



## RESEARCH ARTICLE

# Do psychological inflexibility and self-criticism mediate the relationship between depression and addiction severity?

Sevinc Ulusoy<sup>1</sup>, Enver Denizhan Ramakan<sup>1</sup>, Veysel Gulec<sup>1</sup>, Izgi Alniak<sup>2</sup>, Kaasim Fatih Yavuz<sup>3</sup>

<sup>1</sup>Bakirkoy Prof. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Department of Psychiatry, Istanbul, Turkiye

<sup>2</sup>Bakirkoy Prof. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Treatment and Training Center for Alcohol and Substance Dependence (AMATEM), Istanbul, Turkiye

<sup>3</sup>Istanbul Medipol University, Department of Psychology, Istanbul, Turkiye

### ABSTRACT

**Objective:** Self-related problems and psychological inflexibility, which can also lead to a vulnerability to depression, often accompany substance use disorders. This study examined whether psychological inflexibility and self-criticism mediated the relationship between depression and addiction severity.

**Method:** We examined 111 patients with Substance use disorders (SUDs) using the Addiction Profile Index (API), Beck Depression Inventory (BDI), Forms of Self-criticizing/Attacking and Self-reassuring Scale (FSCRS), and Acceptance and Action Questionnaire-Substance Abuse (AAQ-SA). Mediation analysis was conducted to examine the mediating role of psychological inflexibility on the relationship between depression and addiction severity.

**Results:** API total score was negatively correlated with AAQ-SA and positively correlated with BDI and FSCRS. Because FSCRS did not have a significant predictive effect on addiction severity ( $p=0.966$ ), only AAQ-SA was included in the mediation analysis. According to the results of the mediation analysis, depression was found to directly affect addiction severity (direct effect,  $p=0.007$ ), and it constitutes 54.5% of the total effect. Also, depression predicted addiction severity (indirect effect,  $p<0.001$ ) through psychological flexibility, and it constitutes 45.5% of the total effect.

**Conclusion:** According to our findings, psychological inflexibility is an important variable between depression and addiction severity. Although patients with SUDs may have negative evaluations about self, they may not use self-criticism as a coping strategy. Psychological inflexibility may be a substantial target for interventions in patients who use substances to avoid depressive symptoms.

**Keywords:** Experiential avoidance, depression, psychological inflexibility, self-criticism, substance use disorders

## INTRODUCTION

Substance use disorders (SUDs) are still an ongoing public health problem despite effective pharmacological

or psychotherapeutic treatments. High relapse rates between 60% and 90% were found in the first year after treatment onset when lapses were also considered (1,2). Therefore, it is essential to determine the factors that

**How to cite this article:** Ulusoy S, Ramakan ED, Gulec V, Alniak I, Yavuz KF. Do psychological inflexibility and self-criticism mediate the relationship between depression and addiction severity? *Dusunen Adam J Psychiatr Neurol Sci* 2022;35:130-137.

**Correspondence:** Enver Denizhan Ramakan, Bakirkoy Prof. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology, and Neurosurgery, Department of Psychiatry, Istanbul, Turkiye

**E-mail:** denizhanramakan@gmail.com

**Received:** May 09, 2022; **Revised:** May 31, 2022; **Accepted:** June 06, 2022

facilitate and manifest alcohol and substance use to improve treatment outcomes and develop new treatment modalities for relapse prevention. Classifying treatments based on their intended processes of change and examining outcomes afterward have been argued recently to promote and consolidate current treatment evidence (3,4).

Similar to other dysfunctional attitudes, the function of substance use depends on the context (5). However, substance use often functions as a defense against adverse situations and stimuli. Experiential avoidance is defined as an attempt to alter the form, frequency, or situational sensitivity of unwanted private events even when doing so causes behavioral harm. From this perspective, alcohol or substance use can be considered a form of experiential avoidance, accompanied by a range of psychological difficulties (6). For example, in alcohol use disorders (AUDs), experientially avoidant individuals were shown more likely to relapse when experiencing negative life events than less avoidant individuals (7). Additionally, despite the expectation that alcohol would reduce distress, poorer outcomes were observed in alcohol use among people with AUDs who manifest high emotional avoidance (8). Also, patients with SUDs have a poor tolerance for unpleasant bodily sensations and undesirable mood states resulting directly from substance use and withdrawal cycles (9,10). Therefore, almost any experience can be linked to drug use, from boredom to emotions such as anxiety, anger, depression, and symptoms of withdrawal (6).

