A Review of CBT Treatments for Substance Use Disorders

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Abstract and Keywords

This review article presents a summary of the existing literature on well-established CBT treatments for substance use disorder. It provides an overview of the origins, procedure, and evidence for six CBT treatment models: relapse prevention (RP) and mindful-based relapse prevention (MBRP), guided self-change (GSC), community reinforcement approach (CRA), behavioral couples therapy (BCT), and personality-targeted brief interventions. Common intervention components include orienting clients towards a meaningful goal, teaching necessary skills to reduce substance use and successfully achieve the goal, and establishing plans to face potential relapses, which generally appear to produce moderate to large effects across contexts and substance-related outcomes.

Keywords: substance use disorder (SUD), treatment, cognitive-behavioral therapy (CBT), relapse prevention (RP), guided self-change (GSC), community reinforcement approach (CRA), behavioral couples therapy (BCT), mindfulness-based relapse prevention (MBRP), personality-targeted brief interventions

Introduction

Substance use disorders (SUD) can be defined as “a cluster of cognitive, behavioral and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems” (APA, 2013). It can emerge from a dysfunctional pattern of behaviors and emotions related to the consumption of psychoactive substances, like alcohol, cannabis, cocaine, and opioids. Substance misuse typically manifests in early adulthood, with some individuals already struggling with substance misuse in adolescence. According to an epidemiological study, about 17–19% of the population suffers from substance misuse (Kessler et al., 1996), which makes it the second most prevalent class of disorders within the Diagnostic and Statistical Manual of Mental Disorders–5 (DSM-5; APA, 2013). In a recent report, the World Health Organization (WHO) stated that problematic substance use was on the rise, afflicting more than 5% of the world population, and representing about 3.3 million deaths worldwide (WHO, 2014). Western countries, including Canada, the United Kingdom, and the United States, are experiencing a rapid increase in growth of substance misuse compared to other countries (WHO, 2014). Though rates of substance misuse in adolescents within these countries
have been decreasing over the last 15 years, rates of substance abuse and dependence have remained stable over that time period (CASA, 2010).

SUDs are highly prevalent conditions (Kessler et al., 1996; Peer et al., 2013) and probably the most prevalent disorder to co-occur with other mental health conditions (Kessler, 2004; Lai et al., 2015). Alcohol use disorders (AUD) have been linked to a variety of other psychiatric conditions, including major depressive disorder, generalized anxiety disorder, conduct disorder, antisocial personality disorder, schizophrenia, and bipolar disorder (APA, 2013; Kessler et al., 1996). Alcohol abuse has also been linked to gastrointestinal, cardiovascular, and nervous systems damage (APA, 2013). In addition to its impact on health, alcohol inflicts significant economic and social harms (Goetzel et al., 2003; Sanderson & Andrews, 2002) that are bound to increase with world’s population growth, making it a healthcare priority (WHO, 2014).

This review focuses on five cognitive-behavioral therapy (CBT) models of intervention for SUDs. The relapse prevention (RP) model is the most commonly described CBT intervention for SUDs and was developed to assist clients who had achieved abstinence through detoxification in order to maintain abstinence over the long term. The RP is based on the understanding of a “relapse” as a process by which internal and external triggers for substance use are managed using problematic coping skills and expectancies that increase the likelihood than an individual will believe that substance use is the only way to manage that high-risk situation. In brief, the intervention approach helps clients identify internal and external high-risk situations and triggers, and then offers behavioral and cognitive interventions to promote the use of new skills and effective coping strategies to increase self-efficacy in managing high-risk situations without using substances (Marlatt & Donovan, 2005).

Other interventions have been developed based on the CBT framework, but designed to target clients in different psychosocial contexts and stages in the course of SUD. These less utilized approaches include guided self-change (GSC), behavioral couples therapy (BCT), and community reinforcement approach (CRA). More recently, these interventions have been adapted to address specific features of SUD that might not have been addressed in earlier treatment models, such as managing cravings in alcohol dependence, addressing psychiatric comorbidity, and offering solutions for prevention. The RP model was recently adapted to include a mindfulness component with mindfulness-based relapse prevention (MBRP), a short-term treatment that helps clients identify and learn to effectively cope with situations that trigger the urge to consume, using mindfulness techniques. The GSC model is a very brief, motivationally based treatment that helps clients formulate a goal for change, which will serve as the focus of treatment. BCT focuses on substance-misuse treatment in the context of intimate relationships. CRA is a multimodal treatment, which leads the client to perceive sobriety as a desirable goal, by effecting change through social mechanisms. Finally, personality-targeted CBT intervention represents a more personalized version of the CBT model to address heterogeneity and comorbidity within SUDs by targeting common personality risk factors for behavioral and men-
Relapse Prevention: Framework for Cognitive Behavior Therapy in SUDs

For any mental health professional working with substance-misusing clients, addressing the risk for relapse following abstinence or drug detoxification is essential for the maintenance of long-term positive outcomes. The cognitive behavioral model that first addressed the importance of relapse within the context of substance use was the RP model, first described by Marlatt and Gordon (1985).

This well-established model within CBT states that, when trying to maintain sobriety or reduced substance use, recovering individuals are likely to experience a “lapse,” defined as a momentary failure to uphold their goal. The initial lapse occurs when clients encounter “high-risk situations.” High-risk situations can be external (e.g., walking near a bar) or internal (e.g., feeling depressed). From an initial lapse, two outcomes are possible: either one returns to the initial substance-use behavior (a “relapse”; Marlatt & Gordon, 1985), or one gets back on track with one’s abstinence goals (a “prolapse”; Marlatt & Gordon, 1985). Accordingly, relapses have both affective and cognitive components: the feelings of guilt, shame, and hopelessness associated with relapse constitute the affective component, while attribution of the lapse to internal and uncontrollable factors constitutes the cognitive component (Marlatt & Donovan, 2005). The latter contributes to the “abstinence violation effect” whereby such cognitive processes can lead to giving up on abstinence goals, and strongly contributes to heavy and uncontrolled substance use in the context of a relapse. Figure 1 is a reprint from Marlatt and Gordon (1985) demonstrating the RP model of substance misuse.

![Relapse Prevention Model](image)

**Figure 1** Relapse Prevention Model.

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A Review of CBT Treatments for Substance Use Disorders

According to this model, there are numerous potential targets for psychological intervention. Therapists and clients must identify internal and external high-risk situations. Then behavioral and cognitive interventions can be delivered to develop new skills, teach effective coping strategies, increase self-efficacy and augment feelings of mastery in high-risk situations (Marlatt & Donovan, 2005).

