



## Mindfulness and Self-Compassion Based Interventions for Substance Use Disorders:

### A Literature Review

<sup>1</sup>Keith Allen Platt, <sup>2</sup>Phyllis Thompson, <sup>3</sup>David Patterson

<sup>1</sup>Florida Atlantic University

<sup>2,3</sup>University of Tennessee

<sup>1</sup>kplatt@fau.edu, <sup>2</sup>pthomp11@utk.edu, <sup>3</sup>dpatter2@utk.edu

#### Abstract

This literature review examines eight peer reviewed studies reporting on the efficacy of mindfulness-based and self-compassion-based interventions for adults diagnosed with substance use disorders. Prevalence of substance use disorders is provided, and relevant definitions are discussed. The syndrome model of addiction is advanced as an etiological explanation, and the search methodology described. Results of this literature review support mindfulness training as an effective intervention for substance use disorders. Only one study supporting self-compassion as an effective intervention for substance use disorders was reviewed so it is not possible at this time to make a judgment regarding the efficacy of that intervention. Limitations of this body of literature include attrition, unmatched treatment conditions, and lack of fidelity measures. Recommendations include more self-compassion research, more use of fidelity scales in intervention research, and greater use of mindfulness-based interventions in substance use disorder treatment.

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## Introduction

Substance use disorder as defined by The American Psychiatric Association (2013) is "A cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems" (p. 483). The Diagnostic and Statistical Manual of Mental Disorders (5<sup>th</sup> edition) describes eleven specific criteria required for clinical diagnosis of substance use disorder with nine different substances.

Criteria one through four center around impaired control with symptoms like using more than one intends, unsuccessful attempts to quit, centering one's life on use, and experiencing craving when denied use. Criteria five through seven involve social impairment including neglecting responsibilities due to use, continued use despite multiple problems from use, and reducing non-use activities. Criteria eight and nine entail risky use including use despite recurrent difficulties and hazardous circumstances due to use. Lastly, criteria ten and eleven involve the classic pharmacological signs of tolerance and withdrawal (p. 483).

## Prevalence of Substance Use Disorders

According to *The US National Survey on Drug Use and Health*, an annual survey of noninstitutionalized persons, aged 12 and older, 25 million Americans (9% of the US population) used an illicit drug in the past 30 days. The rate of current illicit drug use was higher for males (11 percent) than for females (7 percent), and males were more likely than females to be current users of several different illicit drugs, including marijuana, cocaine, and hallucinogens. Fifty-two percent of Americans reported being current drinkers of alcohol. Twenty-one percent of the population were current cigarette smokers, and 8% of the population used marijuana making it the most commonly used illicit drug. (Substance Abuse Mental Health Services Administration, 2013, p. 1-4).

In addition to nearly 88,000 deaths from alcohol-related causes (the third leading cause of death in the United States) (National Institute of Alcohol Abuse and Alcoholism, 2015), substance use disorders are a major factor for opening child protective services cases (Children's Bureau, 2011, p. 3). Subsequently, substance abuse harms and disrupts families, stresses the economy, blights communities, and places undue demands on the education, criminal justice, and social service systems (Assistant Secretary for Planning and Evaluation, 1999). The National Center on Addiction and Substance Abuse reports that substance use disorders are one of the nation's most expensive healthcare issues, exceeding \$450 billion in yearly costs (CASA, 2012).

## Mindfulness and Self-Compassion

Mindfulness and self-compassion training are two recent approaches used in substance use disorder treatment. Mindfulness is a concept derived from Buddhist philosophy (Shonin, Van Gordon, & Griffiths, 2014, p. 128-129). Jon Kabat-Zinn (2012) defines mindfulness as "awareness, cultivated by paying attention in a sustained and particular way: on purpose, in the present moment, and nonjudgmentally" (p. 1).

Neff and McGhee (2010) defined self-compassion as "compassion turned inward" (p. 226), and as a construct made up of three components: self-kindness, the ability to hold onto one's feelings of suffering with a sense of warmth and caring; common humanity, recognizing that all human beings suffer at times and we are not alone; and mindfulness, involving holding one's present experience in a balanced awareness neither pushing suffering away nor over identifying with it (p. 226). Each of the three components of self-compassion sits in relation to its opposite: self-kindness vs. self-judgment; common humanity vs. isolation; and mindfulness vs. over-identification (Hall, Row, Wuensch, & Godley, 2013).

Evidence shows that self-compassion is associated with positive psychological functioning (Neff, Rude, & Kirkpatrick, 2007), and less symptoms in substance use (Brooks, Kay-Lambkin, Bowman, and Childs, 2012). More specifically, Bowen, et al. (2006) provided evidence that a mindfulness based intervention decreased stress, increased optimism, and a sense of control over drinking in a sample of incarcerated men (p. 346). This review



examines efficacy studies of self-compassion and mindfulness-based interventions for adults diagnosed with substance use disorders in order to determine if use of these interventions is supported by the evidence.

