Published in final edited form as:

Subst Use Misuse. 2015 January ; 50(2): 251–256. doi:10.3109/10826084.2014.977393.

Emotion Regulation Promotes Persistence in a Residential Substance Abuse Treatment

Christopher J. Hopwood¹, Nick Schade¹, Alexis Matusiewicz², Stacey B. Daughters², and Carl W. Lejuez²

¹Psychology, Michigan State University, East Lansing, Michigan, USA

²Psychology, University of Maryland, College Park, Maryland, USA

Abstract

Emotion regulation at treatment entry was evaluated among 115 patients in an inner-city substance use residential facility who either persisted ($N = 94$) or discontinued treatment ($N = 21$). Emotion regulation capacity including emotional clarity and the ability to engage in goal-directed behavior despite emotional distress, as well as lower scores on a measure of trait-negative emotionality, were associated with treatment persistence, whereas motivational variables were not. Findings indicate the importance of regulating negative emotions for treatment engagement among substance abusers.

Keywords

Emotion regulation; Dropout; Substance Abuse; Negative emotionality; Persistence

Substance use disorders are common and costly (Grant et al., 2004). Substance use treatment is hindered by high rates of premature discontinuation (Hopwood, Baker, & Morey, 2008; Ravndal & Vaglum, 1991). This finding implies the importance of identifying variables that signal the potential for treatment adherence and persistence. A number of predictors of treatment persistence among substance users have been examined (Baekeland & Lundwall, 1975). Research has often focused on demographic or psychiatric diagnoses (e.g., King & Canada, 2004; Maglione, Chao, & Anglin, 2000; Hattenschwiler, Reusch, & Modestin, 2001). However, results from these studies have been mixed (e.g., Agosti, Nunes, Stewart, & Quitkin, 1991; Alterman, McKay, Mulvaney, & McLellan, 1996). Recently researchers have begun to focus on psychological variables (e.g., Blanchard, Morgenstern, Morgan, Labouvie, & Bux, 2003; Fernandez-Montalvo & López-Goñi, 2010; Hopwood et al., 2008; Lejuez et al., 2008). For example, Daughters, Lejuez, Kahler, Strong, and Brown (2005) found that distress tolerance, as indexed by persistence on a cognitively taxing task, predicted the duration of substance use abstinence following residential treatment, and

Address correspondence to Dr. Christopher J. Hopwood PhD, Psychology, Michigan State University, East Lansing, MI 48823, USA; hopwood2@msu.edu.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

Lejuez et al. (2008) found that anxiety sensitivity predicted treatment dropout from such a treatment.

Emotion regulation (Gratz & Roemer, 2004) is a psychological variable with considerable potential for indicating the potential to engage in and persist with treatment of substance use problems. Emotion regulation can be understood as a multidimensional construct involving emotional awareness and acceptance, the ability to behave adaptively while experiencing negative emotions, the flexible use of adaptive responses to emotional experiences, and the tolerance of negative emotions (Gratz & Tull, 2010). Heightened emotion dysregulation is evident across a number of disorders (Gross & Munoz, 1995).

Research on the role of emotion regulation in treatment persistence is limited, particularly among substance abusers. However, the underlying dimensions of emotion regulation have clear conceptual links to factors hypothesized to interfere with treatment persistence in substance abusing samples. For instance, substance use treatments often emphasize the identification of emotional triggers that lead to abuse and interfere with treatment (Marlatt & Gordon, 1985). The effective implementation of such a strategy may depend upon the patient's capacity for awareness of their own emotions and emotion-related behavior as well as their ability to constrain their emotion-based impulses. Furthermore, the impulse control necessary to resist relapse may be adversely affected by emotional distress (Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Fox, Hong, & Sinha, 2008; Tice, Bratslavsky, & Baumeister, 2001). Based on the view that substance use may occur, in part, for the purpose of emotion regulation (Khantzian, Mack, & Schatzberg, 1974; Robinson, Sareen, Cox, & Bolton, 2011), substance use treatments also often emphasize the replacement of substances with other reinforcing but more adaptive behaviors (Platt & Husband, 1993). This may require access to alternatives to substance use for emotion regulation and beliefs among users that such alternatives would be effective.

