Published in final edited form as:

J Subst Abuse Treat. 2018 March ; 86: 1–8. doi:10.1016/j.jsat.2017.12.006.

Understanding the Role of Emotion-Oriented Coping in Women's Motivation for Change

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Abstract

This study tested a sequential mediation model that emotion-oriented coping and motivation for change mediate the relations between anxiety and depressive symptoms and the change in substance use. Data included 183 substance using women, randomly assigned to family therapy (N = 123) or individual therapy (N = 60). They reported their baseline anxiety and depressive symptoms, emotion-oriented coping, as well as motivation for change throughout treatment, and substance use over a time period of 1.5 years. Latent growth curve modeling showed that increased baseline motivation was associated with a faster decline in alcohol and drug use. Moreover, higher baseline anxiety and depressive symptoms were associated with a faster decrease in drug use through higher emotion-oriented coping and higher baseline motivation. This study underscores the importance of emotion-oriented coping in increasing clients' motivation and reducing their drug use.

Keywords

motivation for change; emotion-oriented coping; substance use; anxiety symptoms; depressive symptoms

Motivation for change is important in substance abuse treatment, as it is related to better client engagement, increased psychological functioning, longer abstinence and less dropout rate (e.g., DiClemente, Nidecker, & Bellack, 2008; Slesnick et al., 2009). Motivation for change refers to “an individual's concerns about or interest in the need for change, his or her goals and intentions, the need to take responsibility and make a commitment to change, and sustaining the behavior change and having adequate incentives to change” (DiClemente et al., 2008, p. 26). Most studies tend to study motivation only at one time across treatment process (e.g., Field, Duncan, Washington, & Adinoff, 2007; Font-Mayolas, Planes, Gras, & Sullman, 2007), whereas the change in motivation throughout therapy sessions is less understood.

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Among incarcerated drug users, females tend to show higher motivation in terms of recognition of their problems, and are more likely to use emotion-oriented coping strategies in response to stressful situations than males (Pelissier & Jones, 2006). However, it is not clear how female substance users' coping strategies relate to their motivation for change. Understanding factors contributing to their motivation, although less investigated, is thus important. Research shows that higher pretreatment anxiety and depressive symptoms are associated with greater motivation and better treatment outcomes (Comeau, Stewart, & Loba, 2001; Slesnick et al., 2009). The present study investigated change in motivation among female substance users, and its association with treatment outcomes. We also focused on factors associated with motivation for change and treatment outcomes.

Motivation for change in substance use treatment

The transtheoretical model of intentional behavior change proposes several stages of change (e.g. precontemplation, contemplation, preparation, action and maintenance) (Prochaska & DiClemente, 1984), whereas recent studies suggest that motivation occurs on a continuum through which motivation gradually increases, rather occurring in discrete stages (DiClemente, 1999; Slesnick et al., 2009). Most studies focus on the initial levels of motivation, whereas few studies offer information as to the evolving processes of clients' motivation throughout therapy and how they are associated with changes in substance use behaviors (Font-Mayolas et al., 2007). It is thus crucial to understand how the change process in motivation affects treatment outcomes.

In substance use treatment, clients' mental health has been associated with their motivation for change (Barnett et al., 2002). Some studies have found that mental health concerns can be a barrier for treatment (e.g., Field et al., 2007). Others have argued that the "hitting bottom" effect, in which individuals are more likely to seek treatment if they have experienced significant emotional distress as a result of their substance abuse, results in longer lasting change (Miller & Tonigan, 1996). Although there are mixed findings about the "hitting bottom" effect (e.g., Field et al., 2007), baseline symptoms of depression and anxiety were found to predict clients' motivation in drug use treatment (Barnett et al., 2002; Comeau et al., 2001; Slesnick et al., 2009). It is likely that the mixed findings are due to mixing genders or using a male dominant sample (e.g., Field et al., 2007), and mixing alcohol and drug use outcomes (e.g., Rosario, Schrimshaw, & Hunter, 2006). Moreover, understanding the mechanism underlying the association between depression, anxiety and motivation may shed light on how clients' mental health is associated with their motivation to change. It is likely that investigating the coping processes, how clients handle their distress, can help resolve this gap in knowledge.