There are several manualized versions of RP interventions (Carroll, 1998; Kadden et al., 1992; Monti et al., 1989). Treatment typically consists of about 20 sessions. The main objective is to teach different behaviors and coping strategies to manage internal and external high-risk situations that trigger consumption. All models seem to include five CBT strategies: (1) functional analysis of substance use, (2) identification of intrapersonal and interpersonal triggers for relapse, (3) coping-skills training, (4) behavioral skills training for drug-refusal, and (5) increased activities unrelated to substance use.

Magill and Ray (2009) conducted a meta-analysis gathering data from 52 studies for a total of 9,308 participants. Using Hedges’s $g$, an indicator of standardized mean difference comparable to Cohen’s $d$, they found that CBT treatments, including RP treatments, have a small positive effect ($g = 0.15$) over post-treatment alcohol use, cannabis use, cocaine use, etc., when compared to various control conditions (mostly treatment as usual and medication). The effects slightly diminished over time. Hedges’s $g$ decreased to 0.11 in the short term (6–9-month follow-up), and further diminished to 0.09 at the 12-month follow-up. Another meta-analysis by Dutra et al. (2008), compiling data from 34 studies ($n = 2,340$), reported a low to moderate effect of CBT programs, including RP interventions, on substance use outcomes ($d = 0.32$). Though both meta-analyses suggest an effect of RP interventions, it is important to note that these meta-analyses reviewed other kinds of CBT treatments as well (e.g., coping-skills training). The great majority of the treatment reviewed, however, integrate components of the RP model. Though RP models’ efficacy cannot be determined with certainty on the basis of these reviews, their results suggest a certain efficacy of treatments based on the RP model.

Other investigations explored the possibility of certain client attributes’ being associated with a more favorable response to RP interventions. The RP model revised by Monti et al. (1989), a 27-session group CBT intervention, was compared to interactional group therapy (Kadden et al. 1989). Survival analyses conducted two years after the trial (Cooney et al., 1991) suggested that clients high on psychopathology and sociopathy scales responded more favorably to relapse prevention than to interactional group therapy. They remained abstinent longer after receiving a CBT intervention, compared to interactional group therapy.

The model was later adapted to individual therapy in the context of Project MATCH (Kadden et al., 2003). Project MATCH was a multi-site clinical trial investigating the differential effect of CBT, motivational interviewing, and Twelve-Step Facilitation Therapy. The study also aimed to identify client attributes that might predict differential treatment response. The final CBT model consisted of 14 sessions (eight core sessions and six elective
sessions) addressing different topics. The topics were: coping skills teaching, cognitive restructuring, problem solving, and behavioral skills training.

Project MATCH reported that all three intervention conditions resulted in equivalent and very positive substance use outcomes: ratios of days without drinking were about 70–80% at 12 months post-treatment for all three intervention conditions. The study only modestly validated the client–treatment matching hypothesis (Longabaugh, Wirtz, Mattson, & Myers, 2001): psychiatrically more severe clients were shown to have a slightly beneficial outcome on RP intervention than the motivational enhancement intervention. Considering the small differences between treatments, the study later concluded that all treatments evaluated, including the CBT relapse prevention model, were well-supported treatments for SUDs.

The RP model is now integrated into other CBT interventions targeting non-addictive psychopathologies that are now understood as having a more chronic and relapsing nature, such as depression (Bockting et al., 2005), bipolar disorder (Scott, Colom, & Vieta, 2007), and schizophrenia (Garety et al., 2008). This expansion of the RP model to other areas of psychopathology led to mutual enhancements and adaptations, whereby the RP treatment model integrated newer psychological principles coming from these other fields, such as mindfulness, as a helpful strategy for managing emotional distress and cravings.

**Mindfulness-Based Relapse Prevention: An Extension of the RP Treatment Model**

The mindfulness-based relapse prevention program was developed by Bowen, Chawla, and Marlatt (2010). This eight-session, group-based program was designed to assist clients with substance-use problems to identify and effectively cope with situations that may trigger relapse after their treatment has ended. MBRP sessions address topics such as recognizing triggers for substance use, identifying automatic reactions to those triggers, behaving differently when confronted with triggers, and using mindfulness as a way of redirecting attention and suppressing the urge to consume (Bowen, Chawla, & Marlatt, 2010).

**Origins of MBRP**

In the 1990s, cognitive psychologists adopted the concept of mindfulness from Eastern philosophy to address ruminative thinking in mental disorders (Segal, Teasdale, & Williams, 2004). “Mindfulness” can be defined as a state of consciousness that emerges from purposefully redirecting one’s attention to the present moment, and living the experience without judgment (Kabat-Zinn, 2003). This creates new ways for the client to interact with his or her subjective experience, understanding him- or herself, and developing new ways to act in a given situation. Mindfulness has been shown to reduce the severity of symptoms in many different domains, including anxiety and depression (Amir, Weber, Beard, Bomyea, & Taylor, 2008; Heeren, Lievens, & Philippot, 2011). In the context of
SUD, mindfulness gives individuals the opportunity to develop many skills, such as coping skills, tolerating and reframing cravings, self-motivation, meta-cognitive awareness, self-compassion, and self-efficacy (Witkiewitz, Martlatt, & Walker, 2005).

**Procedure**

MBRP is a group intervention delivered in eight sessions of 120 minutes (Bowen, Chawla, & Marlatt, 2010). This is a structured program, with a detailed schedule for each meeting. MBRP also offers worksheets, practice exercises, DVDs borrowed from traditional CBT interventions, and mindfulness homework to continue skill building between the sessions. Despite the firm structure of the treatment, “creativity and shared curiosity” are encouraged as part of the group dynamic, and they aid the success of MBRP (Bowen, Chawla, & Marlatt, 2010). The process of MBRP also differs from other group treatments of SUD, due to its commitment to the present moment. Despite clients’ natural tendencies to tell stories about their experiences, or share judgments and impressions about treatment, the goal is to connect and cope with emotions and thoughts that naturally arise in the context of the sessions. Facilitators of the groups must foster a safe and familiar environment, where mindful contemplation and open communication can be shared.

MBRP sessions follow a specific routine, which usually begins with a review of the material that was prepared or worked on since the previous meeting. A mindfulness exercise is presented, followed by a present-focused “inquiry” phase, which involves clients’ sharing their thoughts and feelings about the present moment. At the end of the meetings, the facilitator explains the homework and readings for the next session.

