Psicothema

Self-deception as a mechanism for the maintenance of drug addiction

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Abstract

Background: This study was aimed at: (i) examining levels of self-deception in substance dependent individuals following addiction treatment, and (ii) examining the association between participants' levels of self-deception and (a) personality disorders, (b) addiction-related beliefs, (c) duration of abstinence, and (d) estimates of craving. **Method:** We administered self-report questionnaires of self-deception and mixtification, and core beliefs related to addiction and craving. The sample comprised 79 outpatients who were consecutively recruited at the Centro Provincial de Drogodependencias in Granada: 87.3% were males and the mean age was 37.68 years old. Thirty-four percent of participants were diagnosed with comorbid personality disorders. **Results:** Results showed that individuals with substance dependence exhibit elevated scores of self-deception, particularly in the domains of active denial, selective amnesia, projection, and confabulation. Individuals with comorbid personality disorders display greater levels of self-deception compared to individuals without dual diagnosis. **Conclusions:** Moreover, there is a significant association between levels of self-deception and addiction-related beliefs and craving. In addition, there is a negative association between levels of self-deception and duration of abstinence.

Keywords: self-deception, personality disorders, treatment, core beliefs, craving.

Resumen

El autoengaño como mecanismo de mantenimiento de la adicción a las drogas. **Antecedentes:** los objetivos de este estudio fueron: (i) conocer el nivel de autoengaño de drogodependientes en tratamiento por su adicción, y (ii) estudiar la relación del autoengaño con (a) los trastornos de personalidad, (b) las creencias, (c) la abstinencia y (d) el craving en estos pacientes. **Método:** se utilizaron los cuestionarios de autoengaño y mixtificación (IAM) y de creencias relacionadas con el consumo de drogas y craving. La muestra estaba compuesta por 79 pacientes atendidos de forma consecutiva en el Centro Provincial de Drogodependencias de Granada. El 34.5% de los pacientes presentaban un trastorno de la personalidad. **Resultados:** los resultados mostraron que los drogodependientes obtienen puntuaciones elevadas en autoengaño, especialmente en los factores negación, amnesia selectiva, proyección y pensamiento fantaseado. Además, los pacientes con trastornos de la personalidad presentan niveles de autoengaño más elevados en comparación a los que no presentan este tipo de psicopatología, observándose una relación significativa entre las creencias nucleares relacionadas con el consumo y con el craving con el nivel de autoengaño. **Conclusiones:** se constata igualmente que el nivel de autoengaño se relaciona de forma negativa con el tiempo de abstinencia, lo que convierte al autoengaño en una diana terapéutica para mejorar el pronóstico.

Palabras clave: autoengaño, trastornos de la personalidad, tratamiento, creencias, *craving*.

Lying and self-deception are considered inherent to the human condition (Sirvent et al., 2011). Self-deception results from information processing biases that give priority to welcoming over unwelcoming information in an unconscious or conscious manner that reflects the individuals' goals (von Hippel & Trivers, 2011). Thus, it could be considered a useful tool in negotiating the social world (von Hippel & Trivers, 2011) or an adaptive tendency to distort reality (Moral, Sirvent, & Blanco, 2012) through exercising the adoption of advantageous explanations (Elster, 1983). Substance-dependent patients show higher self-deception than non-dependent individuals (Moral, Sirvent, & Blanco, 2012), with denial (affirming something that is not true), recidivism (the tendency to keep making the same mistake) and mixtification (living a life of deceit) being the mechanisms of self-deception that best describe substance-dependent patients (Sirvent, Blanco, Villa, & Rivas, 2014).

Addiction-related core beliefs are essential to the development of the desire to consume, as the degree in which patients identify with certain addiction-related beliefs directly relates to the desire to consume (Beck, 1999; Martínez-González & Verdejo-García, 2011; Martínez-González, Verdejo-García, & Becoña, 2013). This is especially relevant in patients with personality disorders (PD) (Martínez-González & Verdejo, 2014).

