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ORIGINAL ARTICLE

Measuring the beliefs on alcohol craving by using craving beliefs questionnaire: preliminary results of its psychometric properties in a Turkish sample

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Abstract

Introduction: Therapist can assess patients' maladaptive beliefs about drug via Craving Beliefs Questionnaire (CBQ), which was originally developed by Wright to measure beliefs about the craving phenomenon. The aim of the study is to assess the psychometric properties of CBQ and its usefulness in the patients with alcohol dependency. *Method*: The study population was consisted of 70 alcohol addict male patients. Beliefs about substance use questionnaire (BSU), craving beliefs questionnaire (CBQ), Beck anxiety inventory (BAI), clinical institute withdrawal assessment (CIWA), automatic thoughts questionnaire (ATQ) and dysfunctional attitudes scale (DAS) were used as the assessment tools. *Results*: The internal consistency of the CBQ for the alcohol dependent was adequate (Cronbach's alpha 0.94). Item-total score correlations were between 0.50 and 0.84 for alcohol-dependent patients. The principal component analysis revealed one main factor. Positive correlations found between CBQ, and BSU, BAI and ATQ. In discriminant validity analysis, mean CBQ scores were found significantly higher than occasional drinkers and none-alcohol drinkers. *Conclusion*: Our results supported that the Turkish version of the CBQ has an adequate instrument for evaluating alcohol-related craving beliefs in alcoholic patients. However, further studies should be performed for assessing its validity in large number of social drinkers and alcohol-dependent patient.

Introduction

There are many interacting factors that take part in the etiology of alcohol and substance abuse and addiction. Drug availability, social acceptability, the person`s wondering about how the drug`s effect on the body, and peer pressures are mostly the leading factors to try the drugs out (Sadock et al., 2007). Furthermore, genetic vulnerability, having a diagnosis of an attention-deficit hyperactivity disorder (van Emmerik-van Oortmerssen et al., 2012), socioeconomic status (Lemstra et al., 2008), and environmental stressors like childhood trauma are also mostly reported risk factors (Enoch, 2006).

Craving is an important phenomenon that has significant contribution to substance dependence for individuals. Craving is often described as a strong need, or urge to drink, and craving behaviors have been included in the definition of alcohol dependence. In the literature on dependency, craving is one of the actively debated topics. Despite some authorities invite clinicians to tighten the use of the term craving (Kozlowski & Wilkinson, 1987), the term has still different meanings to different disciplines, and consequently different operational criteria (Drummond et al., 2000; Shiffman, 2000).

As craving is related to thoughts, emotions, images, and urges after taking substance and also is defined as a subjective experience; it can be only assessed with self-report scales (Shiffman, 2000). According to Rosenberg (Rosenberg, 2009), focusing only on the intensity, frequency or duration of craving may fail to assess especially craving of drug users' attributes to the feelings for another physiological or psychological state. Craving is related to multicomponent dimensions of behavior. Assessing different psychological dimensions of craving may help predicting different types of outcomes (Sinha et al., 2006).

There are a number of theories about the course and etiology of drug craving. Tiffany mentioned four cognitive models for craving: cognitive labeling model, outcome expectancy model, dual-affect model, and cognitive processing model (Tiffany, 1999). Craving behavior type, beliefs about cravings, and belief-related results of craving might be perpetuating factors in alcohol and substance use disorders.

Most of the addiction sufferers find it difficult to resist the craving, and they have facilitative beliefs about substance use that leads to lapse. The high-risk situations followed by substance-related beliefs, automatic thoughts, the feeling of urges

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and cravings, facilitative beliefs and substance use behavior make up the vicious cycle of addiction (Mitcheson et al., 2010).

Beck et al. (2011) defined a cognitive model through the observation that dysfunctional beliefs may also play an important role in the substance use behavior. With this model, addictive behaviors were described as behaviors that come out of the interplay between layers or levels of beliefs. In this model, when an addict faces a very risky situation, like seeing friends using a substance or feeling depressed, some beliefs about substance use are activated and then the automatic thoughts about using the drug are activated. That makes the addict feel urge and craving to use the substance.