Depressive symptoms are among the most common psychiatric problems among those who seek treatment for SUDs. Accordingly, alcohol and substance use is common among those with mood disorders and who try to alter undesirable mood states. The self-medication hypothesis, as experiential avoidance, to some extent, explains the association between depression and substance use. Patients with SUDs self-medicate with alcohol or illicit drugs to deal with negative emotions (10). On the other hand, they also experience affective symptoms related to substance use (11). Therefore, it should be kept in mind that other processes may contribute to this association.

Studies showed that self-criticism is ineffective in dealing with stressors, increases the likelihood of substance use (12), and has an important role in depression (13). Kannan and Levitt describe self-criticism as an individual's tendency to have high expectations and question the individual's performance. Persons who highly criticize themselves believe that

they perform poorly. It makes them set unattainable standards of behavior for themselves (14). Hull suggested that alcohol makes individuals less reactive to self-relevant information; thus, its function of reducing self-awareness may be a reason for alcohol consumption (15). As a result, alcohol consumption may serve as an experiential avoidance of negative views of the self, such as one's imperfections (16). Also, self-criticism may help to avoid distress, self-critical thoughts, and opportunities for failure that can cause individuals to move away from important goals (17). In the case of depression, the mechanism seems to be bidirectional. Individuals with depressive symptoms tend to express high self-judgment and self-criticism, leading to a vulnerability to depression (18).

Psychological flexibility, a clinical construct targeted by acceptance and commitment therapy (ACT), is defined as "the ability to contact the present moment more fully as a conscious human being, and to change or persist in behavior when doing so serves valued ends" (19). It is contrasted with psychological inflexibility, which contributes to the development and maintenance of various forms of psychopathology such as mood and anxiety disorders (20), SUDs (21,22), and many others (23,24). Experiential avoidance, one aspect of psychological inflexibility, is particularly prominent in substance use. From this point of view, drugs and alcohol can function to control or eliminate unwanted thoughts, emotions, and feelings (25). Theoretically, improved psychological flexibility is thought to foster reductions in substance use due to motivation for change and the ability to deal with aversive experiences, without escape or avoidance (26). Additional evidence on the relevance of psychological inflexibility and SUDs comes from data on interventions targeting psychological flexibility such as ACT. Studies using ACT have shown significant improvements in SUDs (21,27–29).

In light of the scientific evidence, it is plausible to target these psychological processes involved in SUDs and help with arranging specified models. The primary aim of the current study was to investigate the severity of depression, the levels of self-criticism, and psychological flexibility that may be related to the severity of addiction in patients with SUDs and to examine their predictive effects on addiction severity. We also aimed to investigate whether there was a mediational effect of psychological inflexibility and self-criticism on the relationship between depression and addiction severity. We hypothesized that (a) addiction

severity would be predicted by self-criticism, psychological inflexibility, and depression; (b) psychological inflexibility and self-criticism would mediate the relationship between depression and addiction severity.

## METHOD

### Participants and Procedure

Participants were recruited from the inpatient clinic of the Research, Treatment, and Training Center for Alcohol and Substance Dependence (AMATEM) at the Bakirkoy Prof. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology, and Neurosurgery (Istanbul, Turkey) from May 2021 to September 2021. Ethical approval for the study was obtained from the Hospital Ethics Committee (date: December 21, 2020, reference number 2020-25-06).

The sample size was calculated using G-Power. The minimum sample size was calculated as 89 for a power of 95, effect size 0.15, and  $p=0.05$ . The inclusion criteria were as follows: (i) age between 18 and 65 years, (ii) diagnosed with AUDs or SUDs, and (iii) relapsed and participating in an ongoing treatment program. After thorough information about the study, we included those who participated voluntarily and gave valid written informed consent. Patients with delirium, bipolar and related disorders, or psychotic disorders were excluded. Thus, the effect of substance-induced psychiatric disorders was eliminated. However, comorbid psychiatric disorders other than depression were not taken into account in this study.

One of the authors confirmed patients' diagnoses after face-to-face psychiatric interviews. Of 131 patients interviewed, 5 were excluded for declaring unwillingness to participate, 2 for having psychotic symptoms, and 13 for incomplete responses to the questionnaires. The final sample included 111 patients (57 with AUDs, 54 with SUDs) who met the inclusion criteria.

### Measurements

#### *Demographics*

Demographic information was collected using a semistructured form containing items asking participants about their age, sex, education, and marital status.

#### *Addiction Severity*

Addiction severity was assessed using the Addiction Profile Index (API) developed by Ogel et al. (30). This 37-item questionnaire consists of five subscales: characteristics of substance use, criteria for SUD

diagnosis, the effect of substance use in one's life, craving, and motivation for cessation of substance use. Subscale scores are evaluated separately, while the total score is obtained by weighting the subscales. While scores  $<12$  indicate less addiction severity, scores  $>12$  indicate severe addiction. Cronbach's alpha coefficient for the total API was 0.89.