Nevertheless, self-deception is not an irrational belief because it is not a matter of false convictions about a certain situation or experience. Rather it comes with an awareness of not wanting to see that which is uncomfortable and hurtful, and with the hopes of eliminating the discomfort provoked by the awareness what makes one uncomfortable. Porcel and González (2005) refer to self-deception as a modulating mechanism in psychological disorders. To these authors, self-deception not only implies ignoring the

choice one makes, but also the consequences of the choice. This is clear in addictions, in some relapse processes in which the patient once again validates beliefs that were previously questioned, and discounts a group of risks and harms which are derived from decisions leading to relapse.

One previous study has shown that further stages of recovery from substance dependence relate to decreased self-deception (Ferrari, Groh, Rulka, Jason, & Davis, 2008). Nevertheless, there is scarce research dedicated to the role of self-deception in the treatment of substance-dependent patients. It has been pointed out that self-deception could be especially relevant when treating people with psychopathology (Sirvent et al., 2008), and, in particular, when they present a PD. In these cases, self-deception modulates the psychopathology in the sense that it hinders the patient's self-observation of his/her own psychopathology. That is, in egosyntonic disorders, such as PD, self-deception may exercise an unconscious effect on the person, impeding the patient's ability to address the egosyntonic disorder (Martínez-González & Verdejo-García, 2014).

Considering all of the above, the objectives of the present paper are: (i) to measure the level of self-deception in substance-dependent patients during treatment for their addiction, and (ii) to study the relationship between self-deception in substance-dependent patients and (a) PD, (b) addiction-related core beliefs, (c) duration of abstinence, and (d) estimates of craving.

Method

Participants

The sample was composed of 79 outpatients who continued treatment at the time of evaluation at the Provincial Center for Substance-dependent Patients in Granada. There were 69 males (87.3%) and 10 females (12.7%). The mean age was 37.68 years (range 17-80). Thirty-nine patients (49.4%) presented problems with cocaine addiction, 30 patients (38%) with alcohol, and 10 patients (2.7%) with cannabis. Thirty-one (41.9%) of the patients presented a PD whereas 43 (58.1%) did not. Within the patients who had a PD, 34.5% ($n = 10$) presented histrionic disorder, 10.3% ($n = 3$) borderline disorder, 24.1% ($n = 7$) obsessive compulsive disorder, 17.2% ($n = 5$) avoidance disorder, 3.4% ($n = 1$) dependence disorder, and 10.3% ($n = 3$) not specified. Twenty-nine patients (22.62%) showed another disorder (anxiety, food disorder, sleep disorder, impulse control, adaptive disorder, hypochondria, depression, memory problems induced by substance use, posttraumatic stress disorder, pathological gambling, sexual response disorders, explosive intermittent disorder, or hyperactivity). The average duration of time that the patients in the sample had been receiving treatment at the time of the evaluation was 2.45 months ($SD = 4.87$), and they had been abstinent an average of 82.43 ($SD = 107.64$) days.

Instruments

For the evaluation and diagnosis of PD, a semi-structured interview entitled International Personality Disorder Exam (IPDE) was utilized (Loranger et al., 1991; Spanish version by López-Ibor, Pérez- Urdániz, & Rubio, 1996).

The evaluation of Axis I was carried out through a clinical interview, tending to DSM-IV-TR criteria (APA, 2002). In order

to confirm the presence of psychopathology in Axis I, the SCID-I was used (First, Spitzer, Gibbon, & Williams, 1999).

