Published in final edited form as:

Psychol Addict Behav. 2014 June ; 28(2): 568–574. doi:10.1037/a0034545.

Social Anxiety and Coping Motives for Cannabis Use: The Impact of Experiential Avoidance

Julia D. Buckner,

Department of Psychology, Louisiana State University

Michael J. Zvolensky,

Department of Psychology, University of Houston and Department of Behavioral Science,
University of Texas MD Anderson Cancer Center

Samantha G. Farris, and

Department of Psychology, University of Houston

Julianna Hogan

Department of Psychology, University of Vermont

Abstract

Social anxiety is robustly associated with cannabis-related problems. This relation appears to be largely explained by coping-oriented motives for cannabis use. Yet, factors associated with coping motives among socially anxious individuals have yet to be identified. The current study tested whether experiential avoidance (i.e., unwillingness to experience distressing internal states) and its subfacets mediated the relation between social anxiety and coping motives for cannabis use. The sample consisted of current (past-month) cannabis-using adults ($n = 103$). Results indicated that social anxiety was robustly related to experiential avoidance, which was robustly related to coping motives. Follow-up analyses indicated that behavioral avoidance was the only experiential avoidance subtype to be related to both social anxiety and coping motives after controlling for theoretically relevant variables. Experiential avoidance (globally) and behavioral avoidance (specifically) mediated the relation between social anxiety and coping motives. Together, the results suggest experiential avoidance (especially behavioral avoidance) may play an important role in cannabis use behaviors, particularly among socially anxious users.

Keywords

cannabis; marijuana; motives; social anxiety; experiential avoidance

Social anxiety appears to demonstrate a robust and potentially unique relation to cannabis-related impairment. Nearly one third to one fourth of people with cannabis dependence have social anxiety disorder (SAD), a higher rate than for panic disorder, generalized anxiety disorder, and posttraumatic stress disorder (Agosti, Nunes, & Levin, 2002; Stinson, Ruan, Pickering, & Grant, 2006). After adjusting for gender, adolescents with SAD were almost

seven times more likely to develop cannabis dependence in early adulthood (Buckner et al., 2008). Moreover, other anxiety disorders are often not significantly prospectively related to cannabis dependence after adjusting for co-occurring disorders and/or other substance use (Buckner et al., 2008). Further, SAD was more strongly related to cannabis dependence than abuse after adjusting for mood, personality, psychotic, other substance use, and conduct disorders, whereas no other anxiety disorder (generalized anxiety disorder, panic disorder, specific phobia) remained related to cannabis dependence in multivariate analysis (Buckner, Heimberg, Schneier, et al., 2012). Among cannabis users, SAD was related to transition from first use to cannabis-related problems among adolescent boys after adjusting for delinquency (Marmorstein, White, Loeber, & Stouthamer-Loeber, 2010). Elevated social anxiety in nonclinical samples also is related to greater cannabis-related problems (Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007; Buckner, Heimberg, Matthews, & Silgado, 2012; Buckner, Heimberg, & Schmidt, 2011; Buckner, Mallott, Schmidt, & Taylor, 2006; Buckner & Schmidt, 2008; Buckner, Schmidt, Bobadilla, & Taylor, 2006; Buckner, Zvolensky, & Schmidt, 2012). The relation between social anxiety and cannabis-related impairment appears to be largely explained by coping-oriented motives for cannabis use (Buckner et al., 2007; Buckner, Zvolensky, et al., 2012). Yet, factors associated with coping motives among socially anxious individuals have yet to be identified.

Experiential avoidance denotes an affect-related regulatory process whereby persons are unwilling to remain in contact with certain internal experiences (e.g., thoughts, emotions) and attempt to regulate the form, frequency, or contexts that produce these experiences (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Early models posited that experiential avoidance was a unidimensional construct with broadband explanatory applicability to psychopathology (Hayes et al., 1996). Experiential avoidance was implicated in the etiology and maintenance of many clinical disorders (e.g., Blackledge & Hayes, 2001; Hayes et al., 1996), including fear and anxiety (Feldner, Zvolensky, Eifert, & Spira, 2003; Forsyth, Parker, & Finlay, 2003; Karekla, Forsyth, & Kelly, 2004; Sloan, 2004; Zvolensky & Forsyth, 2002) and substance use (Stewart, Zvolensky, & Eifert, 2002). More recent work indicates that experiential avoidance is a higher-order construct with multiple specific lower-order factors. For example, Gámez and colleagues (2011) found that experiential avoidance comprises behavioral avoidance (overt avoidance of distressing situations), distress aversion (nonacceptance of distress), procrastination (delaying anticipated distress), distraction/suppression (ignoring or suppressing distress), repression/denial (distancing and dissociating from distress), and distress endurance (willingness to behave effectively in the face of distress). Accordingly, experiential avoidance can be studied as a global higher-order construct or in regard to specific avoidance processes.