#### *Depression*

Depression was measured using the Beck Depression Inventory (BDI). BDI, developed by Beck et al. (31) to assess the cognitive, affective, and somatic symptoms of depressive disorders, is a 4-point Likert-type scale consisting of 21 items. Higher scores indicate an increase in severity of a depressive mood. Turkish validity and reliability study of the scale was conducted by Hisli (32). Cronbach's alpha coefficient was 0.8.

#### *Self-criticism*

Self-criticism was measured using the Forms of Self-criticizing/Attacking and Self-reassuring Scale (FSCRS). FSCRS, developed to measure the levels of self-criticism and self-reassurance by Gilbert et al. (33), is a 5-point Likert-type scale consisting of 22 items. The scale consists of three subscales: "inadequate-self" (focuses on a sense of personal inadequacy), "hated-self" (measures the desire to hurt or persecute the self), and "reassured-self" (assesses the capacity of self-soothing and the ability to be self-compassionate in case of negative performances). Turkish validity and reliability study was conducted by Bellur et al. (34). Cronbach's alpha coefficients for clinical and nonclinical samples were found to be 0.86 and 0.78 for inadequate-self, 0.85 and 0.74 for reassured-self, and 0.75 and 0.65 for hated-self, respectively. Although there was no total score in the original scale, there are studies that used total scores by reversing the scores of the "reassured-self" subscale (35). In our study, the total score was calculated with this method.

#### *Psychological Flexibility*

Psychological flexibility/inflexibility was measured using the Acceptance and Action Questionnaire-Substance Abuse (AAQ-SA) (36). This 17-item scale was developed specifically for populations with SUD. It consists of two subscales assessing an individual's capacity to accept substance-related memories and urges (defused acceptance) and commitment to sobriety and behaving consistently with values (values commitment). Higher scores represent higher psychological flexibility and lower scores represent higher psychological inflexibility. Turkish validity and reliability study was conducted by Uygur et al. (37). Cronbach's alpha coefficient was 0.736.

**Table 1: Sociodemographic characteristics of AUD and SUD groups**

	AUD		SUD		Total	
	n	%	n	%	n	%
Sex						
Male	56	98.2	50	92.6	106	95.5
Female	1	1.8	4	7.4	5	4.5
Education						
Primary	1	1.8	3	5.7	4	3.6
Secondary	30	52.6	38	71.7	68	61.8
High	14	24.6	12	22.6	26	23.6
University	12	21.1	0	0	12	10.9
Marital status						
Married	29	51.8	17	31.5	46	41.8
Single	13	23.2	31	57.4	44	40
Divorced	14	25	6	11.1	20	18.2

AUD: Alcohol use disorder; SUD: Substance use disorder.

**Statistical Analysis**

The collected data were analyzed using Statistical Package for the Social Sciences (IBM SPSS Statistics 26). Descriptive statistics included frequencies of demographic variables in each group. To test this study’s main hypothesis, Pearson’s correlation analysis was used to examine the associations among the variables. To evaluate potential predictors of addiction severity, a multiple linear regression analysis was performed. API total scores were accepted as the dependent variable and Pearson’s correlation analysis results were considered in determining the independent variables. Accordingly, AAQ-SA, BDI, and FSCRS total scores were included in the analysis as possible independent variables predicting total API scores. The statistical significance level was accepted as  $p < 0.05$ . Furthermore, mediation analysis was conducted to examine the mediating role of psychological flexibility on the relationship between depression and addiction severity. All analyses listed above were performed using IBM SPSS Statistics 26. For mediation analysis, “medmod” module which was developed for Jamovi (2019) Software and “Lavaan package” developed for R (2018) were used.

**RESULTS**

Table 1 summarizes the demographic and clinical characteristics of the participants (Table 1). Of the participants, 5 (4.5%) were females and 106 (95.5%) were males. The mean age of patients with AUDs was

**Table 2: Correlations among variables**

	API total	AAQ-SA	BDI
API	–		
AAQ-SA	-0.603**	–	
BDI	0.476**	-0.460**	–
FSCRS	0.354**	-0.475**	0.544**

r: Pearson’s correlation coefficient; \*,  $p < 0.05$ ; \*\*,  $p < 0.01$ . SD: Standard deviation; AAQ-SA: Acceptance and Action Questionnaire-Substance Abuse; API: Addiction Profile Index; BDI: Beck Depression Inventory; FSCRS: Forms of Self-criticizing/Attacking and Self-reassuring Scale.