In order to evaluate self-deception, the Self-deception and Mixtification Inventory was used (IAM; Blanco, López, & Sirvent, 2007), which is composed of 50 items with responses rated on a five-point Likert scale. Internal consistency of the inventory is .97. It comprises 17 factors: a general scale, four dimensions, and twelve components. The General scale of self-deception, which results from the mean of all the items, represents the person's incapability of realizing the adverse effects of the problem. The four dimensions include: Self-deception, Manipulation, Denial, and Mixtification. The Self-deception dimension is a distorted perception of reality, and the components that best define it are a self-perceived distortion, wishful thinking, insincerity, and opacity. The Manipulation dimension is the intent to make modifications to the emotions and the interpretation of the interlocutor for self-interest; thus, the central objective is not so much deception as it is obtaining a benefit. The Denial dimension is the affirmation that something is not true despite contrary evidence and a persistent refusal to let oneself be influenced by external evidence. The fourth dimension, named Mixtification, refers to a life that is based on deceit, which acts as a shield, obstructing understanding when communicating with others. All of this allows the individual to maintain a false appearance. The scale has twelve components: Insincerity conceived as a lack of truthfulness when speaking to oneself because the recognition of the truth can yield unpleasant consequences; Communicative opacity as the difficulty to achieve thinking in a way that the person frequently cannot or does not want to externalize what he/she thinks or feels; Selfishness which represents giving precedence to one's own interests over that of others; Rejection which is described as the act of rejecting the unknown without even addressing its explanations to save one's own interests; Selective amnesia which represents the act of making mistakes over and over again due to selective memory; Projection which is defined as the act of attributing defects or intentions that the patient does not recognize in him/herself to another person or some other object; Wishful thinking that brings a person to confuse desires with a deformed reality through the imagination of facts for one's own convenience; Self-perceptive distortion in which people possess an illusive image of themselves, bringing other people to observe their problems before the themselves; Selfish-registry of reality as realizing what one likes and ignoring or not taking into account the unpleasant things, or contradicting oneself in order to transform thoughts for one's own convenience; Non-pragmatism consists of the act of settling into self-deception with a lack of practicality, in a life far from the reality; Misanthropy is a psychological barrier to disbelief and skepticism which obstructs interpersonal communication; Social desirably in which people offer an external image that does not correspond with the actual one.

The Beliefs Questionnaire (Martínez-González et al., 2013) consists of two parts. The first is composed of 17 items that measure different addiction-related core beliefs. The analysis of reliability shows a high internal consistency ($\alpha = .91$), which allows us to use the average of the questionnaire scores as a representative measurement of the degree to which people identify with these types of beliefs. The second part is composed of 8 items relative to beliefs about craving. The internal consistency of this measure is .89. The responses are rated on a five-point Likert scale (see Table 1).

Table 1 Beliefs questionnaire					
1. Taking cocaine is the only way in which I can boost my creativity and productivity	0	1	2	3	4
2. I cannot function without it	0	1	2	3	4
3. It is the only way of coping with the pain of my life.	0	1	2	3	4
4. The only way of managing my anger is taking cocaine	0	1	2	3	4
5. I could not be social without taking cocaine.	0	1	2	3	4
6. The *cravings* and the impulses do not disappear unless I consume	0	1	2	3	4
7. I cannot relax without cocaine	0	1	2	3	4
8. I cannot control my anxiety without taking cocaine	0	1	2	3	4
9. I cannot have fun in life unless I take cocaine	0	1	2	3	4
10. One day I will return to consuming in a controlled manner	0	1	2	3	4
11. I think I will be able to consume again one day and not continue doing it	0	1	2	3	4
12. One day I will consume even though it will just be one time	0	1	2	3	4
13. I hope I can learn to consume in a controlled manner	0	1	2	3	4
14. When I am prepared I will be able to consume cocaine in a controlled manner	0	1	2	3	4
15. If I find myself physically well, nothing should happen if I consume	0	1	2	3	4
16. If I find myself psychologically well, nothing should happen if I consume	0	1	2	3	4
17. This sickness is transitory. When I am well, I will be able to consume without abusing	0	1	2	3	4
1. I feel like consuming when I feel physically unwell	0	1	2	3	4
2. When consuming comes to mind, I cannot avoid doing 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 face my desire to consume	0	1	2	3	4
6. I feel like consuming when I feel psychologically unwell	0	1	2	3	4
7. I feel like consuming when I have money	0	1	2	3	4
8. I feel like consuming right now	0	1	2	3	4

Information regarding the time of withdrawal was obtained from the patients' clinical history.