Despite the potential importance of experiential avoidance, there unfortunately has been little attention applied to this construct in terms of better understanding social anxiety-cannabis relations. Existing evidence supports that among current cannabis users, clinically elevated social anxiety is related to behavioral avoidance in two specific situations: avoidance of social situations if cannabis is unavailable (Buckner, Heimberg, Matthews, et al., 2012) and avoidance of scrutiny by cannabis-using peers (Buckner et al., 2007; Buckner, Zvolensky, et al., 2012). Further, social avoidance is uniquely related to cannabis use problems (Buckner et al., 2011). Yet, it is not clear whether behavioral avoidance more

broadly or experiential avoidance as a global construct mediate the relations between social anxiety and coping motives.

In sum, social anxiety is related to coping motives for cannabis use. Experiential avoidance is one form of coping that may mediate this relation. Thus, the primary aim of the current study was to test our hypothesis that experiential avoidance, as a global construct, would mediate the relation between social anxiety and coping motives. Specifically, we first tested our hypotheses that social anxiety would be positively correlated with experiential avoidance, which would be positively correlated with coping motives. Second, we tested our hypothesis that social anxiety would be robustly, positively related to experiential avoidance after controlling for frequency of cannabis use, negative affectivity, and emotion dysregulation, given observed relations between these constructs and coping motives for cannabis use (e.g., Bonn-Miller, Vujanovic, & Zvolensky, 2008). Third, we tested our hypothesis that experiential avoidance would be robustly, positively related to coping motives after controlling for other motives, frequency of cannabis use, negative affectivity, and emotion dysregulation. Finally, we tested whether experiential avoidance mediated the relation between social anxiety and coping motives. Given the recent perspective that experiential avoidance involves multiple lower-order dimensions (Gámez et al., 2011), we also examined whether subtypes of experiential avoidance were related to social anxiety and coping motives for cannabis use.

Method

Participants and Procedures

The sample comprised 103 current cannabis users (32% female; $M_{\text{age}} = 21.1$; $SD = 2.9$) recruited via community advertisements (e.g., flyers, newspaper ads). Interested participants completed an online screening to determine eligibility. Eligibility criteria included being between 18 and 45 years old, past-month cannabis use (confirmed via urine sample using a 50 ng/ml positive cutoff), cannabis as drug of choice, and no interest in, or current receipt of, substance abuse treatment. Eligible participants were invited to the laboratory to complete study measures, which were administered via www.surveymonkey.com. Participants were compensated \$25 for completion of these measures and were asked to refrain from cannabis use the day of their appointment. Study procedures received Institutional Review Board approval and informed consent was obtained before data collection.

Participants reported a mean age of first cannabis use at 16.0 years ($SD = 2.1$; range = 11–22) and 97.1% of the sample used cannabis at least once per week, with 75.7% reporting daily use. Although recruited from the community, the majority (87.4%) were undergraduate or graduate students. Most (91.3%) reported their marital status as single (not married or cohabiting) and were employed either part-time (42.7%) or full-time (13.6%). The sample was predominantly non-Hispanic/Latino (93.2%) and the racial composition was 65.0% Caucasian, 18.4% African American or Black, 3.9% Asian or Asian American, 1.0% Native American, 6.8% “mixed,” and 4.9% “other.” Other sample descriptive information appears in Table 1.

Measures

Cannabis—Cannabis use motives were assessed with the *Marijuana Motives Measure* (MMM; Simons, Correia, Carey, & Borsari, 1998), which asks participants to rate “how often would you say that you use marijuana for each of the following reasons” on a 1 (*almost never/never*) to 5 (*almost always/always*) scale. The MMM consists of five 5-item subscales that assess coping (e.g., “to forget my worries”), enhancement (e.g., “to get high”), social (e.g., “to enjoy a party”), conformity (e.g., “to fit in with a Group I like”), and expansion (e.g., “to expand my awareness”) motives. Responses were summed. MMM subscales have demonstrated adequate internal consistency (Chabrol, Ducongé, Casas, Roura, & Carey, 2005), and the coping motives scale ($\alpha = .87$) demonstrated adequate internal consistency in the present sample. Daily cannabis use status was determined with the *Marijuana Use Form* (Buckner et al., 2007), which has demonstrated good convergent validity (Buckner, Crosby, Wonderlich, & Schmidt, 2012).