Emotion-oriented coping

Coping is conceptualized as those cognitive and behavioral responses employed to manage specific external and internal demands that exceed the resources of the person (Lazarus and Folkman, 1984). Endler and Parker (1994) further categorized coping into three subtypes: task-oriented, emotion-oriented, and avoidance-oriented coping. Task-oriented coping includes individuals' efforts and thoughts aimed at solving a problem; avoidance-oriented

coping consists of activities and cognitive strategies used to avoid stressful situations. Emotion-oriented coping is defined as individual's efforts at reducing stress through emotional responses, including emotion expression, blaming others, self-blame, emotion containment and passive resignation (Endler & Parker, 1994). Emotion-oriented strategies are favored by females, and by men or women who are predisposed to increase and maintain emotional arousal in response to emotional events (Kariv & Heiman, 2005; Melamed, 1994).

Research findings on emotion-oriented coping are mixed. Some studies report that higher emotion-oriented coping is associated with elevated depression and anxiety (e.g., Matheson & Anisman, 2003; McWilliams, Cox, & Enns, 2003). However, other studies report that emotion-oriented coping promotes psychological well-being, especially over the long-term (e.g., Kariv & Heiman, 2005; Van Harreveld, Van der Pligt, Claassen, & Van Dijk, 2007), possibly because strategies that focus on emotional processes reduce psychological distress. Meanwhile, theories of motivation also posit that the activation and arousal of emotional processes increases motivation (Bradley, Codispoti, Cuthbert, & Lang, 2001). Use of emotion-oriented strategies increases individual's awareness of distress, draws attention to emotional processes and generates self-reflective emotions such as regret and guilt, which might motivate individuals to change their distress-reducing strategies. It is thus likely the emotion-oriented coping mediates the links between anxiety and depressive symptoms and motivation for change, as well as actual changes in substance use behaviors.

The current study

This study is based on a secondary analysis of data from a clinical trial focusing on women's substance use outcomes. Overall, women receiving family therapy with their child showed quicker declines in their substance use than their counterparts receiving the individual therapy intervention (Slesnick & Zhang, 2016). The present study provides new information on how the trajectory in motivation for change among female substance users is related to change in alcohol and drug use during and after treatment. Models of alcohol and drug use were estimated separately. This is because the mechanisms of change are likely to be different between alcohol and drug use, as illicit drug users experience more psychological problems such as anxiety and depression, and show poorer treatment outcomes than alcohol users (Slesnick, Bartle-Haring, Glebova, & Glade, 2006). Task-oriented coping was included as a covariate since it is a strong predictor of reduction in substance use (Dashora, Erdem, & Slesnick, 2011). Since it is likely these women use multiple coping strategies, controlling for the effect of task-oriented coping can better illuminate the association between emotion-oriented coping and motivation.

Figure 1 presents the hypothesized model. It was expected that a higher initial level, as well as increasing motivation over time, would be associated with a faster decrease in substance use. It was further expected that higher anxiety and depressive symptoms would be related to increased emotion-oriented coping, which would be associated with a higher motivation for change and a faster decrease in substance use. That is, emotion-oriented coping and motivation for change would sequentially mediate the relationships between anxiety and depressive symptoms and the change in substance use over time.

Method

Participants

Participants included 183 female substance users. They were recruited from a substance abuse treatment center in a large Midwestern city. To be eligible for the current study, women had to (1) meet diagnostic criteria for an alcohol or drug use disorder as defined by DSM–IV, (2) be seeking outpatient treatment for their substance use disorder, and (3) have a biological child between the ages of 8–16 years. Mothers ranged in age from 22 to 54 years ($M = 33.9$), with their child's ages ranged from 8 to 16 ($M = 11.54$; 51.9% male). A majority (53.6%) of the mothers were Caucasian, with 42.6% being African American and 3.8% being other minority races. A third (32.8%) of the mothers reported marital status as single, 34.9% reported being in a romantic relationship, 10.9% reported as legally married, 8.2% reported as separated but still married, and 13.1% reported as divorced or widowed. As to annual family income, 26.8% reported having 0–\$5000 annually, 33.3% having \$5001–\$15,000, 21.3% having \$15,001–\$30,000, 8.7% having \$30,001–\$45,000, and 9.3% having \$45,001 or above (see Table 1 for demographic information).