45.74 years (SD=8.92) and that of those with SUDs was 33.41 years (SD=9.89). As illustrated in Table 2, Pearson’s correlation analyses showed that addiction severity (API) was negatively correlated with psychological flexibility (AAQ-SA) and positively correlated with the severity of depression (BDI) and self-criticism (FSCRS). Psychological flexibility was moderately and negatively correlated with BDI and FSCRS. Also, a strong positive correlation was found between the total scores of BDI and FSCRS (Table 2).

The regression analysis model, in which API total scores were included as dependent variables and the model consisting of BDI, FSCRS, and AAQ-SA as independent variables, explained 44.7% of the total variance ( $p < 0.001$ ). While BDI positively predicted ( $p = 0.045$ ) and AAQ-SA negatively predicted ( $p < 0.001$ ) addiction severity, FSCRS did not have a significant predictive effect on it (Table 3).

To test the study’s main hypothesis, mediation analysis was used to examine whether psychological flexibility mediated the relationship between depression and addiction severity. Given the lack of a predictive effect of self-criticism on addiction severity, FSCRS was not included in the analysis. According to the mediation analysis results, depression was found to directly affect addiction severity ( $B = 0.07$ , CI: 0.02–0.12,  $p = 0.007$ ) (direct effect), and it constitutes 54.5% of the total effect. In addition, we found that the relationship between depression and addiction severity was partially explained by psychological flexibility ( $B = 0.06$ , CI: 0.02–0.09,  $p < 0.001$ ) (indirect effect), and it constitutes 45.5% of the total effect. The results of the mediation analysis are given in Table 4.

As shown in Table 5, all pathways in mediation analysis were significant. The analysis showed that depression predicted psychological flexibility significantly ( $B = -0.53$ , 95% CI: -0.77 to -0.30,  $p < 0.001$ ). Likewise, psychological flexibility predicted addiction severity ( $B = -0.11$ , 95% CI: -0.15 to -0.06,  $p < 0.001$ ). Finally, depression predicted addiction severity significantly ( $B = 0.07$ , 95% CI: 0.02 to 0.12;  $p = 0.007$ ). According to the Sobel test, the

**Table 3: Predictors of addiction severity**

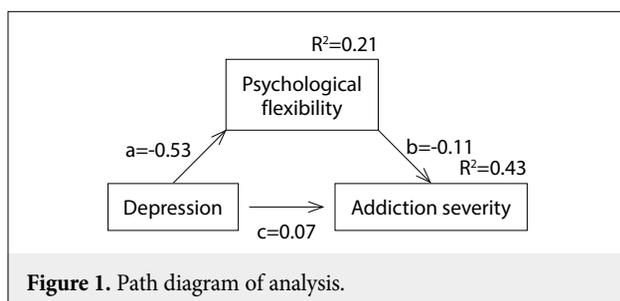
Dependent variable	Independent variables	B	Standard error	$\beta$	t	p
API	AAQ-SA	-0.111	0.023	-0.525	-4.785	<b>&lt;0.001</b>
	BDI	0.059	0.029	0.239	2.046	<b>0.045</b>
	FSCRS	-0.001	0.030	-0.005	-0.043	0.966

Results from multiple linear regression analysis.  $R^2=0.45$ ,  $p<0.001$ . AAQ-SA: Acceptance and Action Questionnaire-Substance Abuse; API: Addiction Profile Index; BDI: Beck Depression Inventory; FSCRS: Forms of Self-criticizing/Attacking and Self-reassuring Scale;  $p<0.05$  statistically significant (bold values).

**Table 4: Mediation estimates of analysis**

Effect	Label	B	SE	Lower	Upper	Z	p	% mediation
Indirect	a×b	0.0563	0.0170	0.0229	0.0897	3.30	<b>&lt;0.001</b>	45.5
Direct	c	0.0674	0.0248	0.0188	0.1159	2.72	<b>0.007</b>	54.5
Total	c+a×b	0.1236	0.0253	0.0741	0.1732	4.89	<b>&lt;0.001</b>	100.0

SE: Standard error; a: Depression → psychological flexibility; b: Psychological flexibility → addiction severity; c: Depression → addiction severity;  $p<0.05$  statistically significant (bold values).

**Figure 1.** Path diagram of analysis.

mediation effect was found to be significant (one-tailed  $p<0.001$ , two-tailed  $p<0.001$ ).

The path diagram of the analysis is shown in Figure 1. In the figure, depression explains 21% of psychological flexibility, while depression and psychological flexibility explain 43% of addiction severity.