Social anxiety—The *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke, 1998), a 20-item measure, assessed anxiety in social interaction situations from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). Responses were summed. This widely used measure has good internal consistency (e.g., Heimberg, Mueller, Holt, Hope, & Leibowitz, 1992) and is specific for social anxiety relative to other forms of anxiety (Brown et al., 1997). Internal consistency was adequate in the current sample ($\alpha = .95$).

Experiential avoidance—The *Multidimensional Experiential Avoidance Questionnaire* (MEAQ; Gámez et al., 2011) is a 62-item measure of experiential avoidance. Items are rated from 1 (*strongly disagree*) to 6 (*strongly agree*). The MEAQ consists of six subscales: (1) Distress Aversion, 13 items that measure nonacceptance/ negative evaluation of stress (“happiness involves getting rid of negative thoughts”); (2) Behavioral Avoidance, 11 items that measure overt avoidance of distress (“I go out of my way to avoid uncomfortable situations”); (3) Distraction and Suppression, seven items that measure attempts to regulate distressing thoughts and feelings (“I work hard to keep out upsetting feelings”); (4) Repression and Denial, 13 items that measure distancing and dissociating from distressing emotions (“people have told me I’m not aware of my problems”); (5) Procrastination, seven items that measure delaying impending discomfort (“I try to put off unpleasant tasks for as long as possible”); and (6) Distress Endurance, 11 items that measure willingness to behave effectively in the face of distress (“when working on something important, I won’t quit even if things get difficult”). Responses were summed. The MEAQ demonstrates convergence with other measures of experiential avoidance (Gámez et al., 2011). In the present sample, internal consistency was adequate for the global MEAQ total score ($\alpha = .92$) and for all MEAQ subscales: Behavioral Avoidance ($\alpha = .85$); Distress Aversion ($\alpha = .84$); Procrastination ($\alpha = .89$); Distraction/Suppression ($\alpha = .89$); Repression/Denial ($\alpha = .86$); and Distress Endurance ($\alpha = .87$).

Emotion dysregulation—The *Difficulties in Emotional Regulation Scale* (DERS; Gratz & Roemer, 2004) is a 36-item assessment of emotion dysregulation. Items are rated from 1 (*almost never*) to 5 (*almost always*). In the current investigation, the DERS total sum score

was used as a global index of emotion dysregulation (Gratz & Roemer, 2004). Consistent with past work (Gratz & Roemer, 2004), the scale demonstrated excellent adequate internal consistency in the current sample ($\alpha = .92$).

Negative affectivity—The sum of the 10-item negative affectivity scale items of the *Positive and Negative Affect Schedule* (PANAS; Watson, Clark, & Tellegen, 1988) was used in this study as a global index of the trait-level propensity to experience negative affect. For each item, participants indicated from 1 (*very slightly*) to 5 (*extremely*) the degree to which the adjective (e.g., “irritable”) typifies how they generally feel. This scale demonstrated adequate internal consistency in the current sample ($\alpha = .89$).

Data Analyses

First, bivariate correlations were conducted to examine relations between study variables and to determine whether social anxiety was related to experiential avoidance and whether experiential avoidance was related to coping motives. A stringent p value of .01 was used to control for Type I error. To test the robustness of the relations of social anxiety with MEAQ scores, a series of hierarchical linear regression models was conducted. Separate models were conducted for each criterion variable (MEAQ total score and each MEAQ subscale). For each model, predictor variables were entered into two steps: covariates (daily cannabis use, negative affectivity, emotion dysregulation) were entered into Step 1, and social anxiety was entered into Step 2. This strategy ensured that observed effects at Step 2 could not be attributable to variance accounted for at Step 1 (Cohen & Cohen, 1983). To test the robustness of the relations of the MEAQ scores with coping motives, an additional series of hierarchical linear regressions was conducted. Coping motives were the criterion variable in each model and separate models were conducted for each predictor variable (MEAQ total or subscale). Separate models were conducted for each MEAQ subscale related to coping motives given that collinearity diagnostic statistics suggested possible problems with multicollinearity among the subscales (eigen-value = .02, condition index >15). For each model, covariates (other motives, daily cannabis use, negative affectivity, emotion dysregulation) were entered into Step 1, and MEAQ scale was entered into Step 2.