In order to assess addicts' beliefs about substance cravings, Wright developed a self-report questionnaire named "Craving Belief Questionnaire – CBQ". It is aimed to define substance addicts' beliefs about craving for substance and to rate how much they agree or disagree with each craving belief statements by using this questionnaire. The questionnaire is composed of 20 statements that can be rated from 1 "totally disagree" to 7 "totally agree" (Wright, 2001).

In this study, we aimed to evaluate the validity and reliability of the Turkish version of the CBQ that can be used in cognitive-behavioral therapy studies, and helpful in understanding patients' cognitive beliefs during craving toward alcohol and substances. As the CBQ, originally created to measure the craving beliefs among substance dependent patients, was used in measuring alcohol craving beliefs for the first time, the current study sought to extent its usefulness in alcohol-dependent patients.

Material and methods

Patient sample

The study was performed at Dışkapı Yıldırım Beyazıt Teaching and Researching Hospital, Department of Psychiatry. Seventy alcohol-addicted male patients diagnosed with SCID-I according to DSM-IV, 31 healthy volunteers who had never used alcohol and 33 healthy volunteers who consumed alcohol regularly without alcohol addiction or alcohol abuse diagnosis were included in our study. The addict patients were admitted to the inpatient unit, and completed physical addiction detoxification treatment. The exclusion criteria were having diagnoses of schizophrenia, bipolar disorder or dementia. The healthy volunteers who had never used alcohol and the ones who consumed alcohol regularly were gathered from the hospital staff by the snowball technique. Written informed consent forms were provided from all the participants.

Measurements

Beliefs about substance use questionnaire (BSU), craving beliefs questionnaire (CBQ), Beck Anxiety Inventory (BAI), Clinical institute withdrawal assessment (CIWA), automatic thoughts questionnaire (ATQ) and dysfunctional attitudes questionnaire (DAS) were used as the assessment tools.

Craving beliefs questionnaire (CBQ) is a 20-item scale which measures beliefs about substance cravings and responses are given on a 7-point Likert-Scale (Wright,

2001). It was translated from the English version of CBQ into Turkish.

The Beliefs about Substance Use (BSU) scale is a 20-item self-report measure, which is rated on a 7-Point Likert-Scale from "totally disagree" to "totally agree". Higher scores are related to greater maladaptive beliefs about substance use. Higher scores on the BSU have also been associated with less sustained abstinence following substance-focused interventions (Crits-Christoph et al., 2013). It was translated from the English version of BSU into Turkish and its reliability was shown in a recent study (Aslan et al., 2012).

Beck Anxiety Inventory (BAI) is a 21-item scale which measures common symptoms of anxiety (Beck et al., 1988). It was developed by Beck et al and has been widely used in assessing clinical anxiety situations. The Turkish version of BAI was developed and psychometric properties were studied by Ulusoy et al. (1998).

The Clinical Institute Withdrawal Assessment (CIWA) is a scale developed by Sullivan et al. in order to assess and treat alcohol withdrawal syndrome and alcohol detoxification. This 10-item scale assesses withdrawal signs, giving a cumulative score that indicates the necessity of treatment. Kalyoncu et al. have translated this scale to Turkish (Kalyoncu et al., 2007; Mirsal et al., 2000; Sullivan et al., 1989).

Automatic Thoughts Questionnaire (ATQ) is a 30-item scale that measures both the frequency of occurrence and degree of automatic negative thoughts (negative self-statements) (Hollon & Kendall, 1980). This scale is reliably used in both adults and children in order to detect negative automatic thoughts related with depression (Kazdin, 1990). The Turkish version of ATQ was developed and psychometric properties were studied by Sahin & Sahin (1992b).

Dysfunctional attitude scale (DAS) is a 40-item scale that measures dysfunctional cognitive distortions related with depression (Weissman & Beck, 1978). DAS has four subscales: Performance Evaluation, Need for Approval, Autonomous Attitude, and Perfectionism. Turkish version of DAS has been developed and studied by Sahin & Sahin (1992a).

Procedures

The present study was performed with the same patient and control groups previously evaluated for the validity and reliability of the Turkish version of the "Beliefs About Substance Use Questionnaire" (Aslan et al., 2012). The ethical approval was obtained together with the previous study.