Procedure

Women were screened for eligibility and interest in the research at the community treatment center. Research assistants also contacted their children to discuss their interest in the study if these women gave parental permission. Once maternal consent and child assent were obtained, the research assistants administered the baseline questionnaires. After finishing the baseline assessment, all families were randomly assigned to one of the three intervention conditions: (1) office-based Ecologically-Based Family Therapy (EBFT, Slesnick & Prestopnik, 2005) ($n=61$), (2) home-based EBFT ($n = 62$) or (3) Women's Health Education (WHE) ($n = 60$). All participating families were assessed at baseline, 3, 6, 12 and 18 months post-baseline. All the assessments were conducted in-person. The follow-up rates ranged from 88.0% to 90.2% for all the follow-up assessments. Independent-sample t-tests were performed to compare the group difference on mothers' depression, anxiety, emotion-oriented coping, substance use and motivation for change between office- and home-based EBFT groups. No significant group differences were observed ($p's > 0.05$), and the two groups were combined into one EBFT group. Each assessment required approximately 90 minutes to complete. Participating mothers were offered a \$75 gift card whereas their children were offered a \$40 gift card at the completion of each assessment. The Ohio State University Institutional Review Board approved all study procedures.

Treatment Interventions

Based on a social-ecological theoretical perspective (Bronfenbrenner 1979), Ecologically-Based Family Therapy (EBFT) considers substance use and related individual and family problems in multiple interrelated systems, and targets dysfunctional family interactions associated with the development and continuation of symptoms using a family systems approach. It also includes cognitive-behavioral skills training, aiming to change individuals' symptom-related thoughts, communication and coping skills, and emotional reactions. EBFT is offered for 12 sessions over a course of 6 months. As new problem-solving skills are taught and practiced, family functioning and individual family member's competence for

communicating needs in the relationship are expected to increase. More details regarding EBFT, such as therapist training and ongoing supervision, can be found in the primary outcome paper (Slesnick & Zhang, 2016).

Women's Health Education (WHE) is a 12-session manualized educational intervention used as an attention control (Miller et al. 1998), which focused on helping women understand the woman's body, human sexual behavior, pregnancy and childbirth, STD's, and AIDS. WHE provided equivalent therapist attention and expectancy of benefits, but did not include family systems therapy techniques, and children were not engaged in the therapy. WHE was offered through the community treatment center over a course of 6 months.

Measures

Alcohol and drug use—Participants' alcohol and drug use was measured by the Form-90 (Miller & Tonigan, 1996). The Form-90 is a structured interview using a timeline follow-back approach to assess daily substance use for the past 90 days. This measure has high test-retest reliability with kappas for different drug classes ranging from .74 to .95 (Tonigan, Miller, & Brown, 1997; Westerberg, Tonigan, & Miller, 1998). In the current study, the percentage of participants' total days of alcohol use and illicit drug use at baseline, and 3, 6, 12, and 18 months post-baseline were assessed.

Motivation for change in alcohol and drug use—Participant's motivation for change was evaluated using the Stages of Change Readiness and Treatment Eagerness Scale for substance use (SOCRATES; Miller & Marlatt, 1984). The SOCRATES includes three subscales: Readiness, Ambivalence, and Taking Steps (Miller & Tonigan, 1996). Test-retest correlations for the subscales range from .83 to .99 (ICC = .82 – .94) and internal consistency from $\alpha = .87$ to .96. In the current study, the 19 item short version was used to assess participants' motivation for change at baseline, and 3 and 6 months post-baseline, for alcohol and drug use separately. Responses are rated on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items included "I really want to make changes in my drinking/use of drugs" "Sometimes I wonder if I am an alcoholic/addict" and "I want help to keep from going back to the drinking/drug problems that I had before." The total score based on the three subscales was utilized, with higher scores representing a greater level of motivation for change. In the current study, Cronbach's alphas ranged between .95 and .97 for alcohol and drug use across three waves.

Emotion-oriented coping—Participants' emotion-oriented coping at baseline was measured by the Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990a). The CISS is a 48-item scale assessing participants' reaction to stressful situations. The CISS consists of three 16-item subscales, task-, emotion-, and avoidance-oriented coping. The emotion-oriented coping subscale assesses respondents' use of emotion-oriented coping strategies such as emotional expression and self-blame. Example items of the emotion-oriented coping subscale included "blame myself for getting into the situation" and "wish that I could change what had happened or how I felt". Responses are rated on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). The total score for emotion-oriented coping was used in the current study, with higher scores representing higher levels of engagement in

emotion-oriented coping. The scale shows adequate construct validity with clinical populations (Endler & Parker, 1990a, 1990b, 1990c). The Cronbach's alpha was .89.