### **Etiology of Substance Use Disorders**

Theories of the etiology or causes of substance use disorder purport to answer why some people develop substance use disorders and others do not. There is no one discrete cause identified for substance use disorder, so a model that takes into account multiple factors and experiences is necessary.

Tarter and Vanyukov (2001) point out that all substance use disorders begin with use, but not all who use will manifest a disorder (p. 2). Hawkins, Catalano, and Miller (1992) describe mediating factors (risk and protective) that can move an individual toward or away from eventual disorder status (p. 65). Arria, Vincent, and Caldeira, (2009) describe substance use disorder as manifesting out of a dynamic interaction between an individual and their environment (p. 234). Shaffer, LaPlante, LaBrie, Kidman, Donoto, and Stanton (2004) suggest that addiction is best thought of as a syndrome (p. 367), and define syndrome as "a cluster of symptoms and signs related to an abnormal underlying condition" (p. 367).

According to Shaffer, et al. (2004), in order for an individual to manifest substance use disorder, they need to have gathered more risk factors than protective factors from birth onward toward adolescence, when most substance use starts. Then, during this pre-morbid stage, they pivot toward disorder due to the protection not outweighing the risk (p. 38).

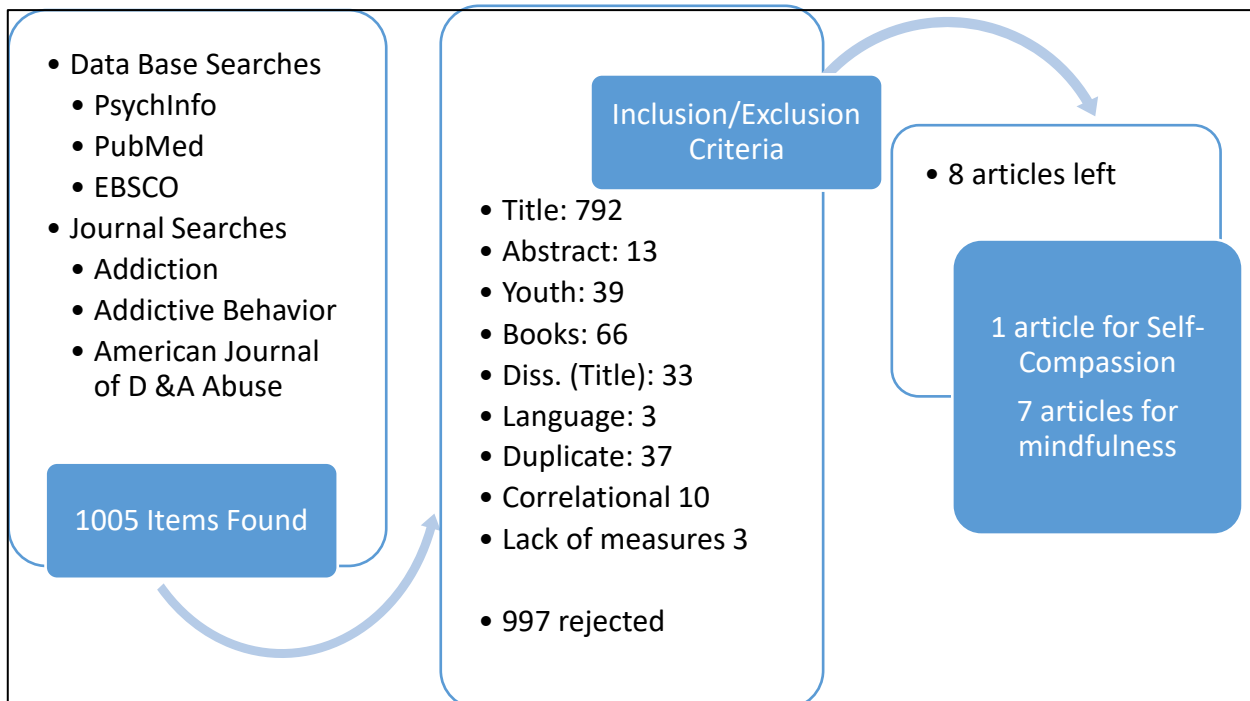
Hawkins, Catalano, and Miller (1992) categorized adolescent substance abuse risk factors into broad macro (*i.e.*, societal and cultural) factors (*e.g.*, availability of drugs within society and cultural attitudes toward use), and individual micro factors (*e.g.*, personality, intelligence, and emotional temperament) (p. 65). Shaffer et al. (2004) suggest three categories of risk/protection: neurobiological, psychological, and social, and theorize that these three areas interact and mutually influence each other toward risk or protection (p. 368-370).