Difficulties in emotion regulation could therefore lead to problems with treatment persistence. For instance, ambivalence regarding quitting is nearly ubiquitous among substance users, and as treatment goes on withdrawal symptoms, cravings, and other factors may tip the scales against engaging in an effective treatment. Individuals with lesser capacity for emotion regulation may decide, perhaps impulsively, to quit treatment in the face of such factors, given that emotion dysregulation has been found to relate to compromised decision-making (Heilman, Crisan, Houser, Miclea, & Miu, 2010) and impulsive behavior (Davidson, Putnam, & Larson, 2000). These issues may be particularly salient in residential treatment that is structured and involves certain behavioral expectations regarding respect for others, participation, etc. Individuals with difficulties in emotion regulation may be less likely to behave in a manner that is consistent with the expectations of residential facilities, and thus may be at relatively greater risk to be excused due to unacceptable behavior or treatment noncompliance.

The overall hypothesis of this study is that greater capacity for emotion regulation would increase the likelihood of treatment persistence in residential substance use treatment, whereas lower capacity for emotion regulation would increase the likelihood of both treatment dropout and noncompliance. Because emotion regulation may promote treatment

adherence given its relation to other potential predictors of persistence, two variables in addition to emotion regulation were examined as well. The first was negative emotionality (Tellegen & Waller, 1994), which reflects a trait disposition for negative emotions such as sadness, anger, and anxiety but does not necessarily imply specific difficulties regulating these emotions. The second was motivation, which is commonly discussed as a predictor of treatment engagement and persistence in the literature (DiClemente, Bellino, & Neavins, 1999) and which may be augmented by capacity for emotion regulation.

METHODS

Patients in an inner-city residential facility for substance use treatment in Northeastern Washington DC were recruited between their 4th and 7th day in the facility. Those who consented to participate ($N = 133$) were administered study measures and diagnostic interviews and followed prospectively during their treatment. Of these, 115 individuals who either clearly completed the treatment ($N = 94$) or who did not complete the treatment ($N = 21$; which included a mix of voluntary termination against counselor advice and mandatory termination due to noncompliance with center rules which included continuous abstinence). Demographic characteristics of this subsample were as follows: 96 (83%) were men, 96 (83%) were single, and 105 (91%) were African-American, 6 (5%) European-American, 2 (2%) were Hispanic/Latino, and 2 (2%) reported other ethnicities. Substance problems primarily involved “heavy” drugs, with 55 (48%) meeting SCID-IV diagnostic threshold for cocaine dependence 21 (18%) meeting for opioid dependence, and 25 (22%) meeting for alcohol dependence. Other diagnoses included PCP ($N = 9$), cannabis ($N = 9$) and stimulants, sedatives, or other drugs ($N = 4$) (several patients received poly-drug diagnoses). Common co-occurring psychiatric diagnoses included depression (24; 21%), phobias (20; 17%), PTSD (18; 16%), and borderline (23; 20%) and antisocial (32; 28%) personality disorders. Individuals who persisted did not differ from those who did not on any demographic or diagnostic variable (all p 's $> .05$).

Three questionnaires were used in this study. The *Difficulties in Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004) is a 36-item measure of emotion regulation problems with six subscales: nonacceptance of emotional responses (NONACCEPTANCE), difficulties engaging in goal-directed behaviors (GOALS), impulse control difficulties (IMPULSE), lack of emotional awareness (AWARENESS), limited access to emotion regulation strategies (STRATEGIES), and lack of emotional clarity (CLARITY). Internal consistencies were all $> .80$. The *Stages of Change Readiness and Treatment Eagerness Scale* (SOCRATES; Miller & Tonigan, 1996) is a 19-item questionnaire that is commonly used in the treatment, and particularly substance use treatment, literature ($\alpha = .90$). The *Multidimensional Personality Questionnaire Negative Emotionality Scale* (MPQ NEM Waller & Tellegen, 1994) is a commonly used measure of a trait propensity to experience negative emotions ($\alpha = .90$).

The treatment includes intervention techniques from Alcoholics and Narcotics Anonymous in addition to group therapy focused on functional analyses and relapse prevention. Treatments were mostly contracted at baseline. The length of contracts varied, including 30 days (50; 10 dropouts), 60 days (40, 4 dropouts), 90 days (1, 1 dropout), 180 days (10, 6

dropouts), and no contract (3, no dropout). Contract length and dropout were not significantly associated ($\chi^2 = 8.57, p > .05$). Detoxification and complete abstinence (with the exceptions of caffeine and nicotine) was a prerequisite for treatment and was tested regularly.

