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Positive affect and processes of recovery among treatment-seeking methamphetamine users

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ABSTRACT

Background: Revised Stress and Coping Theory proposes that positive affect serves adaptive functions, independent of negative affect. However, scant research has examined whether, how, and under what circumstances positive affect is associated with decreased substance use.
Methods: Eighty-eight methamphetamine-using men who have sex with men (MSM) completed the baseline assessment for substance abuse treatment outcome study which included measures of positive and negative affect, cognitive-behavioral change processes (i.e., approach-oriented coping, self-efficacy for managing methamphetamine triggers, and abstinence-related action tendencies), abstinence-specific social support, and self-reported substance use. Participants also provided a urine sample for toxicology screening.
Results: After controlling for demographic characteristics and negative affect, higher positive affect was independently associated with greater approach-oriented coping, abstinence-related action tendencies, and abstinence-specific social support. Positive affect was also independently associated with greater self-efficacy for managing methamphetamine triggers, but only at lower levels of negative affect. Through these cognitive-behavioral and social pathways, positive affect was indirectly associated with lower frequency of stimulant use in the past 30 days, lower odds of reporting stimulant use two or more days in a row, and lower odds of providing a urine sample that was reactive for stimulant metabolites. On the other hand, negative affect was not indirectly associated with any measure of stimulant use.
Conclusions: Clinical research is needed to examine the pathways whereby positive affect may predict better substance abuse treatment outcomes.

1. Introduction

There is increasing recognition that difficulties with affect regulation play an important role in the development and maintenance of substance use disorders, but the underlying pathways that account for these effects are not well understood (Kassel et al., 2003). Consistent with negative reinforcement models of addiction, prior research has focused extensively on negative affect as a risk factor for continued substance use and relapse (Baker et al., 2004). On the other hand, research examining the role of positive affect in substance use has yielded discrepant results (Carrico, 2013; De Wit and Phan, 2010). Greater positive affect encompasses more frequent experiences of positive emotions that can be further differentiated by high (e.g., excitement, joy) and low (e.g., contentment, gratitude) levels of arousal (Watson et al., 1999). Although high arousal positive affect is commonly conceptualized as a trigger for relapse (McKay et al., 1995), greater positive affect has been shown to predict *decreased* substance use following formal treatment (Hall et al., 1990, 1991). Lending additional support to its potentially beneficial effects, other studies observed that positive affect is independently associated with decreased craving and it buffers against the deleterious effects of negative affect on substance use (McHugh et al., 2013; Wills et al., 1999). Further research is needed to determine whether, how, and under what circumstances positive affect may reinvigorate and sustain the processes of recovery from a substance use disorder.

Revised Stress and Coping Theory as well as the Broaden-and-Build Theory of positive emotions delineate the cognitive,

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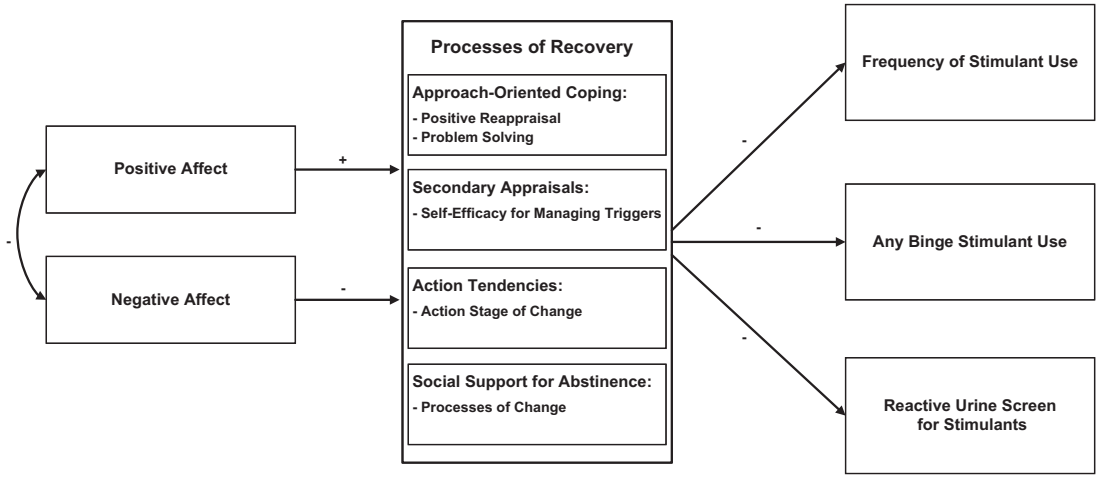

Fig. 1. Proposed theory-based pathways whereby positive affect may decrease stimulant use.