The syndrome model of Substance Use Disorder etiology accounts for both the strengths and liabilities situated in any environment and in any individual. Self-compassion and mindfulness interventions may act as mediators between environmental risks and the individual helping them to manage their SUD symptomology more effectively.

### **Search Methodology**

The literature search was conducted from June 27, 2015 to July 8, 2015. PsychInfo, PubMed/Medline, and EBSCO were searched with the following search term combinations: self-compassion and addiction, self-compassion and substance abuse, self-compassion and substance use, self-compassion and substance use disorder, self-compassion and adult development, self-compassion and protective factor, self-compassion and meta-analysis, self-compassion and systematic review, self-compassion scale, self-compassion scale and addiction, self-compassion scale and substance abuse, self-compassion scale and substance use, self-compassion scale and substance use disorder, mindfulness and addiction, mindfulness and substance abuse, mindfulness and substance use, and mindfulness and substance use disorder. Additionally, three journals (*Addiction*, *Addictive Behavior*, and *American Journal of Drug and Alcohol Abuse*) were searched during that same time frame with the search term self-compassion.

Figure 1 Literature Search Results



Inclusion criteria for this literature review included peer-reviewed articles published in the last 12 years. Studies involving individuals 18 and over who were diagnosed with substance use disorders and treated with interventions involving self-compassion or mindfulness were included. Exclusion criteria included samples encompassing persons under 18 and studies involving process addictions (e.g. gambling, sex, shopping), and correlation studies. The initial search resulted in 1005 items found. Materials were screened according to inclusion and exclusion criteria which resulted in the rejection of 792 items by title, 13 by abstract, and 38 by age of subject. Other items were rejected because 66 were books; 37 were duplications, and three were not written in English. Thirty-three dissertations were also rejected by title. A total of 982 items were rejected and this left 21 articles, one dissertation, and one Master's thesis. Four correlation studies were then rejected from the remaining self-compassion articles, and one was rejected for having a mixed sample of teens and adults. Six correlation studies were rejected from the mindfulness group, and one was rejected since no measure was used. The thesis was rejected because it did not include an intervention and the dissertation was a correlational study so it was excluded. Finally, one of the mindfulness articles was later discovered to have no measure of SUD and therefore was excluded. This left a final total of one article featuring a self-compassion intervention and seven articles regarding mindfulness interventions.

### Literature Review

This review found seven articles profiling mindfulness-based interventions with SUD, and one article reporting on the results of a self-compassion based intervention with SUD. These studies are examined below in detail. A summary of their features is displayed in Table 1

### Mindfulness-Based Interventions for SUD in Adults

There were seven intervention studies reviewed on mindfulness-based interventions for SUD, all of which employed randomized controlled trial (RCT) as their study design. Three of the studies evaluated mindfulness-based relapse prevention which is an aftercare treatment for substance use disorders incorporating a blend of cognitive, behavioral, and mindfulness theory and techniques (Witkiewitz, Marlatt, & Walker, 2005). The other four studies examined other mindfulness-based interventions.



Table 1. Comparison of Studies Arranged by Year Published

Study Reference	Study Purpose	Sample Information	Design Features	Outcomes	Limitations
<b>Bowen, et al. (2009)</b>	To evaluate efficacy of MBRP in relation to TAU among individuals with SUD.	N= 168 63.7% male 51.8% white Age (m): 40.5	RCT  8-weeks trial  Follow-up at 2 and 4 months	Use and craving decreased more in the MBRP group than TAU group.	Brevity of follow-up  Relapse rates were very low for both groups
<b>Kelly, Zuroff, Foa, &amp; Gilbert (2010)</b>	To test a 3-week self-compassion intervention designed to help people resist the urge to smoke.	N= 119 64% female 76% white Age (m): 24.4	RCT  3-week trial  Compare SC to three control conditions	SC group reduced use faster and more than the control conditions.	Study duration short  Self-report measures only  Sample was light smokers only
<b>Brewer, et al. (2011)</b>	To assess efficacy of MT vs. FFS in a 17 week intervention and follow-up.	N=88 63% male 57% white Age (m): 46	RCT  4-week trial  Follow-up at 6, 12, and 17 weeks  Compare MT to FFS	The MT group showed greater reduction in use than the FFS group.	Treatment fidelity not assessed and co-morbidity was excluded
<b>Bowen, Witkiewitz, et al. (2014)</b>	To assess the effectiveness of MBRP, RP and TAU on 12-month outcomes.	N=286 71.5% male 48.8% white Age (m): 38.4	RCT  8-week trial  Follow-up at 3, 6, and 12 months  Compare MBRP to TAU	MBRP group showed less use at 12 months than TAU group	Treatments conditions not matched  Limited urinalysis data
<b>Davis, et al. (2014)</b>	To test feasibility and efficacy of MTS vs. TAU on smoking	N=196 50% male	RCT  7 week trial	MTS group showed lower	Treatment conditions not matched