Procedure

The dual diagnosis was carried out at the beginning of the treatment, in accordance with the abstinence circumstances necessary to discern the nature of the symptoms. Participants filled out both the questionnaire for self-deception and core beliefs about addiction during the session with the psychologist. From the general sample, 30 people also completed the questionnaire about addiction-related core beliefs.

Clinical records of patients were reviewed to gather information about the duration of abstinence from the drug that motivated treatment in the center until the time of evaluation, as recorded in days, and the time spent in treatment recorded in months.

The sample was composed of consecutive patients that attended prearranged sessions with the psychologist. Thus, patients had different profiles with regard to sex, time of abstinence, age, and months in treatment.

All participants were volunteers who completed and signed an informed consent form.

Data analysis

Descriptive statistics were used to characterize the sample. Different between-group comparisons were completed by applying the Student's t-test to find out the differences in self-deception in terms of variables such as substance type, age, time in treatment, or presence of personality disorders. Bivariate correlations were used to study the relationship between addiction-related core beliefs and the different scales of the Self-deception questionnaire or the time of abstinence. Moreover, a lineal regression analysis was used to understand the predictive capacity of addiction-related core beliefs, abstinence, craving, or abstinence time over the level of self-deception. To do so, the General and Self-deception Scales were used as global measures of self-deception, just as the authors have suggested. The statistical analyses were completed with the program SPSS 19.0.

Results

The level of self-deception in substance-dependent patients for alcohol and cocaine

The average scores for each of the factors on the questionnaire for the entire sample can be seen in Table 2. Apart from the factors Selfishness and Misanthropy, the rest of the factors are present in the sample. The following factors presented a pronounced significance: denial, selective amnesia, projection, and wishful thinking.

The comparison of averages through the Student's *t*-test showed that were no differences in the Self-deception dimension in relation to the consumption profile (alcohol versus cocaine). Moreover, the bivariate correlation analysis showed that the age of the participants, the length of treatment, and self-deception did not present a significant association.

Table 2
Averages and standard deviations of scores for each of the questionnaire factors

Questionnaire factors	Average	SD	Interpretation according to test percentiles	
General scale	2.9163	.70785	Present	
Self-deception	2.8796	.76677	Present	
Manipulation	2.7472	.92419	Present	
Denial	3.0273	.74180	*Marked*	
Mixtification	2.8540	.73238	Present	
Insincerity	2.7343	.89965	Present	
Communicative opacity	2.9704	.76979	Present	
Selfishness	2.6582	1.1001		Absent
Rejection	3.0563	.87729	Present	
Selective amnesia	3.1168	.98267	*Marked*	
Projection	2.8133	.88022	*Marked*	
Thought fantasy	2.8715	.87829	*Marked*	
Distortion self-perception	3.1380	.96600	Present	
Interested perception	2.9673	.76725	Present	
Non-Pragmasticism	2.9121	.80254	Present	
Misanthropy	2.8391	.78021		Absent
Social desirability	2.7752	.78682	Present	

Relationship between self-deception and personality disorders

When comparing the factors of the IAM questionnaire in terms of the presence of a PD, we found significant differences in the Self-deception dimension ($t(72)= 2.003$; $p = .04$, Cohen's $d = .462$), where patients with a PD had higher scores ($M = 3.09$, $SD = 0.81$) than patients without a PD ($M = 2.74$, $SD = 0.70$). The mean value for the self-deception factor according to each PD was: borderline 4.08; dependent = 3.90; histrionic = 3.11; obsessive compulsive = 2.98; PD not specified = 2.95; avoidance = 2.87.

