 | 3 | 4 |

Note. * These items are referred to alcohol dependence. Drug type varies depending on the specific dependence of the patient.