## DISCUSSION

Existing literature suggests that depression and SUDs commonly co-occur, and depression comorbidity is related to clinical severity (38–40). Our findings aligned with similar past research and demonstrated a significant positive relationship between addiction severity and depression. We also found that depression was a predictor of addiction severity. Although the relationship between depression and SUD is clear, the mechanisms involved in this relationship are still controversial. Previous research has shown that psychological inflexibility and self-criticism are related to both depression (13,41) and addiction severity (12,25) separately. However, to our knowledge, no previous study has investigated the mediating role of psychological inflexibility and self-criticism in

explaining the relationship between depressive symptoms and addiction severity. In our study, psychological inflexibility mediated the relationship between depression and addiction severity in participants with SUDs. As the severity of depression increased, so did participants' reported psychological inflexibility. In turn, psychological inflexibility was positively associated with addiction severity.

Psychological inflexibility, the core concept of ACT, often occurs when individuals attempt to avoid experiencing unwanted internal events and defines as “the rigid dominance of psychological reactions over chosen values and contingencies in guiding action” (42). The definition of psychological inflexibility is quite similar to experiential avoidance (43). Both have been associated with many kinds of psychopathologies including depression (44–46). Psychological inflexibility processes, such as rumination over negative emotional states and related thoughts, were shown to be effective in the onset, maintenance, and recurrence of depression (47).

On the other hand, increased depression may increase psychological inflexibility/experiential avoidance. In the ACT model, depressive symptoms reflect unwanted internal experiences (thoughts such as “I am broken,” negative memories, anhedonia, depressed mood, and bodily sensations), and depressed individuals tend to engage in avoidant behaviors to reduce these experiences (19,48). Because the dominant use of avoidance behaviors might cause a narrowed behavioral repertoire in depressed individuals (49), they cannot develop functional behaviors that would improve their quality of life and emotional well-being. Moreover, eventually, they may exhibit other experiential avoidance behaviors, such as substance use.

Previous research has indicated that psychological inflexibility/experiential avoidance is related to problematic alcohol/substance use (50,51). While it is reasonable for each individual to seek different outcomes from substance use, it is well known that negative somatic and emotional states are involved in motivations for substance use among patients with SUDs (52) and play an important role in relapse (53). Also, it has been shown that the relapse rate is higher in those who exhibit experiential avoidance when faced with negative life events in patients with AUDs (7). In these situations, substance use is thought to reflect a form of experiential avoidance (54) and serves the purpose of controlling or eliminating undesirable thoughts, feelings, sensations, or other private experiences (25). For example, Forsyth et al. (9) addressed substance use as an emotional avoidance strategy. They reported that veterans with greater distress over bodily sensations and depressive symptoms were more likely to avoid experiencing negative affect in their study of veterans with SUDs. As an avoidance strategy, substance use is highly effective in the short term and can be reinforced by the immediate alleviation of aversive thoughts and feelings (6). Therefore, even if individuals with SUDs have not started substance use as an experiential avoidance strategy, dysphoria or withdrawal symptoms resulting from alcohol/drug use may help maintain the pattern of substance use (55). In fact, in their study on 182 university students with alcohol use, Stewart et al. (52) concluded that experiential avoidance was a predictor of drinking for negative reinforcement (coping) and reported that experiential avoidance mediated the relationship between anxiety sensitivity and motivation to drink. The research found that individuals with SUDs with comorbid depression/anxiety had higher levels of psychological inflexibility than patients with SUDs alone. At the same time, it did not differ between individuals with depression/anxiety alone relative to those with comorbid SUDs. Psychological inflexibility is claimed to be a functionally important process for a group of individuals who engage in substance use with an expectation of avoiding co-occurring symptoms of depression and anxiety (56). The results of our research have clarified this issue and revealed the role of psychological inflexibility in the relationship between depression and addiction severity.

It is noteworthy that there are self-related problems underlined in the literature on addiction. Contrary to our expectations, self-criticism did not predict the addiction severity. It is known that individuals who have high self-criticism maintain self-criticism with the

motivation to keep under control a self that is perceived as weak, out-of-control, and evil (57). Many studies have suggested that low self-esteem is a risk factor for SUDs (58,59). Hull's hypothesis, regarding alcohol consumption, similarly focused on the self and suggested that the function of alcohol use was to escape negative aspects of the self by reducing self-awareness (15). According to Skinner and Veilleux, feeling more positive about the self may also be a function of drinking, just as individuals may choose to drink to feel more positive or less bad when they feel inferior to the person they "should" be (41). Taken together, although patients with SUDs may have negative self-views, they may prefer an avoidance method such as substance use, focusing on immediate results, rather than self-criticism originating from motivation to control self. Further studies involving the evaluations of self are needed in this population.