	cessation among low SES smokers.	77.04% white Age (m): 41.65	Compare MTS to TAU	use than TAU group	Participants not blinded to condition
<b>Davis, Manley, et al. (2014)</b>	To compare MTS to FFS-E on abstinence and psychological outcomes.	N= 135 53.3% male 88.1% white Age (m): 44.5	RCT 7-week trial Compare MTS to FFS-E	MTS group showed higher numerical rates of abstinence than FFS-E group	High attrition Participants not blind to condition
<b>Witkiewitz, et al. (2014)</b>	To assess MBRP versus RP for reducing drug use and drug-related consequences in a population of women offenders.	N=105 100% female 46% white Age (m): 34.1	RCT 8-week trial Follow-up at 15 weeks Compare MBRP to RP	MBRP group had 96% fewer drug use days and 39% fewer use-related consequences than the RP group	Small sample High attrition Missing data Participants not blind to condition
<b>Mermelstein &amp; Garske (2015)</b>	To assess the impact of a brief mindfulness based intervention on subsequent alcohol related behaviors among college student who engage in binge drinking.	N= 76 50% female 91% white Age (m): 19	RCT Brief trial Follow-up at 4 weeks Compare MG To CG	MG increased self-efficacy and trait mindfulness and had less binge episodes and less use consequences than the CG.	No follow-up Treatment conditions not matched Treatment fidelity not assessed

**Mindfulness-based relapse prevention studies.**

Bowen et al. (2009) tested the efficacy of a mindfulness-based relapse prevention (MBRP) intervention compared to treatment as usual (TAU) for individuals diagnosed with substance use disorder. The sample was recruited from a local non-profit substance abuse treatment facility, and then randomized to the two treatment conditions (p. 296). Both conditions used closed groups of eight to ten participants who met for eight weeks. There were no statistically significant differences between the groups at baseline (p. 300).

The MBRP intervention followed the MBRP manual (Bowen, Chawla & Marlatt, 2010). The weekly two-hour sessions consisted of didactic and experiential components including 20-30 minutes of guided meditation to



start each group. The MBRP participants were assigned homework at every session (p. 298). The TAU group consisted of the standard aftercare provided by the treatment agency. The groups were abstinence and twelve step-based. They met 1-2 times each week for 1.5 to 2 hours depending on the need of members. There was no homework assigned in the TAU group.

Assessments were completed at baseline, immediately following treatment, then two months post-treatment, and four months post-treatment. Measures included the Timeline Followback (Sobel, Brown, Gloria, & Sobel, 1996), the Penn Alcohol and Drug Craving Scale (Flannery, Volpicelli, & Pettinati, 1999), the acting with awareness and the nonjudgment subscales of the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), and the Acceptance and Action Questionnaire (Hayes, Wilson, Gifford, Folette, & Strosahl, 1996) (p. 296-299).

Researchers demonstrated substance use decreased to a greater extent in the MBRP group than in the TAU group. At two months post treatment, the MBRP participants reported 2.1 days of substance use while the TAU group reported 5.4 days. Subjective cravings also decreased more in the MBRP group than in the TAU, but this effect was diminishing at four months post-treatment. The authors suggested that the reason for the effect slippage might have been due to the participants in the MBRP group returning to the TAU groups after the intervention period. Overall they concluded that the results were consistent with previous study results and that MBRP can work effectively, but a longer dose may be needed (p.303).

Bowen, Witkiewitz et al. (2014) assessed the effectiveness of MBRP, standard relapse prevention (RP) and treatment as usual (TAU) on SUD outcomes over a one year period. Participants were recruited through postings at treatment facilities. A sample 286 were selected and were randomly assigned to one of the three treatment conditions. The two hour groups ran for eight weeks. Assessments were completed at baseline and post-treatment, and then follow-up measures were taken at three, six, and twelve months post treatment (p. 549).

The MBRP (n=103) intervention was dispensed as eight weekly two-hour sessions with 6-10 participants and two therapists. All sessions included 20-30 minute guided meditations. The RP (n= 88) intervention was matched in time, format, size, location, and scope of assigned homework. Primary objectives of RP included problem solving, self-efficacy, and social support. The TAU (n=95) intervention was an abstinence based, process-oriented, and based on the AA/NA Twelve Step program (p. 550). Measures included the Timeline Followback Method (Sobel and Sobel, 1992), and urinalysis and alcohol screenings (p. 548-549). The results indicated no differences between the MBRP and RP participants at three months. At six months both treatment groups showed a significantly reduced risk for relapse and heavy drinking compared to TAU participants, while at 12 months the MBRP group reported significantly fewer use days and a higher probability of not engaging in heavy drinking compared to the RP group (p. 552). The authors stated that this study showed that MBRP can have longer term effects (p. 554).