The first session addresses the issue of automatic response and relapse. After an introduction of the technical aspects of the treatment (e.g., rules, confidentiality, format of group), the facilitator leads a mindfulness exercise for the group, called the *raisin exercise*. The raisin exercise involves clients’ contemplating, smelling, touching and finally eating a raisin in order fully appreciate and connect with each moment of the experience (Bowen, Chawla, & Marlatt, 2010). The group then discusses the exercise, and the facilitator highlights how most reactions tend to be automatic and mindless compared to the raisin exercise.

The second session focuses on dissecting reactions in high-risk situations, by exposing patients to triggers, cravings, and thoughts related to consumption, while encouraging them to resist reacting in an automatic way. Time is devoted to identifying sensations, emotions, and thoughts of consumption-related triggers and cravings. Mindfulness is introduced as a way of expanding the patients’ possible choices and actions when faced with those difficulties.

The SOBER method (Stop, Observe, Breathe, Expand, and Respond) is presented in the third session as a way to adapt mindfulness to everyday contexts, which diminishes the risk of reacting in an impulsive manner (Bowen, Chawla, & Marlatt, 2010). This session also marks the beginning of official meditation practices.
The mindfulness strategies are further refined in session four, when the group learns coping skills to use when faced with high-risk situations. Coping with and tolerating intense emotional reactions with mindfulness is key for success. For example, a client might take a moment to consider his or her thoughts when confronted with a high-risk situation and choose self-control, as opposed to reacting automatically and consuming substances.

The fifth session concentrates on the acceptance of unwanted thoughts, emotions, and sensations, as a way to move forward and take care of oneself. The concept of “breathing spaces” (Bowen, Chawla, & Marlatt, 2010) is introduced, which consists of disengaging their attention from the external environment and focusing on breathing. Then, clients can progressively re-engage their attention towards their surroundings. This exercise is meant to help clients act in a mindful way, rather than a mindless and automatic way. Meditation techniques are encouraged for daily use, as well.

The sixth session consists of reframing clients’ experiences of their thoughts to accent the element of choice and opportunity, rather than believing their thoughts must be reality. Thoughts are presented merely as thoughts, disassociated from any obligation to act on them (Bowen, Chawla, & Marlatt, 2010).

The seventh meeting underscores the importance of self-care and balance in recovery from SUD. Self-compassion, lifestyle choices, healthy activities, and warning signs of relapse are addressed as important aspects of maintaining positive change.

The last session serves as a brief review of the skills developed over the course of therapy. The group discusses the significance of a support system and the integration of mindfulness practices to preserve the gains that have been achieved (Bowen, Chawla, & Marlatt, 2010).

**Summary of Evidence**

Overall, MBRP is a relatively novel treatment attempting to integrate mindful meditation as an adjunct to classical RP intervention. Investigations conducted so far by Bowen, Marlatt, and Witkiewitz established that mindful meditation was associated with reduced use of many different substances and reduced intensity of psychiatric symptoms. These reductions seem mediated by client’s reduced tendency for thought-avoidance and reduced self-reported intensity of cravings. A systematic review of mindfulness-based programs for substance misuse corroborated the findings of Bowen, Marlatt, and Witkiewitz. Table 1 presents the sources reviewed in this section.
### Table 1 Overview of Sources Reviewed

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Control group</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowen et al. (2006)</td>
<td>173 incarcerated individuals abusing substances</td>
<td>Ten-day course of silent meditation vs. TAU (chemical dependency treatment + education)</td>
<td>Reduced substance use (alcohol, cocaine, marijuana), decreased psychiatric symptoms, and improved positive psychosocial outcomes for mediation group</td>
<td>(d = 0.26-0.57)</td>
</tr>
<tr>
<td>Bowen &amp; Marlatt (2009)</td>
<td>123 college students with smoking-related urges</td>
<td>Mindfulness-based education session vs. received no instruction</td>
<td>Reduced cigarette consumption</td>
<td>(d = 0.64)</td>
</tr>
<tr>
<td>Bowen et al. (2009)</td>
<td>168 individuals suffering from substance abuse</td>
<td>MBRP vs. TAU (12-step programs, process-oriented groups, and psychoeducation)</td>
<td>Reduced substance use at 4 months post-intervention, fewer cravings and more acceptance and mindful acting for the MBRP compared to controls</td>
<td>(d = 0.28)</td>
</tr>
<tr>
<td>Witkiewitz &amp; Bowen (2010)</td>
<td>168 individuals suffering from substance abuse</td>
<td>MBRP vs. TAU (12-step programs, process-oriented groups, and psychoeducation)</td>
<td>Mediation effect of cravings on the association between depression scores and sub-</td>
<td>NA</td>
</tr>
</tbody>
</table>
## A Review of CBT Treatments for Substance Use Disorders

<table>
<thead>
<tr>
<th>Study Reference</th>
<th>Participants</th>
<th>Comparison</th>
<th>Outcomes</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witkiewitz, Greenfield, &amp; Bowen (2013)</td>
<td>70 women convicted of drug charges</td>
<td>MBRP vs. a regular relapse prevention program</td>
<td>Reduced days using drugs and lowered SUD severity scores (Addiction Survey Index) vs. non-Hispanic and minority women in the regular relapse prevention program</td>
<td>$d = 0.31-0.65$</td>
</tr>
<tr>
<td>Bowen et al. (2014)</td>
<td>286 individuals who had recently received treatment for substance use</td>
<td>MBRP vs. Regular relapse prevention vs. TAU</td>
<td>MBRP significantly reduced heavy drinking and the number of consumption days for a longer period than other conditions</td>
<td>$d = 0.10-0.49$</td>
</tr>
</tbody>
</table>
Detailed Review

The very first study to evaluate MBRP on substance use outcomes was reported by Bowen and colleagues (2006), who offered a Vipassana course, teaching a form of Buddhist mindfulness meditation practices to a group of incarcerated individuals (79.2% male), who were abusing substances ($n = 173$). Participants were randomized to either a ten-day course of silent meditation for periods of 8–10 hours per day, or treatment as usual (TAU), which consisted of chemical dependency treatment and substance use education. The findings revealed that participants enrolled in the mindful meditation class showed a significant reduction in their alcohol, cocaine, or marijuana consumption after three months when compared to the TAU group, but no effects were found for tobacco (Bowen et al., 2006). In addition to reduced consumption rates, participants in the mindfulness meditation class also experienced a decrease in their psychiatric symptoms. Positive psychosocial outcomes, such as locus of control over substance use and level of optimism, also significantly improved by the three-month follow up. Using the same data, a secondary analysis established that levels of thought-suppression mediated the relationship between participation in the Vipassana workshops and alcohol use at follow-up: participation in the mindfulness training was associated with lower levels of thought avoidance, which was then related to less alcohol intake (Bowen, Witkiewitz, Dillworth, & Marlatt, 2007). The mechanisms responsible for this relationship might been due to the new perspective clients developed towards intrusive thoughts, like urges to consume. If clients are taught to neither avoid nor react to substance use urges, this would be likely to lead to reduced substance use.