This study has some limitations. First, the study's cross-sectional design did not allow for causality inference from the mediation model. A longitudinal study design would be helpful in inferring the cause and effect relationship between the variables. Second, this study recruited a sample of participants from one center; a multicenter study design will ensure that the entire sample can be represented. Third, self-report measures were used to assess addiction severity and other variables. Fourth, although the study included individuals with both alcohol and substance use disorders, the groups were not analyzed separately. Fifth, no assessment was made for negative self-evaluations. Examining evaluations about self may help understand the function of self-criticism in patients with SUDs. Finally, this study did not consider the components of psychological inflexibility as mediators when examining the relationship between depression and addiction severity. Including other components in a larger sample will provide better guidance for new intervention methods that may be developed for treatment and relapse prevention.

Consequently, our results showed that increased psychological inflexibility in patients with depressive symptoms can result in alcohol/substance abuse as an experiential avoidance method, and this might lead to worsening addiction severity over time. It is necessary to develop functional attitudes rather than experiential avoidance. Psychological inflexibility/experiential avoidance might offer a more precise clinical target for interventions in patients with SUDs, especially those who are suffering from depression. Therefore, interventions that aim to improve psychological flexibility might be promising for this group.

Contribution Categories		Author Initials
Category 1	Concept/Design	S.U., V.G., E.D.R., K.F.Y.
	Data acquisition	V.G., E.D.R., I.A.
	Data analysis/Interpretation	S.U., V.G.
Category 2	Drafting manuscript	S.U., V.G., E.D.R.
	Critical revision of manuscript	S.U., V.G., E.D.R., I.A., K.F.Y.
Category 3	Final approval and accountability	S.U., V.G., E.D.R., I.A., K.F.Y.

**Acknowledgments:** We would like to thank all the patients who made time for our study and the hospital staff for providing an appropriate working environment.

**Ethical Approval:** The Bakirkoy Prof. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology, and Neurosurgery Ethics Committee granted approval for this study (date: 21.12.2020, number: 2020-25-06).

**Informed Consent:** Informed consent was obtained from all participants.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** The authors declare that they have no conflict of interest.

**Financial Disclosure:** The authors declare that they have no financial support.

## REFERENCES

- Evren C, Durkaya M, Dalbudak E, Celik S, Cetin R, Cakmak D. Factors related with relapse in male alcohol dependents: 12 months follow-up study. *Dusunen Adam* 2010; 2:92-99. [CrossRef]
- Connors GJ, Maisto SA, Zywiak WH. Understanding relapse in the broader context of post-treatment functioning. *Addiction* 1996; 91(Suppl):173-189. [CrossRef]
- Hayes SC, Hofmann SG. The third wave of cognitive behavioral therapy and the rise of process-based care. *World Psychiatry* 2017; 16:245-246. [CrossRef]
- Stotts AL, Northrup TF. The promise of third-wave behavioral therapies in the treatment of substance use disorders. *Curr Opin Psychol* 2015; 2:75-81. [CrossRef]
- Yavuz KE, Alptekin FB. Functional analysis of behavior and its clinical application. *J Cogn-Behav Psychother Res* 2017; 6:88-94.
- Hayes SC, Wilson KG, Gifford EV, Follette VM, Strosahl K. Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *J Consult Clin Psychol* 1996; 64:1152-1168. [CrossRef]