Individuals who persisted vs. failed to persist in treatment were compared on the DERS total score and sub-scale scores, as well as the SOCRATES and MPQ NEM scores using independent samples *t*-tests. Receiver Operating Curve (ROC) analyses were used to evaluate the predictive power of significant indicators. Due to the relatively small sample and concerns about multicollinearity among predictor variables, the focus was on univariate effects and no multivariate models were evaluated. Significance benchmarks of .05 and .01 were used throughout, although the interpretive focus was on effect sizes.

RESULTS

Table 1 shows means for individuals who did versus did not persist in the treatment for DERS, SOCRATES, and MPQ NEM variables. Several DERS variables were significantly different across these groups, and each of these showed moderate to strong effects in indicating treatment persistence. These include the total score, and goals, strategies, and clarity subscales, with clarity showing the strongest effect ($d = .70$). The SOCRATES motivation scale was not a significant predictor of persistence, but the MPQ NEM scale was ($d = .76$). Results for the DERS total score and MPQ NEM remained significant among male participants considered separately (DERS $t = 2.51, p < .05$; MPQ NEM $t = 2.49, p < .05$). Table 1 also gives Areas Under the Curve from ROC analyses. These values indicate the extent to which a variable is useful in predicting group membership above and beyond base rate predictions. The DERS goal and clarity subscales and MPQ NEM scale emerged as significant from these analyses.

DISCUSSION

This study examined the role of emotion regulation in treatment persistence in a residential facility for substance use disorders. Overall, study results suggest that the ability to regulate negative emotions is an important predictor of treatment persistence in this population. Specifically, the ability to engage in goal-related activities such as attending to and complying with treatment, clarity regarding one's inner emotions, and a lower trait propensity to experience negative emotions provided incremental information above and beyond base rate predictions about the likelihood of treatment persistence. This study highlights the value of studying the impact of transdiagnostic personality and psychological variables on substance abuse treatment.

The strongest effects overall were for the general trait propensity to experience negative emotions, suggesting that negative emotionality is an important consideration for predicting treatment persistence. Individuals with fewer negative emotions may be able to engage more effectively and in particular to tolerate the unpleasant aspects of treatment to a greater degree than others. Furthermore, given the strong link between negative emotionality and most forms of psychopathology (Kotov, Gamez, Schmidt, & Watson, 2010), lower scores on

this trait may indicate a less complicated diagnostic picture and thus smoother treatment course.

More specific indicators of emotion regulation were also strongly associated with treatment persistence. Effects were strongest for two DERS subscales, GOALS and CLARITY. The Goals scale involves the capacity to follow through on goals despite emotional turmoil. As treatment is generally emotionally taxing, and residential substance treatment is particularly taxing given limited access to pre-existing social supports and that, by definition, preferred coping strategies (i.e., substance use) are not available, the capacity to persist in long-term goals despite emotional difficulties may be particularly important. Clarity involves an understanding of one's inner emotional world. For individuals with heightened negative emotions, such as those in this sample, it may be important to be able to apply a coherent and meaningful cognitive frame on these experiences in order to make use of them in treatment. Overall, these findings promote further examinations of various aspects of negative emotion regulation in indicating treatment problems in residential substance use and other populations.

Although motivation has received significant attention in the substance use treatment literature, findings regarding this variable have been mixed (Hopwood et al., 2008) and this study failed to find an association between motivation and treatment persistence. Further work should be conducted on this variable in diverse treatment samples. One interesting possibility is that motivation is a dynamic mediator between certain aspects of emotion regulation and treatment behavior. For instance, difficulties with impulsivity or with goal-related behavior may diminish consistent motivation, which may in turn lead to treatment problems. A larger sample than was available here would be needed to test this hypothesis. It may also be useful to assess motivation under different mood states. For instance, the correlation between the DERS total score and the SOCRATES in this study was .03. However, even though individuals may be generally motivated independent of their capacity for emotion regulation, if their motivation drops sharply under specific conditions of negative mood it may be the dynamic interaction of mood and motivation that leads to treatment failure, since isolated decisions to withdraw or isolated behavioral problems can be sufficient to terminate treatment.

Study strengths including the prospective design and the relative diagnostic severity and diversity of the sample, which permit tentative generalization of these results to other inner-city residential treatment facilities for substance use. However, the study also had several limitations, including the high proportion of African-American men (and the subsequent under-representation of women and members of other race/ethnicities), exclusive focus on drug users in residential treatment, and the relatively small sample of treatment discontinuers. These limitations raised several analytic issues including the inability to separately examine different reasons for discontinuation or to examine potential unique effects among sub-scales of the DERS. Future research should address these and other shortcomings of this design.