Depressive symptoms—Participants' depressive symptoms at baseline were measured by the 21-item Beck Depression Inventory II (BDI-II; Beck, Steer, & Brown, 1996). The BDI assesses mood, cognitive, and somatic aspects of depressive symptoms. Responses are rated on a four-point scale of 0 to 3. BDI-II total scores range from 0 to 63, with higher scores representing higher levels of depressive symptoms. In the current study, Cronbach's alpha was .94.

Anxiety symptoms—Participants' anxiety symptoms at baseline were assessed by the Brief Symptom Index (BSI; Derogatis & Melisaratos, 1983). The BSI is a 53-item scale assessing the level of distress that a patient is experiencing at a specific point in time (usually within the last 7 days) and was developed from the longer Symptoms Checklist-90-Revised (SCL-90-R). Internal consistency of this measure ranges from .71 to .85 and test-retest reliability ranges from .68 and .91, with a 2-week interval between tests (Derogatis & Lazarus, 1994). In the current study, the 6-item subscale assessing anxiety symptoms was utilized. Responses are rated on five-point Likert scale ranging from 0 (*not at all*) to 4 (*extremely*). A sample item is, "How much were you distressed by nervousness or shakiness inside?" Cronbach's alpha for this subscale was .90.

Covariates—Family total income, treatment condition (0 as WHE condition, 1 as EBFT condition), and participants' task-oriented coping were included in the model as covariates. Task-oriented coping was measured by the Coping inventory for Stressful Situations (CISS; Endler & Parker, 1990a). The Cronbach's alpha for the task-oriented coping subscale was 0.93.

Overview of analysis

A longitudinal mediation model was tested with Mplus 8.0 (Muthén, & Muthén, 1998–2017). Little's MCAR test (Little, 1988) showed that data were missing completely at random $\chi^2(146) = 129.06, p = .84$. Full information maximum likelihood was used to estimate missing data (Enders & Bandalos, 2001). Models of alcohol use and drug use were estimated separately. Data were analyzed in two steps. First, unconditional growth models were tested to examine the change of clients' alcohol/drug use and motivation for change. Second, the growth trajectories of clients' motivation for change (mediator) and alcohol/drug use (dependent variable) were modeled as distinct parallel processes (Cheong, MacKinnon, & Khoo, 2003). Clients' depressive and anxiety symptoms were included in the model as exogenous variables. Clients' emotion-oriented coping was added as another mediator linking clients' anxiety and depressive symptoms and the trajectory of motivation for change. The bootstrapping procedure (Shrout & Bolger, 2002) was performed to confirm the mediation effects, with 5,000 bootstrap samples being generated based on the original sample. The 95% confidence interval excluding zero indicates significant indirect effects. The bootstrap method provides a powerful estimate of indirect effects as the distribution of the indirect effects tend to be skewed (Shrout & Bolger, 2002).

Fit indices indicating a good fitting model include root mean square error of approximation (RMSEA) with the cutoff value of .05, standardized root-mean-square residual (SRMR) with the cutoff value of .08, comparative fit index (CFI) with the cutoff value of .95, and Tucker-Lewis index (TLI) with cutoff value of .95 (Hu & Bentler, 1995).

Results

Descriptive statistics and bivariate correlations of the study variables are presented in Table 2. Unconditional latent growth curve models were tested for clients' alcohol/drug use and motivation for change. Clients showed significant decreases in alcohol ($B = -0.73$, $SE = 0.33$, $\beta = -0.27$, $p = .03$) and drug use ($B = -0.32$, $SE = 0.06$, $\beta = -0.84$, $p < .001$). Both the intercept (alcohol: variance = 3.55, $SE = 0.53$, $p < .001$; drug: variance = 7.02, $SE = 1.30$, $p < .001$) and slope (alcohol: variance = 0.08, $SE = 0.02$, $p = .001$; drug: variance = 0.15, $SE = 0.07$, $p = .04$) factors showed significant individual variability. Clients also showed a significant decrease in motivation for change for alcohol use ($B = -0.23$, $SE = 0.09$, $\beta = -0.33$, $p = .05$) and drug use ($B = -5.01$, $SE = 0.73$, $\beta = -1.04$, $p < .001$). While the variances of the intercept factors were significant (alcohol: variance = 486.68, $SE = 88.88$, $p < .001$; drug: variance = 277.62, $SE = 59.03$, $p < .001$), there was no significant individual variability in terms of the slope factor (alcohol: variance = 51.71, $SE = 35.65$, $p = .15$; drug: variance = 23.26, $SE = 26.64$, $p = .38$). Therefore, only the baseline data of motivation for change were used for the further test of mediation.