The effects of mindfulness training on more severe cases of SUD were explored in another study by Bowen et al. (2009). Individuals suffering from substance abuse ($n = 168$) were randomly assigned to either MBRP or treatment as usual, which consisted of a 12-step program, process-oriented groups, and psychoeducation. These patients had previously been in inpatient or outpatient units for about two weeks. Data were collected at pre-treatment, and at two- and four-month follow-ups. Analyses revealed a significant difference in substance use at four months post-intervention for the MBRP compared to controls. Participants enrolled in the MBRP program also reported fewer cravings, and more acceptance and mindful acting than controls. Bowen et al. (2009) also concluded that the MBRP treatment was feasible for patients, since they observed high compliance rates with homework, high attendance, and positive feedback.

The most rigorous evaluation of MBRP was reported recently by Bowen et al. (2014), who compared the efficacy of MBRP to regular relapse prevention treatment, and to treatment as usual (12-step program and psychoeducation) over a 12-month period. A total of 286 individuals who had recently received treatment for substance use were assigned to either MBRP ($n = 103$), regular relapse prevention ($n = 84$), or treatment as usual ($n = 95$) as part of an aftercare program. The frequency of consumption and relapse were measured at baseline, 3-, 6-, and 12-month follow-ups. Results indicated that both MBRP and traditional relapse prevention were more successful than treatment as usual in reducing relapse and decreasing substances consumed at the 6-month follow-up. After 12 months,
the MBRP group had fewer consumption days and heavy drinking episodes, relative to both standard relapse program and treatment as usual recipients (Bowen et al., 2014). This illustrates that MBRP can supplement the other two conditions by reducing heavy drinking and the number of consumption days. Targeted mindfulness training may support long-term recovery by teaching individuals how to tolerate discomfort associated with cravings or negative affect, and behaving in a healthier way.

Additional studies by this same research team indicate that MBRP is also effective in helping college students reduce smoking behavior (Bowen & Marlatt, 2009), ethnic minority groups reduce their substance use (Witkiewitz, Greenfield, & Bowen, 2013), and clients with concurrent depressive symptoms reduce their elevated cravings and substance use that were linked to their depressive symptoms (Witkiewitz & Bowen, 2010).

Additionally, many different adaptations of mindfulness-based therapy for substance use have been conducted by other research teams. A systematic review conducted by Chiesa and Serretti (2014) gathered results from a total of 24 studies investigating mindfulness-based programs, such as Vipassana meditation, acceptance and commitment therapy (ACT), spiritual self-schema therapy (3S-T), mindfulness-based stress reduction (MBSR), dialectical-behavioral therapy (DBT), mindfulness-based cognitive therapy (MBCT) and MBRP. They concluded that mindfulness-based models such as MBRP outperformed wait-list control, non-specific support groups, and treatment as usual conditions on outcomes such as alcohol, cocaine, tobacco, marijuana, and opiates misuse. The review’s finding gave some support for the hypothesis that MBRP is particularly effective in reducing cravings and increasing self-reported mindfulness.

**Conclusion**

The MBRP model is an excellent post-treatment program, designed to maintain the gains made in therapy for SUD sufferers. Evidence suggests potentially lasting effects for clients in a variety of settings (e.g., forensic, clinical, community) with diverse substance addictions (e.g., alcohol, cocaine), and for members of different cultural backgrounds, with minority women in particular. Beyond interest in their intervention model, the research team behind MBRP is also assessing the relationship between brain changes and mindfulness practices, as well as the development of reliable measures to understand and assess dimensions of mindfulness. For more information, the team’s website is [http://www.mindfulrp.com/](http://www.mindfulrp.com/).

**Community Reinforcement Approach (CRA)**

Another cognitive-behavioral approach to aftercare treatment is the community reinforcement approach, which focuses more on the environmental and behavioral factors that maintain substance use, such as social, recreational, familial, and/or vocational reinforcers. The approach is also based on basic principles of behavioral reinforcement applied to the context of addiction and aims to reduce factors that maintain consumption behaviors and increase activities that reinforce non-addictive behaviors.
Origins of CRA

It is common knowledge in psychology that punishment is not the most effective means to modify human behavior. CRA, a behavioral intervention for substance abuse, proposes a model for rewarding sober behavior, rather than punishing substance use through confrontational means (Hunt & Azrin, 1973). CRA was first tested in the early 1970s, developed as an alternative treatment to 12-step programs. Its novel modular construction, dispensed in a time-limited, goal-oriented format, distinguished itself from the treatment available at that time. The intention behind this program was to reinforce activities and decision making that promoted the maintenance of abstinence and to teach skills to help clients to achieve these activities.

Procedure

CRA is a multi-modal treatment of substance abuse, meaning it offers a variety of interventions targeting key domains of social functioning that are likely to promote a sober lifestyle. The entire set of components is rarely offered systematically, except for functional analysis and treatment planning modules, which serve as starting points for all clients. Depending on clients’ needs, they can navigate through the modules in any way they see fit. What follows is a list of modules that can be used under the umbrella of the CRA intervention.

(a) Functional analysis: In line with the CBT evaluation method, functional analysis is an essential part of assessment. Information collected here focuses on the context of substance use, both external (e.g., situation, time, social setting, presence of key members of social group) and internal (e.g., thoughts, feelings, sensations, emotions). Details of the consumption behavior, like the nature, quantity, and consumption method, are gathered. The consequences of the behavior, both negative and positive, are also part of the evaluation. A well-conducted functional analysis will set the stage for a successful treatment (Meyers & Smith, 1995).