Overall, study results suggest the clinical importance of considering a patient's overall level of negative emotionality as well as their capacity for regulating negative emotions in

predicting residential substance abuse treatment processes. In particular, the overall level of negative emotions and the degree to which individuals understand clearly and interpret accurately their emotions and are able to persist in goal-directed behavior despite emotional distress appear to be important indicators of treatment persistence. Treatments such as Dialectical Behavior (Linehan, 1993), Mentalization (Batemen & Fonagy, 2004) and Emotion Focused (Greenberg, Rice, & Elliott, 1993) therapies that emphasize emotion regulation may therefore be useful adjuncts in treatments of substance users with emotion regulation difficulties. The utility of addressing clinically the potential influence of emotion dysregulation on treatment difficulties among substance users should be researched further.

Biographies

Dr. Hopwood is an associate professor of clinical psychology at Michigan State University. He is an Associate Editor for *Assessment* and *Journal of Personality Disorders* and is a board member of the *Society for Interpersonal Theory and Research* and the *North American Society for the Study of Personality Disorders*. His research focuses on personality pathology, personality assessment, and interpersonal processes relevant to clinical practice.

Nick Schade, M.S., is a recent graduate from Michigan State University. His research interests center around personality and interpersonal problems.

Alexis Matusiewicz, M.S., is a doctoral student in clinical psychology at the University of Maryland, College Park and is a predoctoral intern at the VA Ann Arbor Healthcare System. Alexis's research seeks to identify emotional and motivational factors associated with engagement in risk behavior among people with borderline personality disorder and substance use disorders.

Dr. Daughters is an Associate Professor in the Clinical Psychology program in the Department of Psychology at the University of North Carolina, Chapel Hill. Her research expertise includes the neurobiological and behavioral mechanisms underlying addiction, with a focus on stress and mood disorders, and the translation of this knowledge into effective treatments.

Dr. Lejuez is a professor and the director of clinical training in the clinical psychology program at the University of Maryland. He is the Founder and Director of the Center for Addictions, Personality, and Emotion Research (CAPER), Co-Director of a NIDA T32 Institutional Training Program at the intersection of basic science and addictions treatment development, and Founding Editor of the American Psychological Association Journal *Personality Disorders: Theory, Research, and Treatment*. His research has been continually funded by the National Institutes of Health (NIH) since 2002 and he has published extensively in the areas of addictions, personality pathology, and mood disorders.

GLOSSARY

Emotion Regulation	The capacity to be aware of and manage negative emotions.
Negative Emotionality	A temperamental disposition to experience negative emotions such as anger, sadness, and anxiety.
Treatment Motivation	The desire to be in treatment in order to make personal changes.
Treatment Persistence	Continuing in treatment up to contracted or mutual termination with a clinician.

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TABLE 1
Mean differences on study variables between treatment persisters and discontinuers

Variable	Persist mean (SD)	Discontinue mean (SD)	T (113 df)	d	AUC (SE)
DERS					
Total	81.69 (21.37)	95.86 (30.41)	2.53 *	.62	.64 (.07)
Nonacceptance	12.56 (5.98)	15.05 (7.39)	1.64	.40	.60 (.08)
Goals	12.86 (4.06)	15.52 (5.18)	2.58 *	.62	.66* (.07)
Impulse	13.34 (4.92)	15.67 (7.79)	1.74	.43	.57 (.09)
Awareness	15.54 (4.62)	15.86 (5.09)	0.28	.07	.53 (.08)
Strategies	16.70 (6.69)	20.33 (8.92)	2.11 *	.51	.62 (.07)
Clarity	10.67 (3.72)	13.43 (4.99)	2.88**	.70	.66* (.07)
SOCRATES					
	76.32 (12.02)	70.52 (18.67)	-1.69	-.44	.43 (.09)
MPQ NEM					
	14.59 (8.29)	21.02 (9.07)	3.10**	.76	.71** (.07)

Note. t, d, and AUC coefficients scored such that positive values indicate a higher value for discontinuers. The pattern of effect sizes remained very similar when only voluntary dropouts or only non-compliant discontinuers were compared to persisters with the one exception that there was a stronger effect for DERS goals for non-compliant ($d = 1.13$) than voluntary ($d = .30$) discontinuers.

* $p < .05$

** $p < .01$