Witkiewitz et al. (2014) assessed whether mindfulness based relapse prevention (MBRP) was an effective intervention for reducing drug use and drug-related consequences in women offenders. They sampled 105 of 119 women at a residential substance abuse treatment center for women involved in the criminal justice system. The participants were randomized to one of two treatment conditions: MBRP or a matched relapse prevention intervention (RP). Both groups met twice weekly for 50 minute sessions. Measures were taken at baseline, four weeks, and 15 weeks.

The MBRP intervention was based on a manualized intervention package with two adaptations for the population being sampled. Rolling, open admissions to the groups was used instead of a closed group format detailed in the manual, and the schedule was changed from two hour weekly meetings for eight weeks to two 50 minute meetings weekly for eight weeks. This was done to accommodate the scheduling of treatment in the clinic where the study was based (p. 538). The RP intervention was also based on a manualized intervention package emphasizing the development of skills to manage craving and high-risk situations as well as self-efficacy and the importance of social support. The RP intervention was also adapted to meet the scheduling demands of the clinic where the study was completed (p. 539).



Measures included Timeline Followback (Sobel & Sobel, 1992), the Short Inventory of Problems (Bennett, Nidecker, Kinnaman, Li, & Bellack, 2009), and the Addiction severity Index (McLellan, Luborsky, Obrien, & Woody, 1980) (p. 539). Findings demonstrated that the MBRP participants reported 96% fewer drug use days and drug use consequences were 39% lower than the RP group; however, drug use was very low for the whole population (p. 540). The authors suggest that the results of this study provide modest support for MBRP as an effective intervention for female offenders.

### **Mindfulness-based interventions for substance use.**

Brewer et al. (2011) assessed the efficacy of a mindfulness training (MT) intervention against the Freedom from Smoking (FFS) program by the American Lung Association in a four week treatment with 17-week follow-up. The researchers randomly selected 88 participants from 103 eligible subjects they recruited. The participants were randomized to two treatment conditions: mindfulness training (MT) or freedom from smoking (FFS). The groups were comparable on all baseline and demographic characteristics. The intervention phase lasted for four weeks and the follow-up points were at six, twelve, and seventeen weeks post intervention (p. 73).

The MT intervention was adapted from an existing MT manual for drug use relapse prevention (Bowen, et al., 2009; Brewer, et al., 2009). The intervention schedule was two groups each week for four weeks for a total of eight sessions. Each group lasted for 1.5 hours with 30 minutes of home practice recommended daily, and each participant received a meditation CD. Measures included the Timeline Followback Method (Sobel & Sobel, 1992), exhaled carbon monoxide test, and cigarettes per day count (p. 75). The FFS group was carefully adapted to be similar to the MT group. It was based on a cognitive behavioral approach with stress reduction techniques and relaxation meditations taught. Daily home practice was recommended and a CD of cessation tips was given to each participant. Each group lasted 1.5 hours and they were held on the same days as the MT groups (p. 75). Study results indicated that individuals in the MT group demonstrated a greater reduction in cigarette use than those in the FFS condition and they maintained those gains through the follow-up period (p. 76). The authors concluded that the study results suggested that a mindfulness-based intervention showed promise as a smoking cessation treatment (Brewer et al, 2011, p. 77).

Davis, Goldberg, Anderson, Manley, Smith, and Baker (2014) tested the acceptability and efficacy of a mindfulness training for smokers (MTS) against a telephone quit line in low-SES smokers (p. 572). The researchers recruited 730 eligible participants, with 196 participants being randomized to a treatment (MTS) or a telephone quit-line control (QL) condition (described below). The intervention lasted for seven weeks with follow-up assessments at four and 24 weeks (p. 573).

Measures included Timeline Followback (Sobel & Sobel, 1992), the meditation calendar, smoking history questionnaire, Fagerstrom Test for Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991), the Brief Wisconsin Inventory of Smoking Dependence Motives (Smith, et al., 2010), the Difficulty in Emotion Regulation Scale (Gratz & Roemer, 2004), the Attentional Control Scale (Derryberry & Reed, 2002), and the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). Data were collected at in-home assessment visits at baseline, four weeks, and 24 weeks after participant quit date (p. 575).

The MTS intervention was provided in a schedule extending over two weeks (10 days) with an initial seven hour introductory class followed by four more weekly three hour classes. This was followed by a seven hour quit day retreat which was where the participants were given nicotine patches to start their NRT. Four weekly, 90-minute meditation groups followed the retreat day (p. 574). The QL intervention was the Wisconsin Tobacco Quit Line service provided by a large smoking cessation corporation. Controls were encouraged make frequent calls to the quit line, and to set a quit date two weeks from their orientation on which they were to return to the study center to obtain their nicotine patches (p. 573).