(b) Treatment plan: The CRA treatment plan entails the completion of two questionnaires, the Happiness Scale and the Goals of Counselling form. The Happiness Scale measures self-reported degree of satisfaction in ten areas of social life (e.g., work, relationships, personal habits). Based on the Happiness Scale, domains are selected for a targeted intervention. Once the domains of intervention are established, the client uses the Goals of Counselling form to specify goals to attain in each of the ten identified domains. Strategies to reach said goals, with the projected timeframes, are also included on the form (Meyers & Smith, 1995).

(c) Sobriety sampling: Instead of beginning treatment by stating that clients should achieve complete abstinence, which can be an overwhelming goal for the client, CRA proposes to negotiate a period of soberness. During this period, clients are taught some behavioral skills to stay sober, and the therapist highlights the advantages of sobriety. After the prescribed time period ends, the client and therapist renegotiate the benefits of another sobriety period (Meyers & Smith, 1995).
(d) Behavioral skills training: Therapists and clients may rapidly identify that some behavioral skills are lacking. This module offers clients the opportunity to work on three behaviors: problem solving, assertive communication, and substance refusal. The short behavioral training topics comprise segments on psychoeducation, suggested behaviors, and role-playing exercises to consolidate acquired skills (Meyers & Smith, 1995).

(e) Job skills: For many individuals, work is a key component of social life. Beyond simply obtaining and keeping a job, CRA also promotes the belief that a job should be intellectually, socially, and financially satisfying. The first phase of job-seeking relies heavily upon the Job Club Counselor’s manual, and previously described behavioral skills are taught as job-maintenance strategies (Meyers & Smith, 1995).

(f) Social and recreational counselling: Many intervention models believe that by lowering consumption, clients will immediately find new activities from which to seek enjoyment and satisfaction. Yet, some clients seem to struggle when reorienting their lives after terminating their substance abuse. In this CRA module, clients are encouraged to identify and try different social activities. The clients’ concerns about socializing when sober, and the challenges of having a social circle mostly built around substance use are also discussed. Beyond counseling, attending a CRA social club is another possibility, to help clients learn that sober socializing can be enjoyable in a non-threatening setting (Meyers & Smith, 1995).

(g) Relationship counseling: CRA’s community approach also applies to intimate relationships. In some cases, clients wish to address their relationship with their significant other. Couples start by setting objectives for themselves, using the Happiness Scale and the Perfect Relationship form (an adaptation of the Goals of Counselling form), at the beginning of meetings. For example, to reintroduce pleasant activities in the relationship, couples can set a daily reminder to be nice and to appreciate one another (Meyers & Smith, 1995).

(h) Relapse prevention: This module gathers most of its material for intervention in the functional analysis and behavioral skills module. Clients and therapists investigate each of the triggers for substance use, and use behavioral skills (e.g., problem solving, assertive communication, substance refusal) to avoid future relapse (Meyers & Smith, 1995).

Summary of Evidence

CRA has been adapted to treat clients using a variety of substances (e.g., alcohol, cocaine, heroin, marijuana) and from different sociocultural contexts (e.g., homeless individuals, adolescents), and has been used in conjunction with other treatment approaches. Interestingly, CRA has even been adapted for relatives of substance users, as a means of offering support to the families and encouraging potential substance users to seek treatment (Community Reinforcement Approach: Family Training; Smith, Meyers, & Austin, 2008). Table 2 presents the sources reviewed in this section.
### Table 2 Overview of Sources Reviewed

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Experimental conditions</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunt &amp; Azrin (1973)</td>
<td>16 alcohol-addicted clients</td>
<td>CRA vs. 12-step</td>
<td>Significant increase in number of abstinent days for CRA group</td>
<td>$d = 1.57$</td>
</tr>
<tr>
<td>Azrin et al. (1982)</td>
<td>43 alcohol-addicted clients</td>
<td>12-step + disulfiram prescription vs. 12-step + disulfiram compliance training vs. CRA + disulfiram compliance training</td>
<td>Significant increase in number of abstinent days for CRA group</td>
<td>$d = 0.89$</td>
</tr>
<tr>
<td>Miller, Meyers, Tognan, &amp; Grant (2001)</td>
<td>237 substance misusing clients</td>
<td>12-step + disulfiram prescription vs. 12-step + disulfiram compliance training vs. CRA + disulfiram compliance training</td>
<td>Significant increase in number of abstinent days for CRA group between 1- and 6-month follow-up</td>
<td>NA</td>
</tr>
<tr>
<td>Smith, Meyers, &amp; Delaney (1998)</td>
<td>106 homeless alcohol-dependent clients</td>
<td>CRA vs. TAU (12-step + employment program)</td>
<td>Significant increase in number of abstinent days for CRA group across time points</td>
<td>$d = 0.58$</td>
</tr>
</tbody>
</table>
## A Review of CBT Treatments for Substance Use Disorders

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slesnick et al. (2007)</td>
<td>180 substance abusing youth</td>
<td>CRA vs. TAU (case management)</td>
<td>Reduced substance use, depressive symptoms; improved social stability</td>
<td>$d = 0.92$</td>
</tr>
<tr>
<td>Higgins et al. (2003)</td>
<td>38 outpatient cocaine users</td>
<td>CRA + CM vs. TAU (standard drug abuse counseling)</td>
<td>Significantly greater proportion of members maintained abstinence in the CRA group</td>
<td>NA</td>
</tr>
</tbody>
</table>
Detailed Review

CRA was initially tested for alcohol-abusing inpatients (Hunt & Azrin, 1973). The trial comprised 16 participants suffering from alcohol addiction, assigned to either CRA ($n = 8$) or a 12-step intervention ($n = 8$). Six months after treatment, individuals who followed CRA protocol were favored when compared to 12-step controls; the CRA group only reported drinking on 14% of days, while the other group reported drinking on 79% of days (Hunt & Azrin, 1973). The CRA group also used mental health services less frequently, and had higher employment rates compared to people in a 12-step program. A second CRA trial also showed similar results, with even higher drinking abstinence rates in the CRA group relative to controls (90% non-drinking over two years; Azrin, 1976). The treatment was modified to include a disulfiram observance program (Azrin, 1976).

In the early 1980s, the treatment was expanded to outpatient alcoholics (Azrin et al., 1982). Participants ($n = 43$) were randomly assigned to one of three conditions: 12-step + disulfiram prescription ($n = 14$), 12-step + disulfiram compliance training ($n = 15$), or CRA + disulfiram compliance training. At a six-month follow-up, results showed that members of the CRA + disulfiram compliance training program performed better than the other two groups in percentage of days abstained (97% CRA + disulfiram training, 74% 12-step + disulfiram training, and 45% 12-step + disulfiram prescription; Azrin et al., 1982).