The author's permission for linguistic validation of Turkish CBQ has been taken for this study. The original version of the CBQ questionnaire has been translated to Turkish by two different researchers and reviewed by them for linguistic equivalence and appropriateness of the phraseology. Preliminary applications have been carried on patients and agreement on one translation text has been provided. The Turkish version has been back translated to English as to define the changes that may occur in the meanings of the statements. Considerable attention was given to provide the cultural and linguistic relevancy of the items. The final version of the questionnaire has been developed and applied for this clinical research after preliminary study corrections were made.

The tests have been given three days after 2-week benzodiazepine treatment for abstinence has been ceased. Discriminative validity was calculated by comparing the findings from the CBQ survey applied to alcohol addicts, social drinkers and the ones that have never used alcohol to evaluate validity. Correlations of DAS, BSU and ATQ with CBQ in alcohol addicts were investigated to evaluate similar test validity. Withdrawal symptoms of the subjects have been assessed using CIWA.

In order to evaluate reliability, internal consistency measures of the questionnaire have been done. The internal consistencies of the resulting components were determined by Cronbach's alpha values, which are indicated as item total correlations/ and intra-class correlation (ICC). An ICC above 0.75 indicates excellent internal reliability. To compensate for the increased likelihood of type-1 error caused by multiple comparisons, the alpha level was adjusted so that $p < 0.01$ was required for statistical significance.

Results

Mean age of the addict patients was 42.3 ± 7.0; whereas mean age of the healthy controls was 33.5 ± 9.9 and the mean age of the healthy controls accepted as social drinkers was 33.2 ± 8.9. In patient group, mean alcohol dependency duration was found to be 15.10 ± 8.34 years.

Validity evaluation

Mean psychometric test scores of patients with alcohol addiction are given in Table 1. Mean CBQ scores of all three groups were given in Figure 1. To assess the discriminative validity, difference among the mean CBQ scores of the three research groups were significant based on the ANOVA test. CBQ mean scores of alcohol addicts (68.0 ± 30.3) were found to be significantly higher than healthy controls (20.0 ± 0.0) and social drinkers (32.5 ± 17.4) ($p < 0.001$). ANOVA test pointed to a significant difference between the three groups and Tukey test in *post hoc* analysis showed that mean CBQ score of alcohol addicts was significantly higher than healthy controls and social drinkers (Table 2) ($p < 0.001$). On the other hand, mean CBQ scores of social drinkers and healthy group was not significantly different (Table 2). This findings supports that for all subgroup analysis, CBQ was able to distinguish

Table 1. Mean scores of alcohol addict patient group on research scales.

Scale	Mean Scores	Std. Deviation
BSU	46.43	21.21
CBQ	68.10	30.30
ATQ	75.69	27.89
CIWA	15.45	7.93
BAI	19.95	13.95
DAS – Perfectionism	60.33	20.67
DAS – Need for Approval	33.84	11.95
DAS – Autonomous Attitude	18.46	6.02
DAS – Performance Evaluation	19.35	6.58

BSU: Beliefs about substance use questionnaire; CBQ: Craving beliefs questionnaire; ATQ: Automatic thoughts questionnaire; DAS: Dysfunctional attitudes questionnaire; CIWA: Clinic institute withdrawal assessment; BAI: Beck Anxiety Inventory.
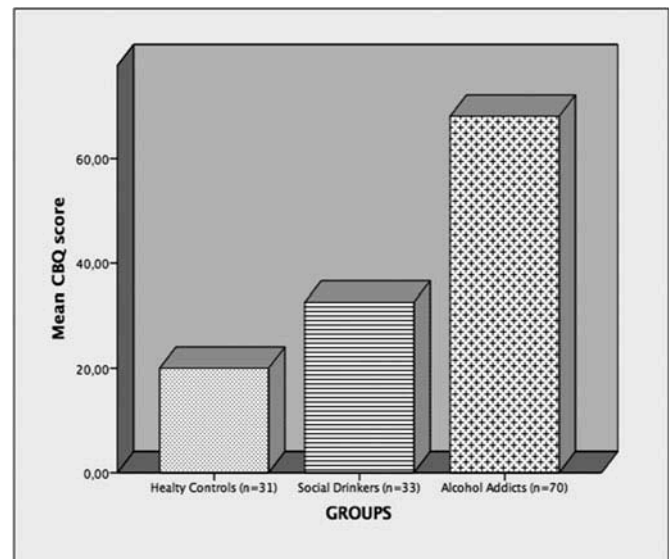

Figure 1. Mean CBQ scores of research groups.