No statistical differences were found when comparing scores from the questionnaire of core beliefs related to addiction and craving, and the duration of abstinence, according to the presence of a PD.

Relationship between self-deception and beliefs, craving, and abstinence in substance-dependent patients

Bivariate correlations were analyzed between the questionnaire's mean score for core beliefs and the IAM questionnaire factors. Seven factors were significantly related to the beliefs that were evaluated. The correlation was significant and positive for the factors: General (.423), Self-deception (.495), Insincerity (.421), Rejection (.389), Fantasies (.374), Selfishness (.430), and Desirability (.387). An in-depth analysis of beliefs showed that some were associated with more factors, which could have a more prominent role in Self-deception (Table 3). Such beliefs relate to difficulties accepting the addiction as a chronic disorder, and placating addiction problems by using biological variables. The factors that correlated with the greatest number of addiction-related core beliefs were: Self-deception, which correlated with 11 of the 17, Projection which correlated with 10, and Distortion which correlated with 11.

The regression analysis, in which the criterion variable was the mean score in the core beliefs questionnaire and the dependent variable was Self-deception, showed that the degree to which patients identified with the beliefs positively predicted their level of Self-deception ($\beta = .495$, $p = .005$; $R^2 = .245$). The same thing occurred with the craving that the patient experiences at the time of the evaluation, which also predicted the level of Self-deception ($\beta = .432$, $p = .000$; $R^2 = .432$). Moreover, the correlation analysis showed that beliefs related to the craving related significantly and positively to the Self-deception dimension ($r = .524$, $p = .003$).

On the other hand, it was found that the Self-deception factor negatively predicted the duration of abstinence: the higher the Self-deception, the lower the duration of abstinence ($\beta = .-271$, $p = .036$; $R^2 = .07$). In the bivariate correlation analysis of the IAM questionnaire factors and days of abstinence, the General scale, the Self-deception dimensions of Denial and Mixtification, as well as the components of Rejection, Amnesia, Projection, Distortion, Interest, and Non-pragmatism had a significant negative correlation with the days of abstinence (Table 4).

The regression analysis in which the criterion variable was the average score for beliefs related to addiction and the dependent variable was craving at the time of the evaluation (measured through the item "Now, I feel like consuming" from the Beliefs questionnaire), showed that the patients who identified more with addition-related beliefs had higher levels of craving ($\beta = .860$, $p = .000$; $R^2 = .739$).

Discussion

This study demonstrates that self-deception is a relevant variable in substance-dependent patients, as it is significantly associated with abstinence, addiction-related beliefs, craving, and the presence of a PD.

The self-deception dimension from the IAM questionnaire does not differ in terms of the type of substance consumed or for the age of the participants. Furthermore, time in treatment is not related to self-deception. This finding suggests that simply remaining in treatment is not enough to change self-deception, and so its improvement should require a specific approach.

Our results also showed that the probability of the patient remaining abstinent increases if the patient presents lower levels of self-deception. Therefore, self-deception becomes a therapeutic target, as lowering its level could improve the prognosis for increasing the duration of abstinence.

The patients with a PD tended to deceive themselves more in comparison to non-dual patients. Borderline PD patients present the highest scores of self-deception —which is consistent with the observed clinical symptoms of these patients—, followed by dependent PD. This falls in line with findings by Moral et al. (2012), which showed that people with emotional dependence reported higher levels of self-deception in comparison to other disorders. The present paper reveals that personality plays a relevant role in the tendency of patients to deceive themselves, which corresponds with other studies that have shown how personality plays a central role in denial (Tirapu, Fernández, & Verdejo-García, 2011), an essential part in the act of deceiving oneself.