Results showed that the mindfulness-based intervention (MTS) group showed statistically significant improvement on all self-report measures (emotional regulation, attentional control, and mindfulness) over the treatment period as compared to the control group, and that the post-treatment scores were significantly





correlated with time spent in daily meditation (p. 580). The results of the study suggest that a mindfulness-based intervention may be superior to telephone quit line in lower-SES populations.

Davis, Manley, Goldberg, Smith, and Jorenby (2014) compared MTS to freedom from smoking-enhanced (FFS-E) on measures of class attendance, attrition, abstinence, urge, mindfulness, and other outcomes. They recruited participants from a low-SES neighborhood for 12 months to take part in a smoking cessation group (p. 214). Though 707 individuals responded to recruitment and 420 were scheduled for orientation, only 243 actually attended the orientation and eight of those declined treatment after the orientation. The resulting 195 participants (53.3% male; 88.1% Caucasian; and mean age 44.5) were given the choice of low intensity or high intensity interventions.

Those who chose low intensity were assigned to the control condition (quit line), and those who chose high intensity were randomized to one of two treatment conditions: mindfulness for smokers (MTS) or an enhanced version of freedom from smoking (FFS-E). Measures included Timeline Followback (Brown, et. al., 1998), carbon monoxide test, Acceptance and Action Questionnaire (Boelen & Reijntjes, 2008), the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), and the Perceived Stress Scale (Leung, Lam, & Chan, 2010). Data was collected on measures of class attendance, attrition, practice compliance, smoking abstinence, urge to smoke, and mindfulness (p. 215).

The MTS intervention was delivered over seven weeks in seven 2.5 hour classes followed by a quit day retreat lasting 6.5 hours for a total of 24 class hours. Each class provided both didactic and experiential components. Participants were encouraged to meditate at home daily for 15-30 minutes (p. 214). The FFS-E intervention was matched to the MTS intervention as much as possible, including schedule, to promote comparativeness. The FFS-E group focused on cognitive skills and relaxation technique including a 15-minute relaxation meditation in every class. The control intervention was a quit line offered on an as needed basis with supportive materials and a website. Participants in all three conditions also received two weeks of NRT after their quit day (p. 214).

The researchers found that abstinence rates were statistically almost identical at four weeks post-treatment for all three groups, while the MTS group demonstrated numerically higher rates at 24 weeks that did not reach statistical significance. The MTS group compared to FFS-E showed statistically significant decreases in urge or craving ratings from before quitting to after quitting (p. 219). At 24 weeks, the MTS group compared to the FFS-E demonstrated statistically significant increases in rates of mindfulness, acting with awareness, nonjudging, and nonreactivity and lower rates of experiential avoidance and perceived stress (p. 217). The results of this study seem to demonstrate that a mindfulness-based intervention for smokers may reduce urges to smoke and smoking behavior.

Mermelstein and Garske (2015) assessed the impact of a brief mindfulness-based intervention on subsequent alcohol-related behaviors and perceptions of use among college students who had engaged in binge drinking in the last two weeks. The sample (n=76) were undergraduates at a public university. The participants were randomized to one of two treatment conditions: mindfulness group (MG) or control group (CG), and were blind to treatment conditions.

Individuals (n=38) in the MG condition were assigned to one of three therapists who were trained in the treatment protocol. The intervention was based on harm reduction theory with the treatment goal of sparking an interest in mindfulness and a curiosity about how mindfulness could be used to change their own drinking behavior (p. 263). Participants were given a handout explaining what mindfulness was and how it can help with binge drinking. After that they listened to two mindfulness exercises: one was 19 minutes of a breath meditation and the other was a nine minute meditation called "urge surfing" which modeled awareness of thoughts and feelings without reacting to them (p. 263).

Participants then watched a three phase presentation of images of alcoholic beverages interspersed with messages to practice mindfulness. The whole program lasted about 12 minutes. After this, the participants were given a CD of mindfulness exercises and asked to practice mindfulness at least one hour each week for the next



month. Participants (n=38) in the control group (CG) also engaged in the cue protocol but instead of mindfulness hints, they were told to use whatever they typically use to resist the urge to binge. They were then asked what methods they used to resist the urge (p. 263).

Measures included frequency of binge episodes derived from the Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985), the Rutgers Alcohol problem Index (White & Labouvie, 1989), the Drinking Refusal Self-Efficacy Questionnaire (Young, Oci, & Crook, 1991), the Readiness to Change Questionnaire (Heather, Gold, & Rollnick, 1991), the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), Alcohol Timeline Followback (Sobel and Sobel, 1993), and the Alcohol Urge Questionnaire (Bohn, Krahn, & Staehler, 1995) (p. 261-263). All self-report scales were completed at baseline and each week of the following four weeks.