For the model estimating changes in drug use, results indicated a good fit of the model to the data: $\chi^2(34) = 44.96$, $p = .10$; CFI = .97; TLI = .96; RMSEA = .04 (90% CI = .00, .07); SRMR = .05. As indicated by Figure 2, depressive ($B = 0.43$, $SE = 0.06$, $\beta = 0.50$, $p < .001$) and anxiety symptoms ($B = 0.52$, $SE = 0.11$, $\beta = 0.30$, $p < .001$) were significantly associated with emotion-oriented coping. Emotion-oriented coping was significantly associated with motivation for change ($B = 0.04$, $SE = 0.02$, $\beta = 0.28$, $p < .01$), and motivation for change was significantly associated with both the intercept ($B = 3.31$, $SE = 1.51$, $\beta = 0.21$, $p < .05$) and slope factors of drug use ($B = -0.71$, $SE = 0.27$, $\beta = -0.28$, $p < .01$). As expected, this indicates a faster decline of drug use associated with higher motivation.

The rest of the direct paths were not significant. The mediation pathways were tested. While we were interested in common processes underlying motivation to change, we were less interested in differences by treatment condition. However, analysis determined that the mediating pathways did not differ by treatment condition. Results from the bootstrap procedure with regard to all indirect paths in the final model are presented in Table 3. As expected, two sequential mediation pathways were identified. Significant indirect pathways were found among depressive symptoms $\rightarrow$ emotional coping $\rightarrow$ motivation for change $\rightarrow$ slope factor of drug use (coefficient = -0.013 , $SE = 0.007$, 95% CI [-0.030 , -0.002]), and anxiety symptoms $\rightarrow$ emotional coping $\rightarrow$ motivation for change $\rightarrow$ slope factor of drug use (coefficient = -0.016 , $SE = 0.009$, 95% CI [-0.036 , -0.002]).

The model estimating the change in alcohol use was a poor fit: $\chi^2(34) = 115.89$, $p < .001$; CFI = .85; TLI = .75; RMSEA = .12 (90% CI = .09, .14); SRMR = .07. Higher initial

motivation for change was associated with a faster decline in alcohol use ($B = -0.39$, $SE = 0.14$, $\beta = -0.30$, $p < .01$). However, women's anxiety, depressive symptoms, and emotion-oriented coping were not associated with motivation for change, thus the mediation paths of interest were not significant.

Discussion

The current study investigated the mediating relationship among anxiety and depressive symptoms, emotion-oriented coping, motivation for change and alcohol and drug use in a sample of female substance users. Findings of this study showed that higher baseline motivation was associated with faster decline with both alcohol and drug use, and that anxiety and depressive symptoms were associated with a faster decrease of drug use through higher emotion-oriented coping and greater baseline levels of motivation for change.

Supporting the first hypothesis, this study found that higher initial levels of motivation for change were related to a faster decline in alcohol and drug use. This finding is consistent with research noting the positive influence of motivation on treatment effects (e.g., DiClemente, Nidecker, & Bellack, 2008; Slesnick et al., 2009). It is likely that higher motivation is related to a better therapist-client relationship as well as client's adherence to treatment, resulting in better treatment outcomes. Results also showed that motivation decreased during treatment, and the rate of decrease did not differ among clients or treatment conditions. It seems that the initial level of motivation, compared to the change of motivation during treatment, is a stronger predictor of treatment outcomes. This finding implies that motivation at the start of intervention should be an intervention target, and that a decreasing motivation for change during treatment might not negatively impact outcomes. This finding lends support to using the Motivational Interviewing therapy (Baker et al., 2002), especially at the beginning phase of substance use treatment. It is therefore critical for practitioners to provide treatments that address the needs of individuals who are at all levels of readiness, including those who express little interest in change. Although future research is needed to explore reasons underlying this finding and the clinical implications, it could suggest that since change is already occurring, the client perceives the problem as resolving.