The analysis of the association between the factors from the IAM questionnaire and the addiction-related core beliefs highlighted essential aspects in understanding the concept of self-deception. On the one hand, some of the beliefs appear to have more weight in the link established between self-deception and the beliefs that underpin addictive behavior. These beliefs revolve around the conviction that drug consumption leads to

Table 3
Significant correlations between the factors of the IAM questionnaire and addiction-related beliefs. Content of the items may be seen in the Annex

		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 8	Item 9	Item 10	Item 11	Item 13	Item 14	Item 15	Item 16	Item 17
General scale	Correlation Pearson	.525**		.422*	.377*	.441*			.456*					.389*		
	Sig.	.003		.020	.040	.015			.011					.034		
Self-deception	Correlation Pearson	.474**	.363*	.432*		.411*			.469**	.388*	.429*	.384*	.363*	.447*		.362*
	Sig.	.009	.049	.017		.024			.009	.034	.018	.036	.048	.013		.050
Manipulation	Correlation Pearson	.382*														
	Sig.	.041														
Denial	Correlation Pearson	.476**		.384*	.394*	.453*			.503**							
	Sig.	.009		.036	.031	.012			.005							
Mixtification	Correlation Pearson	.514**		.426*	.448*	.459*			.403*							
	Sig.	.004		.019	.013	.011			.027							
Insincerity	Correlation Pearson	.501**		.368*												
	Sig.	.006		.046												
Selfishness	Correlation Pearson	.379*														
	Sig.	.042														
Rejection	Correlation Pearson	.480**			.444*	.498**	.379*	.388*	.517**					.384*		
	Sig.	.008			.014	.005	.039	.034	.003					.036		
Selectiva amnesia	Correlation Pearson	.408*				.396*			.519**	.399*	.372*			.396*		
	Sig.	.028				.030			.003	.029	.043			.030		
Projection	Correlation Pearson	.478**		.478**	.549**	.440*	.572**	.456*	.482**	.408*		.397*	.424*			
	Sig.	.009		.008	.002	.015	.001	.011	.007	.025		.030	.020			
Wishful thinking	Correlation Pearson								.374*		.437*			.392*		
	Sig.								.042		.016			.032		
Distorted self-perception	Correlation Pearson							.379*								
	Sig.							.039								
Interested perception	Correlation Pearson	.465*		.441*	.383*	.473**			.521**		.461*	.401*	.384*	.437*	.362*	
	Sig.	.011		.015	.037	.008			.003		.010	.028	.036	.016	.049	.018
Non-pragmaticism	Correlation Pearson	.474**		.434*	.438*	.431*			.538**					.371*		
	Sig.	.009		.017	.016	.017			.002					.043		
Misanthropy	Correlation Pearson	.454*				.437*										
	Sig.	.013				.016										
Social Desirability	Correlation Pearson	.487**		.403*	.423*	.525**			.467**					.371*		
	Sig.	.007		.027	.020	.003			.009					.043		

* The correlation is significant at the level 0.05
** The correlation is significant at the level 0.01

the strengthening of ability, creativity, and coping skills, and improves their identity and existential feeling of confronting the void that the cessation of consuming leaves in the substance-dependent patient. On the other hand is the difficulties of patients to completely accept the sickness. It is likely that self-deception plays an essential role in the process of confronting the existential void described by some substance-dependent patients (Aguilar, Pérez, & Sánchez, 2003), and that it could influence the delay in acceptance of the disease.

There are three factors of the IAM questionnaire that appear to play a more prominent role in relation to the presence of these kinds of core beliefs; Projection: the patients blame others for failures during the maintenance of abstinence; Interested/distorted perception of reality: the patients take into account only what interests them, dismissing the information that contradicts their vision of reality; Self-deception: the patients' tendency to distort the perception of themselves and to create a convenient reality, leading the individual to transform reality without regard to its outcome. At the same time, this increases his/her difficulty to openly express what he/she truly thinks (Martínez-González et al., 2013). Not unconditionally accepting permanent abstinence could promote self-deception as a coping mechanism for the discomfort experienced when imagining being abstinent for the rest of one's life. Findings show that when patients tend to deceive themselves more, they are less convinced about the need to remain definitely abstinent, as evaluated by their beliefs.