We tested whether relevant MEAQ scales mediated the relation between social anxiety and coping motives using the strategy outlined by Kenny, Kashy, and Bolger (1998). The first requirement of this strategy is a significant relation between the predictor variable (social anxiety) and the criterion (coping motives). The second is a significant relation between the predictor variable and the proposed mediator (MCSAS scale). To satisfy requirement three, the proposed mediator must be significantly related to the criterion after controlling for the effects of the predictor. The final requirement involves evaluating the relation between the predictor and the criterion when the variance accounted for by the proposed mediator has been removed. If the coefficient is zero, then the data are consistent with mediation. If the coefficient is reduced but is not zero, partial mediation is indicated. Given the limitations of testing mediation using cross-sectional data, we tested whether coping motives mediated the relations between social anxiety and relevant MEAQ scales (as per MacKinnon, 2008).

Results

Relationships Between Study Variables

Coping motives were significantly, positively correlated with social anxiety and with MEAQ-Total score as well as all MEAQ subscales except Distress Endurance (see Table 1). Social anxiety was significantly, positively correlated with all experiential avoidance measures. Negative affectivity and emotion dysregulation were significantly, positively correlated with coping motives, social anxiety, and MEAQ subscales.

As detailed in Table 2, when accounting for the variance attributable to daily cannabis use status, negative affectivity, and emotion dysregulation, social anxiety remained significantly positively related to the following MEAQ scales: MEAQ-Total, Behavioral Avoidance, Procrastination, and Repression/Denial. Together, predictor variables accounted for 52.4% of the variance in MEAQ-Total, with social anxiety uniquely accounting for 6.8% of this variance. Predictor variables accounted for 33.2% of the variance in Behavioral Avoidance, with social anxiety uniquely accounting for 15.5% of this variance. Predictor variables accounted for 31.4% of the variance in Procrastination, with social anxiety uniquely accounting for 5.9%. Predictor variables accounted for 43.4% of the variance in Repression/Denial, with social anxiety uniquely accounting for 2.3%. Social anxiety was not significantly related to Distress Aversion, $F(1, 98) = 1.03$, $p = .313$, $R^2 = .008$, or Distraction/Suppression, $F(1, 98) = 1.07$, $p = .303$, $R^2 = .009$.

Next, we examined whether MEAQ scores remained significantly related to coping motives when accounting for the variance attributable to other motives, daily cannabis use status, negative affectivity, and emotion dysregulation (see Table 3). Covariates accounted for 53.1% of the variance in coping motives. MEAQ-Total remained significantly related to coping motives and accounted for an additional 1.9% of the variance. Regarding the MEAQ subscales, Behavioral Avoidance (2.4% unique variance), Distress Aversion (3.0% unique variance), and Distraction/Suppression (2.3% unique variance) remained significantly related to coping motives. Procrastination and Repression/Denial were no longer significantly related to coping motives in these analyses.

Mediational Analyses

Because the MEAQ total score and the Behavioral Avoidance subscale were the only two experiential avoidance variables robustly related to both social anxiety and coping motives, we tested whether they mediated the relation between social anxiety and coping motives. As evidenced on Table 4, both the MEAQ-Total and the Behavioral Avoidance subscale partially mediated the relation between social anxiety and coping motives. Specifically, there was a 97.8% reduction in the variance accounted for by social anxiety once the variance attributable to MEAQ total score was accounted for and there was an 82.0% reduction in the variance accounted for by social anxiety once the variance attributable to Behavioral Avoidance was accounted for.

Next, we tested whether coping motives mediated the relation between social anxiety and MEAQ scales. These analyses were not consistent with mediation (MEAQ-Total $B = 0.93$, $p < .001$; Behavioral Avoidance $B = 0.23$, $p < .001$). Although there was a reduction in

variance accounted for by social anxiety, the decrease (55.7% for MEAQ-Total and 48.1% for Behavioral Avoidance) was much less than that observed in the original mediational analyses, coefficients did not approach zero, and MEAQ scales remained significantly related to coping motives.