Supporting the second hypothesis, our study found that women with higher anxiety and depressive symptoms utilized more emotion-oriented coping strategies, which in turn increased their motivation and resulted in a faster decrease in drug use. This observation is similar to other findings associating higher anxiety and depression with greater motivation for change in substance use (e.g., Barnett et al., 2002; Comeau et al., 2001; Slesnick et al., 2009). Our findings revealed the underlying connection between anxiety, depression and motivation for change is the coping process. Possibly, the use of emotion-oriented coping, especially among female drug users, increased awareness and attention of the negative experiences associated with drug use. The arousal of these negative emotional experiences (anxiety and depression), though unpleasant, could function to bring in self-reflection and determination to reduce these symptoms. This finding highlights the role of emotional arousal and coping in understanding the motivation system (Bradley et al., 2001). Our finding supported the "hitting bottom" effect, and other studies finding baseline symptoms of depression and anxiety predicting clients' motivation in drug use treatment (Barnett et al.,

2002; Comeau et al., 2001; Slesnick et al., 2009). It seems that increased psychological distress prompts awareness and determination to change maladaptive drug-using behaviors, as individuals are forced by their symptoms to seek treatment and recover from emotional “bottoms”. This result is not consistent with some other findings (e.g., Field et al., 2007; Rosario et al., 2006). The inconsistency is likely due to lumping motivation for change of alcohol and drug use together in these previous studies. It is also likely that the mixed findings are due to a primarily male sample (over 95% being male), whereas female substance users present different characteristics.

This study did not find significant associations between emotion-oriented coping and women’s motivation to change alcohol use. This suggests that motivation to change alcohol and drug use may rely on different mechanisms (Slesnick et al., 2006). It is likely that the use of alcohol is socially acceptable, and people tend to attribute psychiatric symptoms less to alcohol than to illicit drugs (Diego, Field, & Sanders, 2003). Thus, the use of alcohol can be associated with other factors, such as interpersonal reasons, which were not examined in the current study. An additional possibility is that alcohol and different illicit drugs function through distinct neurobiological mechanisms (Koob, 2011; Sinha, 2013; Weiss & Porrino, 2002). It is suggested that the pharmacological effects of ethanol, which supports alcohol-seeking behavior, involve actions at multiple neurochemical systems throughout the brain, when compared to most other drugs which function within a much smaller number of neurochemical systems (Koob, 2011; Weiss & Porrino, 2002). Possibly, the role of emotion-oriented coping has interrupted some of these pathways but not others that affect alcohol use. Findings highlight the necessity for differential understanding of motivation associated with drug and alcohol use.

Limitations of the current study should be considered when interpreting the findings. First, women in this study actively sought treatment for their substance use problem, so it is likely they had higher levels of baseline motivation than non-treatment-seeking women. It is also likely these women experience more anxiety and depression and their treatment seeking behaviors were a manifestation of the “hitting bottom” effect. Thus, the findings may not generalize to those not seeking treatment as they may not have experienced a similar bottoming out effect. Second, this study did not include male drug users, so we cannot know if the findings would be replicated among men. Third, this study utilized self-reported measures of anxiety and depressive symptoms, coping, motivation and drug use, which can contribute to inflation of associations between variables. Fourth, this study did not include Axis diagnosis on depression or anxiety, or measures on distress tolerance, which may potentially affect treatment-seeking behaviors and substance use outcomes (Ozdel & Ekinci, 2014). Finally, only the frequency of alcohol and drug use was included in the current study, inclusion of quantity of alcohol/drug use and drug type might show different outcomes.

Despite these limitations, the study has significant strengths. This study investigated the change in motivation throughout treatment and its association with substance use outcomes. This study also used a unique high-risk sample of women, and provides a differential understanding of the motivation for change in using alcohol as separate from drugs. Other strengths include an intent-to-treat and randomized controlled trial design, the use of manualized, empirically supported treatments, and long-term follow-up to 1.5 years.