Table 4
Factors from the IAM questionnaire that correlate with days of abstinence

		Days of abstinence at the time of evaluation
General scale	Sig. Pearson Correlation (bilateral) N	-.349** .005 63
Self-deception	Sig. Pearson Correlation (bilateral) N	-.268* .034 63
Denial	Sig. Pearson Correlation (bilateral) N	-.378** .002 63
Mixtification	Sig. Pearson Correlation (bilateral) N	-.314* .012 63
Rejection	Sig. Pearson Correlation (bilateral) N	-.360** .004 63
Selective amnesia	Sig. Pearson Correlation (bilateral) N	-.405** .001 63
Projection	Sig. Pearson Correlation (bilateral) N	-.333** .008 63
Wishful thinking	Sig. Pearson Correlation (bilateral) N	-.234 .065 63
Distored self-perception	Sig. Pearson Correlation (bilateral) N	-.260* .040 63
Interested perception	Sig. Pearson Correlation (bilateral) N	-.371** .003 63
Non-pragmaticism	Sig. Pearson Correlation (bilateral) N	-.346** .005 63

** The correlation is significant at the level of 0.01
* The correlation is significant at the level of 0.05

The desire to consume at the time of the evaluation can predict the patient's degree of self-deception, which confirms the importance of craving in the development of self-deception. Self-deception eliminates and minimizes the discomfort derived from the conflict between what one would like and what one should do, allowing one to feel good momentarily despite knowing that the decision to consume has negative consequences. In this association of craving with self-deception, decision-making could play an essential role, in terms of its importance in substance abuse (Fernández-Serrano, Pérez-García, & Verdejo-García, 2009). With respect to the analysis of relapse in drug consumption, self-deception can play a central role (Blanco et al., 2007) because it facilitates the patient's act of letting him/herself go. This happens even when the individuals know the consequences of consuming again, and nonetheless assume and underestimate the potential risk for their own convenience, despite the many previous failed attempts directed at controlled consumption. In these decisions, addiction-related beliefs seem to intercede, questioning the need to definitively abstain from consumption and thus facilitating craving. In other words, beliefs relate to the non-acceptance of the addiction as a chronic illness.

The therapeutic implication of the present study's results on substance abuse in general and in particular with patients who also have a PD is clear, in terms of its importance for orienting therapeutic interventions to a deactivation of self-deception. We have shown in this study that self-deception in addicts tends to become chronic or dissolve depending on the presence of addiction-related and craving core beliefs. In light of the association between addiction-related beliefs with some factors of the questionnaire, one could suggest that self-deception may block the attempts of dismantling beliefs associated with consumption through consistent mechanisms of lying to reject consequences, denying explanations that contradict the irrational beliefs, confusing fantasy with reality through the veracity of fallacies, definitively ignoring what one does not like, and presenting a desirable image to others instead of being coherent with one's way of thinking.

The present study has some limitations. Importantly, the sample size is small, was recruited consecutively, and thus, it is heterogeneous. Future studies with larger samples should analyze self-deception in more detail in the different PDs. Also, information was collected through self-reports, as this is the only possible way to measure beliefs. Further future research should review and delve into the evolution of self-deception throughout treatment in order to understand the influence of this variable in treatment outcomes.

Acknowledgements

References

Aguilar, F., Pérez, M., & Sánchez, M. (2003). *Evaluación emocional en drogodependientes* [Emotional assessmnet in drug addicts]. Sevilla, Spain: Junta de Andalucía.

APA (2002). *DSM-IV-TR Diagnostic and Statistical Manual of mental disorders, IV Revised Text*. Barcelona, Spain: Masson.

Beck, A. T., Wright, F. D., Newman, C. F., & Liese, B. S. (1999). *Cognitive therapy of drug abuse*. Barcelona, Spain: Paidós.