A replication of this study by Miller, Meyers, Tonigan, and Grant (2001) further refined the experimental design. A sample of 237 participants was recruited, including individuals who were eligible and ineligible for a disulfiram prescription. Disulfiram-eligible participants were randomized in the same three conditions as the original study by Azrin et al. (1982). For disulfiram-eligible participants, a fourth condition of CRA without disulfiram was added to assess the specific contribution of CRA and establish whether disulfiram was necessary for CRA to be effective. For disulfiram-ineligible cases, CRA or treatment as usual were offered as the two random conditions. CRA conditions seemed to outperform other conditions between one and six-month follow-ups, but the effects decreased by the 12- and 18-month follow-ups. For the disulfiram-ineligible participants, CRA had significantly fewer dropouts than treatment as usual (9% CRA vs. 41% control), but no effects of intervention were observed on drinking outcomes (Miller et al., 2001).

The treatment was also adapted to help homeless adults struggling with alcoholism. Smith, Meyers, and Delaney (1998) compared the outcomes of 106 clients in a group adaptation of CRA to the standard treatment offered by a large shelter in the community (12-steps + job program). The changes in CRA included case management and independent living skills. Follow-ups were conducted at two, four, six, nine, and 12-months post-admission. Follow-up response rates were very high among participants of the CRA program (76-93% across time points), with better outcomes for their substance use at the end of the program than the start (Smith et al., 1998). Comparisons between the two groups showed that clients who followed CRA had consumed significantly fewer standard
units of alcohol in between follow-ups, had significantly fewer drinking days, and presented significantly lower blood alcohol levels than controls.

New evidence has examined how homeless youth can benefit from CRA as well (Slesnick et al., 2007). Youth between the ages 14 and 22 who lived on the streets and met criteria for substance abuse (n = 180) were recruited from a community center. They were assigned to either CRA (n = 96) or treatment as usual (n = 84), which consisted of case management and referral to different services at the youth’s request. The results favored CRA: youth in CRA reported a larger decrease in their substance use and depression, and a greater increase in their social stability than controls at the six-month follow up (Slesnick et al., 2007).

The CRA approach was also expanded to users of other substances, notably cocaine, opiates, and marijuana. In the early 1990s, Higgins and colleagues (1993) investigated the effect of combined CRA and contingency management (CM). The CM approach for substance use treatment consists of offering tangible rewards to immediately rival the rewarding aspect of substance use. When clients provide drug-negative urine samples, they are given vouchers exchangeable for goods. Thirty-eight cocaine users were randomized into CRA + CM or standard counseling conditions. In the CRA + CM group, 58% of participants completed the 24-week program, while only 11% of the control group did. Regarding abstinence rates, the percentage of CRA + CM participants who remained continuously abstinent after eight and 16 weeks was 68% and 42%, respectively, while the control group only managed 11% and 5% abstinence at the same time points. In a different study, CRA plus CM seemed to be better than CM alone in reducing cocaine use, improving treatment adherence and employment outcomes during the treatment phase (Higgins et al., 2003). Opiate and marijuana addicts were also investigated as potential targets for CRA intervention with a combined CRA and CM model. People with both substance problems seemed to respond favorably to CRA + CM (Bickel et al., 1997; Budney et al., 2006).

As substance use problems generally start in adolescence, a youth adaptation of the program was developed. Godley and colleagues (2001) investigated a modified version of CRA, the Adolescent Community Reinforcement Approach (A-CRA), which featured components relating to school functioning, friendship, and anger management. A-CRA was also altered to include caregivers in the therapy, and was shown to be as effective as motivational enhancement therapy plus CBT and multidimensional family therapy for adolescent substance abusers (Dennis et al., 2004).

The last addition to the CRA model was the development of an intervention targeting significant others of the abusers. The CRA Family Training (CRAFT) has been shown to improve the well-being of substance abusers’ relatives, while also assisting sufferers seeking help for their substance problem. The treatment attempts to teach family members to reward their relative’s sobriety, and withhold rewards when said relative is using substances. It also seeks to enhance the overall happiness of family members. There is strong supportive evidence for CRAFT; it has been shown to successfully engage about two out of three treatment-refusing individuals in treatment (Kirby et al., 1999; Meyers, Miller,
Conclusion

In conclusion, CRA is a multifaceted cognitive behavioral program adapted to many different potential needs. It has been extensively researched and continues to expand to different cultures. The manuals have been translated into Dutch, Finnish, German, and Korean. The research findings are now being disseminated in communities worldwide (Godley, Garner, Smith, Meyers, & Godley, 2011).

Brief Interventions and Guided Self-Change

These interventions consist of a small number of therapy sessions, usually four, with the possibility of adding additional appointments at the client’s request. This motivationally based treatment orients the client towards a goal of his or her choice regarding substance use. These goals typically include substance use reduction or abstinence. The intervention is focused on highlighting and resolving the client’s ambivalence towards change, and to foster the client’s ability to identify and cope with situations or emotions that may trigger substance abuse.

Origins of Brief Interventions

The foundation for brief interventions dates back to the late 1970s. In their investigation of the effect of a short intervention on problematic alcohol consumption, Edwards et al. (1977) observed no significant differences in recovery status between alcohol-abusing men who followed a prolonged treatment program, and alcohol-abusing men who received supportive advice about their alcohol consumption. This effect was observable beyond advice-seeking outside the experiment and level of adherence to treatment. Many participants who received supportive advice sought services outside the context of the study in a similar proportion to clients following the experimental treatment program. In fact, men with a moderate alcohol problem who received single advice sessions reported high satisfaction for the help they received, and seemed to perform better than their peers at a second follow-up. This observation led to the hypothesis that, for individuals with moderate alcohol problems, very brief counselling sessions might be a time- and cost-efficient alternative to formal inpatient or outpatient treatment (Edwards et al., 1977).