Discussion

Findings from this study contribute to our understanding of the relations between social anxiety, experiential avoidance, and coping motives for cannabis use in several ways. First, experiential avoidance was positively related to both social anxiety and coping motives. These findings were evident above and beyond the substantial variance accounted for by theoretically relevant variables (e.g., cannabis use frequency, emotion dysregulation). Second, experiential avoidance mediated the relations between social anxiety and coping motives for cannabis use, reducing the variance attributable to social anxiety by nearly 98%. Thus, the present findings suggest that experiential avoidance, as a global construct, may, at least partially, explain the observed relations between social anxiety and coping motives for cannabis use (Buckner et al., 2007; Buckner, Heimberg, Matthews, et al., 2012; Buckner, Zvolensky, et al., 2012).

Behavioral avoidance was the only subfacet of experiential avoidance robustly related to both social anxiety and coping motives. This subfacet mediated the relation between social anxiety and coping motives. Thus, behavioral avoidance may play a particularly important explanatory role in better understanding the relation between social anxiety and coping motives. Further, results suggest that it may not be behavioral avoidance in specific social situations that play important roles in social anxiety's relation to cannabis behaviors (Buckner, Heimberg, Matthews, et al., 2012), but behavioral avoidance more broadly that plays a role in coping motives for cannabis use. Also, the finding that no other experiential avoidance dimension was robustly related to social anxiety and coping motives offers further empirical support to the importance of modeling specific avoidance processes (Gámez et al., 2011).

Although not primary aims of the present investigation, at least three other observations deserve brief comment. First, the sample was characterized by frequent cannabis use. Indeed, 97% used cannabis at least once per week with 76% reporting daily use. Identification of cognitive vulnerability factors related to coping motives for cannabis use among socially anxious users in a sample of frequent cannabis users is particularly important given the positive association between social anxiety and high-risk behaviors such as suicidality among more frequent cannabis users (e.g., Buckner, Joiner, Schmdit, & Zvolensky, 2012). Second, consistent with the notion that cannabis users are vulnerable to suffering from social anxiety, the sample was characterized by greater social anxiety than is observed among nonanxious controls (Weeks et al., 2005). Third, social anxiety and experiential avoidance shared approximately 32% of variance with one another. Thus, although these constructs are related, they do not fully overlap. This observation is in accord with past work documenting the distinct construct validities of these two cognitive-affective factors (Glick & Orsillo, 2011; Kashdan, Breen, Afram, & Terhar, 2010).

There are limitations of this study that suggest avenues for future research. First, although the sample was relatively racially diverse, it primarily comprised younger adults. Second, the cross-sectional design of the present study limits causal inferences. Third, self-report measures were used as the primary assessment methodology, and it is thus possible that shared method variance may have played a role in the observed results.

Overall, the results of the current study highlight the importance of experiential avoidance in terms of better understanding the link between social anxiety and coping motives for cannabis use. This finding may conceptually inform the development of individualized intervention strategies for socially anxious cannabis users. Such tailored treatment approaches may help improve outcomes given that anxious patients tend to have poorer cannabis treatment outcomes (Buckner & Carroll, 2010).

Acknowledgments

Funding for this study was provided in part by grants from the National Institute of Drug Abuse (NIDA; 5R21DA029811-02, 1R34DA031937-01A1). NIDA had no further role in study design; in the collection, analysis and interpretation of data; in the writing of the manuscript; or in the decision to submit the manuscript for publication.