Results indicated that four weeks after baseline the binge episodes of the CG was 2.24 times that of the MG. Participants in the MG increased their self-efficacy by 6.55 points from baseline to week four, and increased their dispositional mindfulness by 4.06 points in the same time period. The MG participants also reported less consequences of alcohol use than those in the CG. These results give preliminary evidence that a brief mindfulness intervention may help some college students to deal with urges that lead them to dangerous behavior.

### **Self-Compassion-Based Interventions for SUD in Adults**

One study on the topic of self-compassion-based interventions and substance use disorder was reviewed for this paper. Kelly, A., Zuroff, D., Foa, C., & Gilbert, P. (2010) tested the efficacy of a three-week self-compassion-based intervention designed to help individuals to resist the urge to smoke. Participants were recruited through advertisements in magazines and social media platforms. The final sample consisted of 64 females and 55 males with a mean age of 24.4. The sample was randomly assigned to one of four conditions. The treatment condition was the self-compassion (SC) intervention. This was compared to two other treatment conditions (self-controlling and self-energizing interventions) and a control condition (TAU). The dependent variable was measured as cigarettes per day (CPD).

The researchers generated four hypotheses. H1 was that the SC intervention would reduce CPD faster than baseline self-monitoring (TAU). H2 was that the SC intervention will be especially efficacious for participants with low readiness to change. H3 was that the SC intervention will be more beneficial than control condition or other treatment conditions to participants high in self-criticism. H4 was that the SC intervention will be more beneficial to those participants who had the ability to visualize more vividly.

Measures used included Cigarettes per Day (baseline mean was 6.02 CPD), Smoking Stage of Change-Short Form (DiClemente et al., 1991), Depressive Experiences Questionnaire (Santor, Zuroff, Mongrain, & Fielding, 1997), Self-Compassion Scale (Neff, 2003), Imagery Vividness Rating Scale, and Compliance with Intervention Checks 2).

The SC intervention did reduce CPD more rapidly than the TAU condition and as effectively as the other two treatment conditions. However, the SC intervention reduced CPD at a statistically higher rate among those with low readiness to change. The SC intervention reduced CPD at a statistically higher rate among high self-critics. Finally, the SC intervention reduced CPD at a statistically higher rate for those with high vividness in their imagery. The conclusion of the study was that the individuals trained in self-compassion over a three week period showed faster reductions in smoking among those with low readiness to change, high self-criticism, and high imagery ability than self-controlling, self-energizing, or Tau conditions.



## **Limitations of the Research**

### **Mindfulness Research**

Though all of the studies reviewed here were well-crafted methodologically, there are still limitations which create difficulties with either internal or external validity. All of the studies employed randomization but three of them (Witkiewitz, et al., 2014; Davis, et al., 2014; and Davis, Manley, et al., 2014) reported that the groups were not blind to each other's condition. One of these (Witkiewitz, et al. 2014) took place in a residential setting which would make it quite difficult to keep the groups separate. It cannot be ignored that the fact that participants were not blind to their treatment conditions may have contaminated the results and introduced error. This is called diffusion of treatments (Rubin and Babbie (2011, p. 264). Keeping groups separate and blind to condition maximizes comparability.

Two of the studies (Witkiewitz, et al. 2014 and Davis, Manley, et al. 2014) reported high attrition rates. This becomes a problem with group comparability which can be checked for statistically, but it also becomes a problem of not having enough data in the sample to establish power of the study. Three of the studies reported that their treatment comparison groups were not matched, which then makes it difficult to judge if the effects seen were caused by the intervention or by some other factor.

Finally, an important issue in intervention research is that of treatment fidelity or integrity. When comparing treatments it is critical that each treatment be delivered as it is described in the manual. If there is therapeutic drift into some other treatment modality, it can confound the results and become a source of error. Baer (2003) states that treatment integrity can be enhanced through training, supervision, and fidelity checks (p. 138). None of the studies reviewed reported that they employed fidelity checks of any sort.

There is currently a fidelity scale for MBRP. It is called the Mindfulness-Based Relapse Prevention Adherence and Competence Scale (Chawla, et al., 2010). Two studies, Bowen et al., (2009) and Bowen, Witkiewitz, et al. (2014) reported that the study therapists were trained and supervised during the study. Two other studies Witkiewitz et al., (2014) and Brewer et al (2011) reported that the study therapists were trained but no supervision was reported. Finally two studies, Davis et al., (2014) and Davis, Manley, et al (2014) reported that the study therapists had two days of training but no supervision was reported. Bellg et al. (2004) states that study treatment integrity is essential to ensuring the internal validity of research findings (p. 444). Clearly, studies that employ training, supervision, and fidelity checks will have greater claim to validity of their results.