- Westrup, D. Experiential avoidance and alcohol dependence relapse. Doctoral Dissertation, West Virginia University, Austin, 1999.
- Cooper ML, Russell M, Skinner JB, Frone MR, Mudar P. Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *J Abnorm Psychol* 1992; 101:139-152. [CrossRef]
- Forsyth JP, Parker JD, Finlay CG. Anxiety sensitivity, controllability, and experiential avoidance and their relation to drug of choice and addiction severity in a residential sample of substance-abusing veterans. *Addict Behav* 2003; 28:851-870. [CrossRef]
- Thorberg FA, Lyvers M. Negative mood regulation (NMR) expectancies, mood, and affect intensity among clients in substance disorder treatment facilities. *Addict Behav* 2006; 31:811-820. [CrossRef]
- Charney DA, Palacios-Boix J, Negrete JC, Dobkin PL, Gill KJ. Association between concurrent depression and anxiety and six-month outcome of addiction treatment. *Psychiatr Serv* 2005; 56:927-933. [CrossRef]
- Ireland SJ, McMahon RC, Malow RM, Kouzekanani K. Coping style as a predictor of relapse to cocaine abuse. *Problems of Drug Dependence* 1993; 159.
- Cheung MS-P, Gilbert P, Irons C. An exploration of shame, social rank and rumination in relation to depression. *Pers Individ Differ* 2004; 36: 1143-1153. [CrossRef]
- Kannan D, Levitt HM. A review of client self-criticism in psychotherapy. *J Psychother Integr* 2013; 23:166-178. [CrossRef]
- Hull JG. A self-awareness model of the causes and effect of alcohol consumption. *J Abnorm Psychol* 1986; 90:586-600. [CrossRef]
- Brooks M, Kay-Lambkin F, Bowman J, Childs S. Self-compassion amongst clients with problematic alcohol use. *Mindfulness* 2012; 3:308-317. [CrossRef]
- Santanello AW, Gardner FL. The role of experiential avoidance in the relationship between maladaptive perfectionism and worry. *Cogn Ther Res* 2007; 31:319-332. [CrossRef]
- Beck AT, Epstein N, Harrison RP, Emery G. Development of the sociotropy-autonomy scale: A measure of personality factors in psychopathology. Unpublished manuscript, University of Pennsylvania, Philadelphia, 1983. <https://beckinstitute.org/wp-content/uploads/2021/06/SAS-Full-Documents.pdf>
- Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: model, processes and outcomes. *Behav Res Ther* 2006; 44:1-25. [CrossRef]
- Venta A, Sharp C, Hart J. The relation between anxiety disorder and experiential avoidance in inpatient adolescents. *Psychol Assess* 2012; 24:240-248. [CrossRef]
- Twohig MP, Shoenberger D, Hayes SC. A preliminary investigation of acceptance and commitment therapy as a treatment for marijuana dependence in adults. *J Appl Behav Anal* 2007; 40:619-632. [CrossRef]
- Ostafin BD, Marlatt GA. Surfing the urge: Experiential acceptance moderates the relation between automatic alcohol motivation and hazardous drinking. *J Soc Clin Psychol* 2008; 27:404-418. [CrossRef]
- Rawal A, Park RJ, Williams JMG. Rumination, experiential avoidance, and dysfunctional thinking in eating disorders. *Behav Res Ther* 2010; 48:851-859. [CrossRef]
- Goldstone E, Farhall J, Ong B. Life hassles, experiential avoidance and distressing delusional experiences. *Behav Res Ther* 2011; 49:260-266. [CrossRef]
- Wilson KG, Hayes SC, Byrd MR. Exploring compatibilities between acceptance and commitment therapy and 12-step treatment for substance abuse. *J Ration-Emot Cogn-Behav Ther* 2000; 18: 209-234. [CrossRef]
- Ii T, Sato H, Watanabe N, Kondo M, Masuda A, Hayes SC, et al. Psychological flexibility-based interventions versus first-line psychosocial interventions for substance use disorders: Systematic review and meta-analyses of randomized controlled trials. *J Contextual Behav Sci* 2019; 13:109-120. [CrossRef]