References

- Agosti V, Nunes E, Levin F. Rates of psychiatric comorbidity among U.S. residents with lifetime cannabis dependence. *The American Journal of Drug and Alcohol Abuse*. 2002; 28:643–652. [PubMed: 12492261]
- Blackledge JT, Hayes SC. Emotion regulation in acceptance and commitment therapy. *Journal of Clinical Psychology*. 2001; 57:243–255. [PubMed: 11180150]
- Bonn-Miller MO, Vujanovic AA, Zvolensky MJ. Emotional dysregulation: Association with coping-oriented marijuana use motives among current marijuana users. *Substance Use & Misuse*. 2008; 43:1653–1665. [PubMed: 18752166]
- Brown EJ, Turovsky J, Heimberg RG, Juster HR, Brown TA, Barlow DH. Validation of the Social Interaction Anxiety Scale and the Social Phobia Scale across anxiety disorders. *Psychological Assessment*. 1997; 9:21–27.
- Buckner JD, Bonn-Miller MO, Zvolensky MJ, Schmidt NB. Marijuana use motives and social anxiety among marijuanausing young adults. *Addictive Behaviors*. 2007; 32:2238–2252. [PubMed: 17478056]
- Buckner JD, Carroll KM. Effect of anxiety on treatment presentation and outcome: Results from the Marijuana Treatment Project. *Psychiatry Research*. 2010; 178:493–500. [PubMed: 20537406]
- Buckner JD, Crosby RD, Wonderlich SA, Schmidt NB. Social anxiety and cannabis use: An analysis from ecological momentary assessment. *Journal of Anxiety Disorders*. 2012; 26:297–304. [PubMed: 22246109]
- Buckner JD, Heimberg RG, Matthews RA, Silgado J. Marijuana-related problems and social anxiety: The role of marijuana behaviors in social situations. *Psychology of Addictive Behaviors*. 2012; 26:151–156. [PubMed: 22004129]
- Buckner JD, Heimberg RG, Schmidt NB. Social anxiety and marijuana-related problems: The role of social avoidance. *Addictive Behaviors*. 2011; 36:129–132. [PubMed: 20832947]
- Buckner JD, Heimberg RG, Schneier FR, Liu S, Wang S, Blanco C. The relationship between cannabis use disorders and social anxiety disorder in the National Epidemiological Study of Alcohol and Related Conditions (NESARC). *Drug and Alcohol Dependence*. 2012; 124:128–134. [PubMed: 22266089]
- Buckner JD, Joiner TE Jr, Schmidt NB, Zvolensky MJ. Daily marijuana use and suicidality: The unique impact of social anxiety. *Addictive Behaviors*. 2012; 37:387–392. [PubMed: 22154236]

- Buckner JD, Mallott MA, Schmidt NB, Taylor J. Peer influence and gender differences in problematic cannabis use among individuals with social anxiety. *Journal of Anxiety Disorders*. 2006; 20:1087–1102. [PubMed: 16621436]
- Buckner JD, Schmidt NB. Marijuana effect expectancies: Relations to social anxiety and marijuana use problems. *Addictive Behaviors*. 2008; 33:1477–1483. [PubMed: 18694625]
- Buckner JD, Schmidt NB, Bobadilla L, Taylor J. Social anxiety and problematic cannabis use: Evaluating the moderating role of stress reactivity and perceived coping. *Behaviour Research and Therapy*. 2006; 44:1007–1015. [PubMed: 16168950]
- Buckner JD, Schmidt NB, Lang AR, Small JW, Schlauch RC, Lewinsohn PM. Specificity of social anxiety disorder as a risk factor for alcohol and cannabis dependence. *Journal of Psychiatric Research*. 2008; 42:230–239. [PubMed: 17320907]
- Buckner JD, Zvolensky MJ, Schmidt NB. Cannabis-related impairment and social anxiety: The roles of gender and cannabis use motives. *Addictive Behaviors*. 2012; 37:1294–1297. [PubMed: 22766487]
- Chabrol H, Ducongé E, Casas C, Roura C, Carey KB. Relations between cannabis use and dependence, motives for cannabis use and anxious, depressive and borderline symptomatology. *Addictive Behaviors*. 2005; 30:829–840. [PubMed: 15833585]
- Cohen, J.; Cohen, P. *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum; 1983.
- Feldner MT, Zvolensky MJ, Eifert GH, Spira AP. Emotional avoidance: An experimental test of individual differences and response suppression using biological challenge. *Behaviour Research and Therapy*. 2003; 41:403–411. [PubMed: 12643964]
- 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. *Addictive Behaviors*. 2003; 28:851–870. [PubMed: 12788261]
- Gámez W, Chmielewski M, Kotov R, Ruggero C, Watson D. Development of a measure of experiential avoidance: The Multidimensional Experiential Avoidance Questionnaire. *Psychological Assessment*. 2011; 23:692–713. [PubMed: 21534697]
- Glick DM, Orsillo SM. Relationships among social anxiety, self-focused attention, and experiential distress and avoidance. *Journal of Cognitive and Behavioral Psychotherapies*. 2011; 11:1–12.
- Gratz KL, Roemer L. Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*. 2004; 26:41–54.
- Hayes SC, Wilson KG, Gifford EV, Follette VM, Strosahl K. Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*. 1996; 64:1152–1168. [PubMed: 8991302]
- Heimberg R, Mueller G, Holt C, Hope D, Leibowitz M. Assessment of anxiety in social interaction and being observed by others: The social interaction scale and the social phobia scale. *Behavior Therapy*. 1992; 23:53–73.
- Karekla M, Forsyth JP, Kelly MM. Emotional avoidance and panicogenic responding to a biological challenge procedure. *Behavior Therapy*. 2004; 35:725–746.
- Kashdan TB, Breen WE, Afram A, Terhar D. Experiential avoidance in idiographic, autobiographical memories: Construct validity and links to social anxiety, depressive, and anger symptoms. *Journal of Anxiety Disorders*. 2010; 24:528–534. [PubMed: 20399602]
- Kenny, DA.; Kashy, DA.; Bolger, N. Data analysis in social psychology. In: Gilbert, DT.; Fiske, ST.; Lindzey, G., editors. *The handbook of social psychology*. 4th. Vol. 1. New York: McGraw-Hill; 1998. p. 233–265.
- MacKinnon, DP. *Introduction to statistical mediation analysis*. New York, NY: Taylor & Francis Group/Erlbaum; 2008.
- Marmorstein NR, White HR, Loeber R, Stouthamer-Loeber M. Anxiety as a predictor of age at first use of substances and progression to substance use problems among boys. *Journal of Abnormal Child Psychology*. 2010; 38:211–224. [PubMed: 19821024]