Table 2. *Post hoc* multiple comparisons of three groups on CBQ scores.

Dependent Variable	(I)	(J)	Mean Difference (I - J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	Upper Bound
CBQ	0	1	−12.57	5.91	0.088	−26.58	1.43
		2	−48.10*	5.09	0.000	−60.18	−36.02
	1	0	12.57	5.91	0.088	−1.43	26.58
		2	−35.52*	4.98	0.000	−47.35	−23.69
	2	0	48.10*	5.09	0.000	36.01	60.18
		1	35.52*	4.98	0.000	23.69	47.35

0: Healthy Controls; 1: Social Drinkers; 2: Alcohol Addicts; CBQ: Craving beliefs questionnaire.
*: The mean difference is significant at the $p < 0.001$ level.

alcohol addicts significantly from social drinkers and healthy controls.

Concurrent validity has been shown by positive correlations between ATQ and CBQ scores, BAI and CBQ scores and BSU and CBQ scores (Table 3). These findings tell us that the beliefs about providing a positive relief after substance use have a positive relationship with anxiety level and higher depressive automatic thoughts.

Reliability evaluations and factor analysis

Internal reliability of CBQ was found to be excellent for alcohol addicts (Cronbach's alpha = 0.948). The results showed that the Kaiser–Meyer–Olkin index was 0.877 and Bartlett's test of sphericity was significant at <0.001, indicating adequate sampling and significant correlations among the variables, fitting the statistical assumptions required for factor analysis. Although exploratory factor analysis showed three factors to have Eigen value above 1, scree-plot test showed that all the 20 items were found to load on one distinctive factor, with an Eigen value of 10.24 and the cumulative percentage accounted for 51.18%
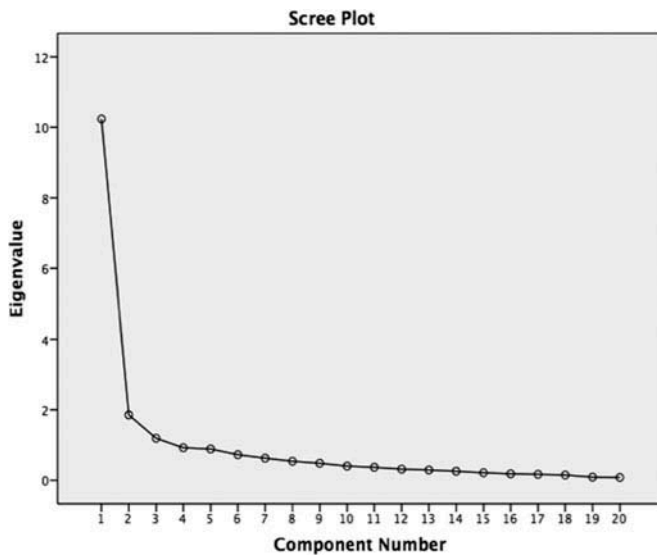
Scree Plot

Figure 2. Result of scree plot test.

of the total variance (Figure 2). All 20 items loaded positively on this factor, with factor loadings ranging from 0.48 to 0.86.

Other correlations

When patients and control groups test scores correlation were evaluated, both ATQ total score was positively correlated with BSU and CBQ. CIWA scores were positively correlated with BSU and BAI. BSU and CBQ were also positively correlated with BAI (Table 3).

Discussion

Our findings show that Turkish version of CBQ can significantly distinguish alcohol addicts from healthy controls and social drinkers with adequate discriminative validity. It can be used to evaluate cognitive beliefs of alcohol-addicted patients about craving. The questionnaire also has adequate internal consistency and reliability. Another significant finding of this study is that alcohol addicts' craving beliefs about substance/alcohol use are positively correlated with negative beliefs about substance use and higher anxiety.