### **Self-Compassion Research**

As the only study to examine the efficacy of a self-compassion based intervention with a substance use disorder, Kelly, Zuroff, Foa & Gilbert (2010), stands out as an exemplar of a solid treatment comparison study. The authors point out that the study was short-term, and that it focused on reducing use instead of quitting, and that the participants were light smokers, which means that the findings may not apply to heavy smokers. These limitations make this study preliminary in its scope.

The main limitation of the research on self-compassion based interventions with substance use disorders is that there is no research, so it is not known if self-compassion interventions are efficacious with SUDs. There are several correlational studies that show, quite convincingly, that self-compassion is significantly correlated to positive psychological growth factors (Neff, Kirkpatrick, & Rude 2006; Neff and McGhee, 2010) and significantly negatively associated with substance abuse symptoms and experiential avoidance ( Renden, 2006; Brooks, Kay-Lambkin, Bowman, & Childs, 2012; and Mirron, Orcutt, Hannan, & Thompson, 2014). It would be very helpful for therapist and patients alike if self-compassion interventions were proven safe and effective with substance use disorders. The field is currently limited by the serious lack of research on this topic.



## Recommendations

The purpose of this review was to examine the efficacy research on mindfulness-based and self-compassion-based interventions for adults diagnosed with substance use disorders in order to determine if these interventions are evidence-based. Having analyzed this body of literature, there are several recommendations.

## Research

For mindfulness research, it is recommended that intervention studies compare the intervention of study to another evidence-based intervention instead of treatment as usual. Special attention should be paid as well to matching of treatment conditions so that treatment effectiveness can truly be tested. It is also suggested that researchers seek creative ways to keep participants engaged in the study so attrition does not confound results. As for treatment fidelity, it is recommended that all intervention studies employ therapist training, supervision, and fidelity checks as common practice (Baer, 2003). Lastly, researchers studying individuals struggling with substance use issues should not rely only on self-reports for use data. Clinicians are likely to trust more objective measures like urinalysis or hair analysis to corroborate participant self-reports of use. For self-compassion research, it is strongly encouraged that researchers use randomized control trials of self-compassion interventions matched with other interventions known to work with substance use disorders.

## Practice

Marlatt and Baer (1988) pointed out that one of the difficulties of treating substance use disorders is the high rate of relapse (p. 224). Anton (1999) suggested that the experience of craving is something that researchers and clinicians should attend to because it often leads to relapse (p. 168). It is suggested that adding a mindfulness component may help substance dependent clients to better manage their cravings and thus reduce incidence of relapse, but it should be noted that clinicians must maintain their own mindfulness practice if they are using mindfulness-based interventions with clients. Self-compassion as the basis for an intervention in SUD treatment awaits further validation of its treatment efficacy.

## Synthesis of Findings

Considered as a body of literature on mindfulness-based and self-compassion based interventions with substance use disorders, these studies offer cautious hope for those who suffer from addiction and those who serve them. Seven randomized controlled trials report that Mindfulness-Based Relapse Prevention (Bowen et al., 2009; Witkiewitz et al., 2014) and Mindfulness Training for Smokers (Brewer et al., 2011; Davis et al., 2014) can help to decrease substance use when compared to treatment as usual or other evidence based interventions like Relapse Prevention (Daley & Marlatt, 2006).

Additionally, Mermelstein and Gorske (2015) showed in their pilot study that even a brief introduction to mindfulness has lasting inhibiting effects on college students' binge drinking behavior one month after intervention. Finally, the one study which employed a self-compassion based intervention reported that a self-compassion based intervention reduced cigarettes per day most in individuals who were low in readiness to change and high in self-criticism.

However, there is cause for caution. Most studies reviewed were strong in their design and methodology, but there were still limitations that could cast doubt on the findings. Two of the studies sustained high attrition rates which can limit generalizability and create problems in group matching. Three of the studies reported that their treatment conditions were not well matched which may mean that the treatment effects observed could have been influenced by something other than the treatment being tested. Lastly, none of the studies employed fidelity checks on their study therapists. All of them trained their therapists, two gave them supervision, but none of the studies used fidelity scales like the MBRP Adherence and Competence Scale Chawla et al. (2010), which could have added another level of credibility to the findings.



The studies reviewed here are the best evidence to date on the topic, but that evidence must be weighed against each individual practitioner's knowledge of, and experience with, substance use disorder, combined with an appreciation for the potential efficacy of mindfulness or self-compassion based interventions. Then the practitioner can present a summary statement about the safety and efficacy of this intervention as it relates to that particular client and their experience, values, circumstances, and relevant attributes.

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