- Mattick RP, Clarke JC. Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*. 1998; 36:455–470. [PubMed: 9670605]
- Simons JS, Correia CJ, Carey KB, Borsari BE. Validating a five-factor marijuana motives measure: Relations with use, problems, and alcohol motives. *Journal of Counseling Psychology*. 1998; 45:265–273.
- Sloan DM. Emotion regulation in action: Emotional reactivity in experiential avoidance. *Behaviour Research and Therapy*. 2004; 42:1257–1270. [PubMed: 15381437]
- Stewart SH, Zvolensky MJ, Eifert GH. The relations of anxiety sensitivity, experiential avoidance, and alexithymic coping to young adults' motivations for drinking. *Behavior Modification*. 2002; 26:274–296. [PubMed: 11961915]
- Stinson FS, Ruan WJ, Pickering R, Grant BF. Cannabis use disorders in the USA: Prevalence, correlates and co-morbidity. *Psychological Medicine*. 2006; 36:1447–1460. [PubMed: 16854249]
- Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*. 1988; 54:1063–1070. [PubMed: 3397865]
- Weeks JW, Heimberg RG, Fresco DM, Hart TA, Turk CL, Schneier FR, Liebowitz MR. Empirical validation and psychometric evaluation of the brief Fear of Negative Evaluation Scale in patients with social anxiety disorder. *Psychological Assessment*. 2005; 17:179–190. [PubMed: 16029105]
- Zvolensky MJ, Forsyth JP. Anxiety sensitivity dimensions in the prediction of body vigilance and emotional avoidance. *Cognitive Therapy and Research*. 2002; 26:449–460.

Table 1

Bivariate Correlations Among Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Social anxiety															
2. Coping motives	.37*														
3. MEAQ total	.56*	.58*													
4. Behavioral avoidance	.52*	.46*	.82*												
5. Distress aversion	.34*	.53*	.77*	.63*											
6. Procrastination	.47*	.41*	.73*	.54*	.37*										
7. Distraction/suppression	.28*	.45*	.66*	.59*	.58*	.36*									
8. Repression/denial	.42*	.49*	.75*	.48*	.45*	.49*	.38*								
9. Distress endurance	-.28*	.01	-.34*	-.12	-.01	-.30*	.13	-.16							
10. Social motives	.17	.52*	.38*	.29*	.37*	.34*	.39*	.32*	.16						
11. Enhancement motives	-.01	.05	.16	.14	.22	.17	.25	.14	.25	.33*					
12. Conformity motives	.15	.17	.13	.14	.13	.21	-.08	.07	-.07	.21	-.07				
13. Expansion motives	.26*	.37*	.26*	.33*	.23	.17	.23	.27*	.22	.42*	.24	.16			
14. Emotion dysregulation	.56*	.59*	.67*	.40*	.52*	.50*	.35*	.63*	-.27*	.28*	.13	.32*	.28*		
15. Negative affectivity	.69*	.42*	.45*	.29*	.32*	.36*	.26*	.35*	-.25*	.21	.07	.13	.27*	.66*	
Mean	28.6	12.7	199.7	37.3	44.9	26.0	28.9	34.5	48.8	15.0	21.1	6.0	14.3	76.1	28.6
Standard deviation	16.8	5.1	38.6	9.6	11.3	7.8	7.3	11.4	8.8	4.9	2.9	2.1	6.4	19.9	16.8

Note. Significant correlations are presented in bold.