In the late 1970s and early 1980s, these observations were followed by two seminal reviews on brief interventions for “problem drinkers,” or people suffering from non-severe alcohol misuse (Babor, Ritson, & Hodson, 1986; Bien, Miller, & Tonigan, 1993). Researchers started shifting from the original assumption that individuals struggling with substance use problems lacked the skills to regulate their consumption, and moved towards a motivation-based model in which motivation is understood as a “multi-determined state of readiness” that permits a person to achieve meaningful change; if the indi-
A Review of CBT Treatments for Substance Use Disorders

individual wants to change, he or she already has the resources to do so (Miller 1985, 1987; Miller & Hester, 1986; Miller & Rollnick, 1991). In this view, the aim of a brief or early intervention for substance misuse is to assist motivated clients to find the tools they need to address their substance-related concerns. These original studies set the stage for the development of motivational interviewing and motivational enhancement therapy. Another example of a brief, early intervention for problem substance use is the guided self-change method (GSC), developed by Sobell & Sobell (1993).

Procedure

A key component of GSC is the motivational interviewing (MI) style. According to Miller and Rollnick (1991), MI aims to identify and work with the client’s objectives and personal goals. This technique facilitates the client’s exploration and resolution of ambivalence to change. MI is a way to interact with the client, rather than a set of specific techniques; it is an unstructured interview that favors the client’s autonomy. In order to achieve this, (1) the client’s personal motivation is what leads the interview, rather than the counselor’s; (2) the client is responsible for investigating and solving his or her own uncertainty and difficulties; and (3) the counselor and client develop a partnership rather than a hierarchical therapist–patient relationship (Miller & Rollnick, 1991).

In this treatment, the client is able to select his or her own goal regarding substance misuse. Many treatment programs, most notably the 12-step, Alcoholics Anonymous inspired programs, often advocate abstinence as the only realistic goal to pursue when striving for sobriety. In the case of the GSC model, adherence to MI’s style means the client is encouraged to formulate his or her own personal goal, as long as it is compatible with a healthy lifestyle (e.g., less than three drinks on any occasion; avoid drinking all days of the week). Giving the client autonomy to select a goal has the added bonus of solidifying the therapeutic alliance and providing the client with a meaningful personal goal to pursue (Sobell & Sobell, 1993).

The first session of GSC therapy consists of a two-hour, thorough assessment of the client’s substance use. It aims to determine the nature of the substance(s) used by the client, the frequency and intensity of consumption episodes, the contextual elements of substance use, and the level of motivation and self-efficacy regarding change for these behaviors. To achieve this goal, therapists often employ open-ended interviewing and formal assessment tools. A list of these questionnaires includes: Alcohol Use Disorder Identification Test, Drug Abuse Screening Test–10 items, Drug Use History Questionnaire, Brief Situational Competence Questionnaire (BSCQ), Where Are You Now Scale, and Timeline Followback (Sobell & Sobell, 1993). In between the evaluation and the first intervention session, the client is asked to complete some homework, including a self-observation of his or her substance use between the two sessions, and a goal evaluation form, in which the client sets his or her abstinence or reduction goal for the treatment (Sobell & Sobell, 1993).
The next session starts with a review of the material completed since the initial assessment, and the clinician provides personalized feedback, creating a portrait of the client’s substance use. The client and counsellor first review the client’s goal. Then the therapist reviews the self-observation homework and puts it in context with the information gathered from the first session. The therapist also provides feedback, comparing the client’s consumption to normative drinking patterns, and illustrating the client’s consumption-risk profile. They then address and explore the client’s ambivalence towards change. The next sessions aim to further explore high-risk situations for the client, and help him or her identify steps that can be taken to reduce the risk of consumption (Sobell & Sobell, 1993).

The final session prepares the client for the conclusion of therapy and addresses the issue of relapse. Great effort is invested in framing relapse as a normal experience from which the client can learn and grow. The client is taught to identify and limit the impact of relapse when it occurs, and is also taught to consider it a learning opportunity for refining the initial plan of persistent change. This is discussed in an effort to avoid the client’s potential devaluation of his or her ability to maintain change (Sobell & Sobell, 1993).

Summary of Evidence

GSC has been the subject of investigations for over 20 years and has demonstrated that a very brief treatment can still help some substance-misusing clients to reduce their consumption. GSC’s efficiency seems not to be improved by adding more sessions, or different components, suggesting that this very simple model is quite well optimized in its current form. The treatment has also been tested successfully in different sociocultural settings, a great asset for teams interested in testing the model internationally. Table 3 presents the sources reviewed in this section.
## Table 3 Overview of Sources Reviewed

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Experimental conditions</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sobell &amp; Sobell (1993)</td>
<td>100 alcohol misusers</td>
<td>GSC vs. GSC + RP</td>
<td>alcohol use reduction post-treatment, but no difference between conditions</td>
<td>NA</td>
</tr>
<tr>
<td>Sobell, Sobell, &amp; Leo (2000)</td>
<td>56 spouses of alcohol misusing males</td>
<td>Informal advice-giving training vs. formal advice-giving training</td>
<td>alcohol use reduction post-treatment, but no difference between conditions</td>
<td>$d = 1.64$</td>
</tr>
<tr>
<td>Breslin et al. (1999)</td>
<td>69 still heavy drinking males who received GSC</td>
<td>Supplemental session vs. no treatment</td>
<td>Augmentation of drinking post-treatment, but no difference between groups</td>
<td>$d = 1.03$</td>
</tr>
<tr>
<td>Sobell, Sobell, &amp; Cleland (1995)</td>
<td>287 substance misusers (non-heroin, non-injecting misusers)</td>
<td>Individual GSC vs. Group GSC</td>
<td>Substance use reduction post-treatment, but no difference between conditions</td>
<td>NA</td>
</tr>
<tr>
<td>Sobell, Sobell, &amp; Agrawal (2009)</td>
<td>264 substance misusing clients</td>
<td>Individual GSC vs. Group GSC</td>
<td>Alcohol and drug use reduction post-treatment</td>
<td>$d = 1.15-1.45$</td>
</tr>
<tr>
<td>Study (year)</td>
<td>Participants</td>
<td>Intervention 1</td>
<td>Intervention 2</td>
<td>Effect Size</td>
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<tr>
<td>----------------------</td>
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<tr>
<td>Floyd et al. (2007)</td>
<td>830 women at risk for alcohol-exposed pregnancies</td>
<td>Information session vs. information session + GSC + contraception consultation</td>
<td>Information session + GSC + contraception consultation increased the odds of avoiding alcohol-exposed pregnancy</td>
<td>$d = 0.35$</td>
</tr>
</tbody>
</table>
A Review of CBT Treatments for Substance Use Disorders

Detailed Review

The GSC model for the treatment of SUDs has been extensively researched. In the first GSC clinical trial, conducted by Sobell and Sobell (1993), 100 participants with an alcohol problem were randomized to receive either a GSC intervention alone (n = 50) or a GSC intervention and two RP module sessions at the end of the intervention (n = 50). The investigators found that both interventions were successful in reducing the amount of alcohol consumed from last year self-reported drinking levels to 12-months post-treatment drinking levels by 54%, but the two conditions were not significantly different from one another, raising questions about the empirical strength of the RP module. Though the RP module was deemed potentially inefficient, it remained in the intervention because it made little clinical sense to exclude the topic of relapse within an SUD treatment (Sobell & Sobell, 1993). The study also revealed the treatment was well received by clients, 97% of whom rated the treatment highly (Sobell & Sobell, 1993).