behavioral, and social pathways whereby positive affect may serve adaptive functions (Folkman and Moskowitz, 2000; Fredrickson, 2001). The experience of positive affect may sensitize individuals to non-drug-related sources of reward, resulting in the activation of the mesocorticolimibic and nigrostriatal dopamine systems (Ashby et al., 1999). Elevations in dopamine during reward processing may partially account for the "broadening" function of positive affect, which leads to enhanced cognitive capacity (Dreisbach and Goschke, 2004; Lyubomirsky et al., 2005) and behavioral action tendencies (Fredrickson and Branigan, 2005). Positive affect has also been shown to reinvigorate coping efforts and bolster self-efficacy (Lyubomirsky et al., 2005; Moskowitz et al., 2009). The relevance of coping processes is supported in part by prior research where increased substance use coping mediated the associations of lower positive affect and higher negative affect with greater substance use (Carrico et al., 2012; Wills et al., 1999). Prior clinical research has also established that approach-oriented coping and self-efficacy for managing triggers for substance use are important determinants of better substance abuse treatment outcomes as well as increased 12-step, self-help involvement (Carrico et al., 2007; Gifford et al., 2006). Taken together, the experience of positive affect may directly decrease risk for substance use and it could also support the sustained implementation of cognitive-behavioral change processes to avoid substance use.

Positive affect is also theorized to build social resources that assist individuals with effectively managing stressful life circumstances (Folkman and Moskowitz, 2000; Fredrickson, 2001). This is supported by findings that the daily experience of positive emotions is prospectively linked to increased personal and social resources, which, in turn, predict greater life satisfaction (Fredrickson et al., 2008). Among individuals with substance use disorders, abstinence-specific social support has been shown to predict better substance abuse treatment outcomes (Havassy et al., 1991) and increased odds of alcohol use disorder remission following formal help-seeking (Moos and Moos, 2007; Timko et al., 2005). Thus, greater abstinence-specific social support represents another theory-based pathway whereby greater positive affect may indirectly decrease substance use.

Consistent with Revised Stress and Coping Theory as well as the Broaden and Build Theory of positive emotions (Folkman and Moskowitz, 2000; Fredrickson, 2001), we propose a model where positive affect plays a unique, beneficial role in decreasing substance use (Carrico, 2013). In the present study, we hypothesized that positive affect would be directly associated with decreased stimulant use, greater cognitive-behavioral change processes (i.e., approach-oriented coping, self-efficacy for managing methamphetamine triggers, and abstinence-related action tendencies), and higher abstinence-specific social support after accounting for negative affect. Because the adaptive significance of positive affect is theorized to be heightened during periods of increased stress (Folkman and Moskowitz, 2000; Zautra et al., 2002), we also tested whether negative affect moderated the associations of positive affect with stimulant use, cognitive-behavioral change processes, and abstinence-specific social support. Informed by these findings, we examined the extent to which positive affect was indirectly associated with decreased stimulant use via cognitive-behavioral change processes and abstinence-specific social support (see Fig. 1).

2. Methods

2.1. Procedures

The Stonewall Treatment Evaluation Project (STEP) is a treatment outcome study, which followed a cohort of methamphetamine-using men who have sex with men (MSM) that was receiving outpatient, cognitive-behavioral substance abuse treatment. Located in San Francisco, the Stonewall Project is implementing cognitive-behavioral substance abuse treatment from a harm reduction perspective with substance-using MSM (Siever and Discepola, 2013). Participants receiving treatment at Stonewall were eligible to enroll in STEP up to: (1) 60 days after treatment initiation; or (2) 60 days following re-initiation after more than 30 days out of treatment. No formal exclusion criteria were employed in this community-based participatory research project.

Prospective participants completed a consent to contact form during outpatient treatment. After eligibility was verified using treatment records, participants were contacted to schedule a baseline visit. Participants were recruited from July of 2010 through June of 2012. Of the 97 individuals who were eligible, 88 (91%) enrolled in STEP. Seven participants were not enrolled because their period of eligibility expired, one participant was excluded because he was unable to complete the baseline assessment after two attempts, and one individual declined to participate.

At the baseline study visit, participants completed a signed informed consent followed by an interviewer-administered, computer-based survey (Questionnaire Development System; Nova Research Company; Bethesda, MD) to assess positive and negative affect as well as cognitive-behavioral and social change processes that were hypothesized to be relevant to substance abuse treatment outcomes. Then, participants completed a self-administered, computer-based measure of substance use and provided a urine sample at the end of the study visit to screen for recent substance use (Redicup; Redwood Toxicology Laboratory; Santa Rosa, CA). Participants were reimbursed with a $50 pre-loaded debit card for their time and travel expenses. Study procedures were approved by the University of California, San Francisco Committee on Human Research.

2.2. Measures

2.2.1. Demographics. Age, ethnicity, education, income, sexual orientation, and HIV status were assessed by questionnaire.

2.2.2. Positive and negative affect. The modified Differential Emotions Scale (DES) was administered to assess state positive and negative affect (Fredrickson et al.,