* $p < .01$.

Table 2
Results From Hierarchal Linear Regression Models of Social Anxiety Predicting Experiential Avoidance

	<i>F</i>	β	<i>t</i>	<i>f</i> ²	<i>p</i>
DV: MEAQ-Total					
Model 1, Step 1:	27.61				<.001
Daily cannabis use status		.11	1.78		.143
Negative affectivity		.01	.05		.958
Emotion dysregulation		.67	6.70		<.001
Model 1, Step 2: Social anxiety	14.04	.37	3.75	.09	<.001
DV: Behavioral avoidance					
Model 2, Step 1:	7.08				<.001
Daily cannabis use status		.12	1.31		.195
Negative affectivity		.03	.234		.815
Emotion dysregulation		.39	3.16		.002
Model 2, Step 2: Social anxiety	22.65	.55	4.76	.16	<.001
DV: Procrastination					
Model 3, Step 1:	11.27				<.001
Daily cannabis use status		.04	.46		.645
Negative affectivity		.05	.40		.694
Emotion dysregulation		.47	4.07		<.001
Model 3, Step 2: Social anxiety	8.37	.34	2.89	.06	.005
DV: Repression/denial					
Model 4, Step 1:	22.99				<.001
Daily cannabis use status		.10	1.33		.188
Negative affectivity		-.12	-1.15		.252
Emotion dysregulation		.71	6.86		<.001
Model 4, Step 2: Social anxiety	3.94	.21	1.98	.03	.050

Note. DV = dependent variable; MEAQ = Multidimensional Experiential Avoidance Questionnaire.

Table 3
Results From Six Hierarchal Linear Regression Models Predicting Coping Motives

	<i>F</i>	β	<i>t</i>	<i>f</i> ²	<i>p</i>
Step 1:	15.36				<.001
Daily cannabis use status		.00	-.01		.989
Negative affectivity		.00	-.04		.968
Emotion dysregulation		.51	5.05		<.001
Social motives		.42	5.03		<.001
Enhancement motives		-.19	-2.49		<.001
Conformity motives		-.11	-2.49		.015
Expansion motives		.12	1.47		.146
Model 1, Step 2: MEAQ-Total	3.98	.20	2.00	.03	.049
Model 2, Step 2: MEAQ-Behavioral avoidance	5.05	.18	2.25	.03	.027
Model 3, Step 2: MEAQ-Distress aversion	6.34	.21	2.52	.04	.013
Model 4, Step 2: MEAQ-Distracton/suppression	4.74	.18	2.18	.03	.032
Model 5, Step 2: MEAQ-Procrastination	0.62	.07	0.79	.00	.433
Model 6, Step 2: MEAQ-Repression/denial	0.61	.07	0.78	.00	.439

Note. MEAQ = Multidimensional Experiential Avoidance Questionnaire.

Table 4

Regression Analyses Testing for Mediation: (1) Effect of Social Anxiety on Coping Motives, (2) Effect of Social Anxiety on MEAQ Scale (Mediator), (3) Effect of MEAQ Scale on Coping Motives Controlling For Social Anxiety, and (4) Effect of Social Anxiety on Coping Motives Controlling for MEAQ Scale

Dependent variable	Independent variable(s)	B	t	p	R ²
Coping motives	1. Social anxiety	.37	4.03	<.001	.139
MEAQ-Total					
MEAQ-Total	2. Social anxiety	1.30	6.84	<.001	.316
Coping motives	3. MEAQ-Total	0.07	5.45	<.001	.139
	Social anxiety	0.11	4.03	<.001	.197
Coping motives	4. Social anxiety	0.02	0.71	.478	.003
	MEAQ-Total	0.08	7.09	<.001	.333
MEAQ-Behavioral avoidance					
Behavioral avoidance	2. Social anxiety	0.29	6.04	<.001	.266
Coping motives	3. Behavioral avoidance	0.19	3.56	<.001	.097
	Social anxiety	0.11	4.03	<.001	.139
Coping motives	4. Social anxiety	0.06	1.82	.072	.025
	Behavioral avoidance	0.24	5.18	<.001	.210

Note. MCSAS = Marijuana Use to Cope with Social Anxiety Scale. B = unstandardized coefficient provided for multiple regression. Social anxiety was separately regressed on each dependent variable in steps (1) and (2). Social anxiety and mediator were simultaneously hierarchically regressed on the dependent variable in steps (3) and (4).