Findings suggest that motivation for change at the beginning of treatment is a more powerful predictor of change than motivation during treatment, and also highlights the emotional processes associated with motivation for change. This study offers several important clinical implications. Clinicians should focus on emotional processes during therapy for drug use, especially the coping process that women use to handle their negative experiences. Our study revealed that increased anxiety and depressive symptoms leads to more emotional coping which then results in higher motivation and better drug use outcomes. This may suggest that increased self-awareness and reflection, and a tension between how one feels and behave and how one would like to feel and behave could underlie the observed causal connections. Overall, the current study is one of the few studies to examine change in motivation over the course of treatment and sheds light on the underlying mechanisms leading to reduced drug use among women.

Acknowledgments

This study was funded by NIDA grant #R01DA023062, awarded to the second author.

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Highlights

- Emotion-oriented coping mediates the link of anxiety, depression and motivation.
- Higher initial motivation is related to faster decrease in drug use.
- A sequential mediation model is established.
- Treatment should attend to emotional and coping processes in therapy.

Figure 1.
Proposed mediation model.

Figure 2.

Results of parameter estimates. Values shown are standardized estimates of path coefficients. Significant paths are represented by solid lines. Nonsignificant paths are represented by dashed lines.

*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 1

Demographic Characteristics of the Current Sample

Variable	N (%)	Mean (SD)
Race/ethnicity		
White, not of Hispanic Origin	98 (53.6)	
African American	78 (42.6)	
Other	7 (3.8)	
Marital status		
Single, never married	60 (32.8)	
In a romantic relationship	64 (34.9)	
Legally married	20 (10.9)	
Separated but still married	15 (8.2)	
Divorced	21 (11.5)	
Widowed	3 (1.6)	
Annual family income		
0–\$5000	49 (26.8)	
\$5001–\$15,000	61 (33.3)	
\$15,001–\$30,000	39 (21.3)	
\$30,001–\$45,000	16 (8.7)	
\$45,001 or above	17 (9.3)	
Have ever been abused	134 (73.2)	
Sexually	89 (50.6)	
Physically	115 (62.8)	
Drug of choice		
Alcohol	60 (32.8)	
Cocaine	34 (18.6)	
Opiates	89 (48.6)	
Have been in inpatient treatment for alcohol/drug abuse	76 (41.5)	
Average times for inpatient treatment for alcohol/drug abuse prior to baseline		2.15 (1.87)
Average duration for inpatient treatment for alcohol/drug abuse prior to baseline		43.79 (133.41)
Have been in outpatient treatment for alcohol/drug abuse	91 (49.7)	
Average times for outpatient treatment for alcohol/drug abuse prior to baseline		1.40 (1.15)
Average duration for outpatient treatment for alcohol/drug abuse prior to baseline		194.00 (341.10)

Table 2

Descriptive statistics and bivariate correlations of study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1.Treatment	-																					
2.Income	.02	-																				
3.Depression	.06	-.07	-																			
4.Anxiety	.06	-.01	.61	***	-																	
5.Emotion	.02	-.03	.68	***	.60	***	-															
6.Task	-.08	.08	-.26	***	-.07	-.11	-															
Motivation for change: Drug use																						
7.Baseline	.15	*	.27	***	.22	**	.33	***	-.02	-												
8.3-month	.10	.01	.29	***	.22	**	.38	***	.02	.62	***	-										
9.6-month	.01	.07	.35	***	.32	***	.37	***	-.11	.50	***	.52	***	-								
Drug use:																						
10.Baseline	-.02	.08	.16	*	.15	*	.18	*	-.04	.27	***	.39	***	.42	***	-						
11.3-month	-.05	.07	.07	.11	.06	-.03	.06	.24	**	.28	***	.52	***	.28	***	.52	***	-				
12.6-month	-.07	.13	-.02	-.03	-.11	.08	-.02	.06	.26	***	.37	***	.56	***	.37	***	.56	***	-			
13.12-month	-.05	.06	.09	.06	.00	.13	.07	.11	.25	**	.36	***	.46	***	.60	***	.46	***	.60	***	-	
14.18-month	.04	.01	.07	.00	-.03	.04	-.04	.06	.23	**	.29	***	.46	***	.51	***	.58	***	.51	***	.58	***
Motivation for change: Alcohol use																						
15.Baseline	.05	-.18	.03	.11	.11	-.11	-.02	-.11	-.07	-.28	***	-.11	-.16	*	-.11	-.15	-					
16.3-month	.00	-.23	.04	.15	.10	-.14	-.14	-.17	*	-.24	**	-.17	*	-.21	**	-.15	-.12	.67	***	-		
17.6-month	-.04	-.09	.16	.21	**	.16	*	-.21	**	.10	-.15	-.05	-.21	**	-.06	-.09	.53	***	.58	***	-	
Alcohol use:																						
18.Baseline	-.04	-.18	-.05	-.03	-.01	-.11	-.20	**	-.29	***	-.11	-.17	*	-.14	-.11	-.13	-.17	*	.44	***	.55	***
19.3-month	-.17	*	-.10	.01	-.01	.02	-.16	*	-.17	*	-.23	**	-.05	-.23	.05	.01	-.03	-.07	.29	***	.37	***
																					.61	***