Blanco, P., López, B., & Sirvent, C. (February, 2007). *Psicopatología del autoengaño en adicto*s [Psychopathology of self-deception in addicts]. 8º Congreso Virtual de Psiquiatría. Interpsiquis. Retrieved from http://www.psiquiatria.com.

Elser, J. (1983). *Sour grapes*. Cambridge, England: Cambridge University Pres.

Fernández-Serrano, M. J., Pérez-García, M., & Verdejo-García, A. (2009). A neuropsychological consequences of alcohol and drug abuse in cold. *Journal of Psychopharmacology, 24*(9), 1317-1332.

Ferrari, J. R., Groh, D. R., Rulka, G., Jason, L. A., & Davis, M. I. (2008). Coming to terms with reality: Predictors of self-deception within substance abuse recovery. *Addiction Disorders & Their Treatment, 7*(4), 210-218.

First, M., Spitzer, R., Gibbon, M., & Williams, J. (1999*). User's guide for the Structured Clinical Interview for DSM-IV Axis I Disorders* (SCID-I). Madrid, Spain: Masson.

López-Ibor, J., Pérez, A., & Rubio, V. (1996). *Examen Internacional de los Trastornos de la Personalidad*; *Módulo DSM-IV* [International Review of Personality Disorders; DSM-IV module]. Madrid, Spain: Organización Mundial de la Salud.

Martínez-González, J. M., & Verdejo-García A. (2011). Creencias básicas adictivas y *craving* [Basic addictive beliefs and craving]. *Adicciones, 23*(1), 339-352.

Martínez-González, J. M., & Verdejo-García, A. (2014). *Drogodependientes con trastornos de la personalidad. Guía de intervenciones psicológicas* [Drug addicts with personality disorders]. Bilbao, Spain. Desclée de Brouwer.

Martínez-González, J. M., Verdejo-García, A., & Becoña, E. (2013). Estudio exploratorio del impacto de las creencias nucleares relacionadas con la adicción en el consumo tras la abstinencia [An exploratory study on the impact of nuclear beliefs related to addiction in consumption after withdrawal]. *Trastornos Adictivos, 14*(4), 105-111.

Moral, M., Sirvent, C., & Blanco, P. (February, 2012). *Autoengaño en adictos y dependientes emocionales* [Self-deception in addicts and emotional dependents]. XIII Congreso Virtual de Psiquiatría. Interpsiquis.com. Retrieved from http://psiquiatria.com.

Porcel, M., & González, R. (2005). El engaño y la mentira en los trastornos psicológicos y sus tratamientos [Deception and lie in psychological disorders and their treatments]. *Papeles del Psicólogo, 26*(92), 109-114.

Sirvent, C., Blanco, P., Villa, M., & Rivas, C. (February, 2014). *Mixtificación y adicción* [Mixtification and addiction]. XV Congreso Virtual de Psiquiatría. Interpsiquis. Retrieved from http://psiquiatria.com.

Sirvent, C., Moral, M., Blanco, P., Rivas, C., Quintana, L., & Campomanes, C. (2011). *Vivir en el autoengaño* [Living in self-deception]. Psicología.com. Retrieved from http//hdl.handle.net/10401/4351.

Sirvent, C., Rivas, C., Fernández, C., Blanco, P., Palacios, L., & Delgado, R. (February, 2008). *Psicoterapia del engaño* [Psychotherapy of deception]. *9° Congreso virtual de Psiquiatría*. Interpsiquis. Retrieved from http://psiquiatria.com.

Tirapu, Fernández, M., & Verdejo-García, A. (2011). Conciencia y negación en adicciones. In E Pedrero (Coord.), *Neurociencia y adicción* [Neuroscience and addiction] (pp. 377-394). Valladolid, Spain: Sociedad Española de Toxicomanías.

Von Hippel, W., & Trivers, R. (2011). The evolution and psychology of self-deception. *Behavioral and Brain Science, 34*(1), 1-16.