Turkish version of CBQ can not only distinguish alcohol addicts from healthy subjects, but also it can distinguish alcohol addicts from social drinkers. Furthermore, CBQ scores were also correlated with anxiety. Anxiety is usually a common and overlooked problem with addiction. Our findings are consistent with pervious findings that withdrawal-induced craving and anxiety were strongly associated (Swift & Stout, 1992). Although, neither anxiety nor craving was found to be a predictor of alcohol relapse (Sinha et al., 2011), the positive correlation between CBQ scores and anxiety can help clinicians remember that anxiety is a problem.

Importance of craving and craving related cognitive beliefs about substance or alcohol was mentioned in the literature (Sinha et al., 2011; Turkcapar et al., 2005). Beliefs

Table 3. Correlations of CBQ, BSU, ATQ, BAI, CIWA and DAS scores.

Scale		CBQ
ATQ	Pearson Correlation	0.441*
	Sig. (2-tailed)	0.000
	N	68
BSU	Pearson Correlation	0.513*
	Sig. (2-tailed)	0.000
	N	68
BAI	Pearson Correlation	0.375*
	Sig. (2-tailed)	0.009
	N	48
CIWA	Pearson Correlation	0.147
	Sig. (2-tailed)	0.238
	N	66
DAS – Perfectionism	Pearson Correlation	−0.100
	Sig. (2-tailed)	0.512
	N	45
DAS – Need For Approval	Pearson Correlation	0.157
	Sig. (2-tailed)	0.303
	N	45
DAS – Autonomous Aptitude	Pearson Correlation	−0.059
	Sig. (2-tailed)	0.699
	N	45
DAS – Performance Evaluation	Pearson Correlation	0.096
	Sig. (2-tailed)	0.531
	N	45

BSU: Beliefs about substance use questionnaire; CBQ: Craving beliefs questionnaire; ATQ: Automatic thoughts questionnaire; DAS: Dysfunctional attitudes questionnaire; CIWA: Clinic institute withdrawal assessment; BAI: Beck Anxiety Inventory.
* Correlation is significant at the $p < 0.01$ level (2-tailed).

about craving and the severity of physical dependence mentioned to play an important role in relapse of male alcoholic patients. These factors could have a direct clinical application for predicting relapse to drinking in male alcohol-dependent patients (Turkcapar et al., 2005). However, craving was not found useful for prediction of time to relapse to heavy drinking, it was found useful for prediction of time to alcohol consumption, which is premise state of heavy drinking (Sinha et al., 2011). CBQ scores may also help clinicians to identify the addicted patients who will relapse early. That is why, it is so important for a clinician to measure craving and beliefs about alcohol craving. In addition, beliefs that the patients endorse highly can become important targets for intervention in cognitive-behavioral treatment.

To our knowledge, this is the first study in literature that CBQ is used for measuring beliefs on alcohol craving. Measuring beliefs on craving may help clinicians to focus directly on manipulating craving beliefs through cognitive therapy.

The original form of CBQ can be found in Beck`s book "Cognitive therapy of substance use", which is one of the major sources of this field. We have found only two studies written in English in which the CBQ is used in the literature (Lee et al., 2010; Loeber et al., 2006). Except the Turkish version, there is another version of CBQ too. Chang et al. found that Chinese version of Craving Beliefs Questionnaire (CCBQ) is an easy-to-administer assessment instrument of measurement of craving beliefs for heroin abusers. Like our results, the psychometric properties of the CCBQ seem promising for both research and clinical purposes (Chang et al., 2011).

The limitation of this study is that the patient group consisted of only alcohol-addicted patients. CBQ was shown to be a useful measurement tool for craving in substance-addicted patient group. Further studies should be organized to determine reliability and validity of CBQ in substance-addicted patient group, especially for females, outpatients, and those with addictions to other substances besides alcohol.

Conclusion

The primary findings in this article support that the 20-item Turkish version of CBQ meets the criteria of a short and easy to administer assessment instrument with great psychometric properties. CBQ seems to measure craving beliefs successfully not only on drugs but also on alcohol. We hope that Turkish version of CBQ will be used in new research studies in Turkey. Findings of further studies will provide more knowledge about different craving beliefs of addicted patients.

Acknowledgements

Declaration of Interest

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