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
20.6-month	-.14	-.06	-.09	-.02	-.02	-.03	-.16 [*]	-.24 ^{**}	-.11	-.14	.02	-.00	.06	-.01	.22 ^{**}	.30 ^{***}	.39 ^{***}	.56 ^{***}	.61 ^{***}	-	-	-
21.12-month	-.16 [*]	.03	-.08	-.03	.01	.13	-.14	-.13	-.09	-.13	.00	.01	.11	.04	.14	.26 ^{**}	.27 ^{**}	.48 ^{***}	.38 ^{***}	.72 ^{***}	-	-
22.18-month	-.03	-.10	-.05	-.03	-.03	-.02	-.14	-.17 [*]	.01	-.07	-.07	-.03	.10	.11	.23 ^{**}	.36 ^{***}	.33 ^{***}	.50 ^{***}	.34 ^{***}	.67 ^{***}	.69 ^{**}	-
M	-	2.48	22.65	7.92	55.03	54.79	73.25	64.50	63.62	58.47	33.13	35.50	30.04	31.86	51.49	46.67	46.90	21.24	13.92	11.73	12.40	11.11
SD	-	1.43	13.74	6.72	11.87	12.61	18.56	21.99	21.38	38.12	38.51	42.27	38.60	40.94	24.70	24.59	23.19	29.64	25.36	22.08	24.73	22.62
N	183	182	183	182	182	182	182	164	162	183	165	165	161	163	181	162	163	183	165	165	161	163

Note. Treatment: 0 = WHE, 1 = EBFT. Depression = BDI total score at baseline. Anxiety = BSI anxiety subscale at baseline. Emotion = Emotion-oriented coping measured by CISS at baseline; Task = Task-oriented coping measured by CISS at baseline; Motivation = total scores of SOCRAATES; Drug use and alcohol use = number of percent of days of using substance in 90 days prior to assessment. The mean and the standardized deviation represent the average score and the standardized deviation of each assessment.

p < .001,
**
p < .01,
*
p < .05.

Table 3

Indirect effects.

Indirect Pathways	Coefficient	SE	95% CI (Bootstrap percentile)
Effects from depression to the intercept of drug use			
Depression → emotion coping → drug use	-0.064	0.138	(-0.340,0.201)
Depression → motivation → drug use	0.039	0.059	(-0.063,0.175)
Depression → emotional coping → motivation → drug use	0.063	0.039	(-0.001,0.149)
Effects from anxiety to the intercept of drug use			
Anxiety → emotion coping → drug use	-0.077	0.165	(-0.409,0.240)
Anxiety → motivation → drug use	-0.002	0.101	(-0.224,0.202)
Anxiety → emotional coping → motivation → drug use	0.076	0.047	(-0.001,0.180)
Effects from depression to the slope of drug use			
Depression → emotion coping → drug use	-0.030	0.026	(-0.083,0.022)
Depression → motivation → drug use	-0.008	0.012	(-0.035,0.013)
Depression → emotional coping → motivation → drug use	-0.013	0.007	(-0.030,-0.002)
Effects from anxiety to the slope of drug use			
Anxiety → emotion coping → drug use	-0.036	0.032	(-0.104,0.025)
Anxiety → motivation → drug use	0.000	0.021	(-0.046,0.042)
Anxiety → emotional coping → motivation → drug use	-0.016	0.009	(-0.036,-0.002)
Effects from emotion coping to the intercept of drug use			
Emotion coping → motivation → drug use	0.147	0.085	(-0.002, 0.334)
Effects from emotion coping to the slope of drug use			
Emotion coping → motivation → drug use	-0.031	0.016	(-0.066, -0.005)

Note. Boldface numbers indicate statistically significant indirect effects.

p<.001,**
p<.01,*
p<.05