27. Heffner M, Eifert GH, Parker BT, Hernandez DH, Sperry JA. Valued directions: Acceptance and commitment therapy in the treatment of alcohol dependence. *Cogn Behav Pract* 2003; 10:378–383. [CrossRef]
28. Hayes SC, Wilson KG, Gifford EV, Bissett R, Piasecki M, Batten SV, et al. A preliminary trial of twelve-step facilitation and acceptance and commitment therapy with polysubstance-abusing methadone-maintained opiate addicts. *Behav Ther* 2004; 35:667-688. [CrossRef]
29. Smout ME, Longo M, Harrison S, Minniti R, Wickes W, White JM. Psychosocial treatment for methamphetamine use disorders: A preliminary randomized controlled trial of cognitive behavior therapy and Acceptance and Commitment Therapy. *Subst Abus* 2010; 31:98-107. [CrossRef]
30. Ogel K, Evren C, Karadag F, Guro D. The development, validity, and reliability of the Addiction Profile Index (API). *Turk J Psychiatry* 2012; 23:264-273. [Turkish]
31. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; 4:561-571. [CrossRef]
32. Hisli N. Use of the Beck Depression Inventory with Turkish university students: reliability, validity and factor analysis. *Turk Psikoloji Dergisi* 1989; 7:3-13. [Turkish]
33. Baião R, Gilbert P, McEwan K, Carvalho S. Forms of self-criticising/attacking & self-reassuring scale: Psychometric properties and normative study. *Psychol Psychother* 2015; 88:438-452. [CrossRef]
34. Bellur Z, Alpay EH, Aydin A. Reliability and validity of the Turkish version of forms of self-criticizing/attacking and self-reassuring scale (FSCRS) in clinical and non-clinical samples. *Curr Psychol* 2021;1-12. [CrossRef]
35. Fritzsche MF. The validity of the forms of self-criticizing/attacking & self-reassuring scale in comparison to the self-compassion scale. Master Thesis, University of Twente, 2016.
36. Luoma JB, Drake CE, Kohlenberg BS, Hayes SC. Substance abuse and psychological flexibility: The development of a new measure. *Addict Res Theory* 2011; 19:3-13. [CrossRef]
37. Uygur H, Yavuz KE, Eren I, Uygur OF, Selcuk M, Varsak N, et al. Reliability and validity of the Turkish version of the acceptance and action questionnaire-substance abuse (AAQ-SA) on a clinical sample. *Psychiatry Clin Psychopharmacol* 2020; 30:47-54. [CrossRef]
38. Swendsen JD, Merikangas KR. The comorbidity of depression and substance use disorders. *Clin Psychol Rev* 2000; 20:173-189.
39. Leventhal AM, Mooney ME, DeLaune KA, Schmitz JM. Using addiction severity profiles to differentiate cocaine-dependent patients with and without comorbid major depression. *Am J Addict* 2006; 15:362-369. [CrossRef]
40. Gilman SE, Abraham HD. A longitudinal study of the order of onset of alcohol dependence and major depression. *Drug Alcohol Depend* 2001; 63:277-286. [CrossRef]
41. Skinner KD, Veilleux, J.C. The interactive effects of drinking motives, age, and self-criticism in predicting hazardous drinking. *Subs Use Misuse* 2016; 51:1342-1352. [CrossRef]
42. Bond FW, Hayes SC, Barnes-Holmes D. Psychological flexibility, ACT, and organizational behavior. *J Organ Behav Manag* 2006; 26:25-54. [CrossRef]
43. Wolgast M. What does the acceptance and Action Questionnaire (AAQ-II) really Measure? *Behav Ther* 2014; 45:831-839. [CrossRef]
44. Chawla N, Ostafin B. Experiential avoidance as a functional dimensional approach to psychopathology: an empirical review. *J Clin Psychol* 2007; 63:871-890. [CrossRef]
45. Ruiz FJ. A review of acceptance and commitment therapy (ACT) empirical evidence: correlational, experimental psychopathology, component and outcome studies. *Int J Psychol Psychol Ther* 2010; 10:125-162.
46. Zettle RD. ACT for depression: A Clinician's Guide to Using Acceptance and Commitment Therapy in Treating Depression. Oakland, CA: New Harbinger Publications, 2007.
47. Nolen-Hoeksema S, Wisco BE, Lyubomirsky S. Rethinking rumination. *Perspect Psychol Sci* 2008; 3:400-424. [CrossRef]
48. Williams JMG. Mindfulness, depression and modes of mind. *Cogn Ther Res* 2008; 32:721-733. [CrossRef]
49. Ferster CB. A functional analysis of depression. *Am Psychol* 1973; 28:857-870. [CrossRef]
50. Levin ME, Lillis J, Seeley J, Hayes SC, Pistorello J, Biglan A. Exploring the relationship between experiential avoidance, alcohol use disorders and alcohol-related problems among first-year college students. *J Am Coll Health* 2012; 60:443-448. [CrossRef]
51. Bricker JB, Schiff L, Comstock BA. Does avoidant coping influence young adults' smoking? A ten-year longitudinal study. *Nicotine Tob Res* 2011; 13:998-1002. [CrossRef]
52. Stewart SH, Zvolensky MJ, Eifert GH. The relations of anxiety sensitivity, experiential avoidance, and alexithymic coping to young adults' motivations for drinking. *Behav Modif* 2002; 26:274-296. [CrossRef]
53. Witkiewitz K, Bowen S, Harrop EN, Douglas H, Enkema M, Sedgwick C. Mindfulness-based treatment to prevent addictive behavior relapse: theoretical models and hypothesized mechanisms of change. *Subst Use Misuse* 2014; 49:513-524. [CrossRef]
54. Wilson KG, Byrd MR, Hayes SC, Strosahl KD. ACT for substance abuse and dependence: In Hayes SC, Strosahl KD (editors). *A Practical Guide to Acceptance and Commitment Therapy*. New York: Springer Science Business Media, 2005, 153-184. [CrossRef]
55. Baker TB, Piper ME, McCarthy DE, Majeskie MR, Fiore MC. Addiction motivation reformulated: An affective processing model of negative reinforcement. *Psychol Rev* 2004; 111:33-51.
56. Levin ME, MacLane C, Daflos S, Seeley JR, Hayes SC, Biglan A, et al. Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *J Contextual Behav Sci* 2014; 3:155-163. [CrossRef]
57. Luoma JB, Platt MG. Shame, self-criticism, self-stigma, and compassion in acceptance and commitment therapy. *Curr Opin Psychol* 2015; 2:97-101. [CrossRef]
58. Bushman BJ, Baumeister RF. Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: does self-love or self-hate lead to violence? *J Pers Soc Psychol* 1998; 75:219-229.
59. Rendon, KP. Understanding alcohol use in college students: A study of mindfulness, self-compassion, and psychological symptoms. Dissertation Thesis. The University of Texas, Austin, 2006.