The second randomized controlled trial of GSC examined the potential benefits of involving significant others in the treatment (Sobell, Sobell, & Leo, 2000). Fifty-six problem-drinking males received the GSC intervention. Their spouses were randomly assigned to two sessions of “natural social support” (n = 28), which consisted of information sessions and readings about alcohol problems, or two sessions of “directed social support” (n = 28), which consisted of training sessions and readings to help the partners be proactive and supportive of the abusers’ treatment. Results suggested that, though all participants improved over the course of treatment, no between-group effects were observable (Sobell, Sobell, & Leo, 2000). This could suggest that the GSC intervention model is a sufficient, self-contained treatment for alcohol problems, and it does not need the added couple component to be efficient. The lack of significant results could also indicate that the control condition was already sufficient to generate effects comparable to the directed condition. Most participants responded favorably to the length of treatment: two-thirds reported the number of sessions as being sufficient, while one-third would have liked more sessions (Sobell, Sobell, & Leo, 2000).

Another trial was conducted to assess the need for a supplementary session for clients who were still problem drinkers after receiving the full intervention (Breslin et al., 1999). Here, 69 males who still drank heavily after the third session were randomized to one of two conditions. A first group received a supplemental or “stepped” session (n = 33), including a re-evaluation of the client’s obstacles to change, and received personalized flash card reminders to use outside the therapist’s office. The other group received no additional session (n = 36). The results were not significant for the additional session. The authors mentioned that, since the additional session was very similar to what clients received in regular GSC sessions, participants might have obtained full benefits from the previous GSC sessions, explaining the non-significant effect (Breslin et al., 1999; Sobell & Sobell, 2005). A new approach altogether might be warranted for GSC-resistant cases.

The format of therapy was also investigated in the development of the GSC model. Sobell, Sobell, Brown and Cleland (1995) created an intervention targeting problematic drug
consumption, and a second group-based format for both alcohol and drug abusers. Both treatments comprised four sessions presenting GSC topics and material. The individual sessions were about 60 minutes long, while the group sessions were between 90 and 120 minutes long. A total of 287 participants (232 drinkers and 55 non-injecting, non-heroin drug users) were randomized. The group format was not deemed significantly different from the individual format, meaning it helped participants reduce their alcohol and drug consumption at a similar level to the already validated individual GSC treatment (Sobell, Sobell, Brown & Cleland, 1995). It is also important to note that the authors observed a considerable cost efficiency (41% less therapist time required by participant for group intervention) and logistic advantage (8 times fewer appointments missed) with the group format. A replication of these findings was recently obtained by Sobell, Sobell, & Agrawal (2009), confirming the efficacy of group GSC treatment.

Another contemporary adaptation of GSC concerns the treatment of young women at risk for alcohol-exposed pregnancies (Floyd et al., 2007). A group of 830 women, aged 18–44 years, were recruited from Florida, Texas, and Virginia in the United States. These women were randomized to either receive informational sessions (n = 414), or information with GSC plus a contraception consultation (n = 416). Women who received the GSC program plus a contraception consultation were twice as likely as the controls to reduce their drinking and/or use efficient contraception at three months, six months, and nine months after the end of the intervention (Floyd et al., 2007).

The efficiency of the GSC model has also been validated in diverse cultural contexts. A series of studies by Ayala et al. (1998; Lozano-Blanco, Sobell, & Ayala, 2002) adapted the intervention model by translating all the relevant material to Spanish for its delivery to problem drinkers in Mexico. The treatment was also modified to be delivered in Stockholm, Sweden (Andréasson, Hansagi, & Österlund, 2002). Both studies reported significantly reduced alcohol consumption for clients in their respective settings.

**Conclusion**

The GSC model of intervention has been shown to be an effective brief treatment for individuals in the United States, Mexico, and Sweden who suffer from problematic alcohol or drug use. GSC appears to be well suited for an individual or a group-based intervention, which can be useful as a community approach that is also cost-effective. Though the program is proficient with people who misuse various substances, it seems to be best suited to non-severe alcohol users, since treatment-resistant cases do not seem to respond to more GSC sessions, as was seen in Breslin et al. (1999). Evidence suggests that severe alcohol abusers could benefit from brief motivational interventions (Edwards & Taylor, 1994; Match Research Group, 1998), but no research has investigated the specific effect of GSC on this population. The community responsible for the development of this treatment is still looking for better ways to disseminate this program. For example, they are expanding their alcohol-exposed pregnancy program to college students using a mail-based administration of the program, and they are developing an app- and email-supported version of GSC (iSelf-Change™). The GSC webpage (Healthy Lifestyles Guided Self-
Behavioral Couples Therapy

Another CBT option for substance users is behavioral couples therapy (BCT), which is far less utilized in the field, despite promising outcomes. Substance abuse can be detrimental to one’s physical and mental health, but it can also be harmful to the people closest to the abuser. BCT is a therapy targeting couples with one substance abusing partner. This model of treatment has been shown to reduce the addicted partner’s substance use and improve the quality of the couple’s relationship. BCT also addresses the non-abusing partner’s relationship satisfaction and the overall discord within the family environment, which could potentially improve children’s well-being.

Origins

In the 1970s, research on social dynamics revealed that family relationships and processes might inadvertently maintain substance use behavior, and interventions were developed tailored to the needs of families struggling with substance addiction. A number of family intervention models exist that address family dynamics in SUD (e.g., multisystemic family therapy), but only a few family-based treatments are strictly based on CBT principles. Using many of the concepts from behavioral interventions, Keller (1974) developed BCT as a response to the needs of struggling families. BCT has since become one of the most empirically supported treatments for alcohol abuse (Epstein & McCrady, 1998), and it has been expanded to clients suffering from various substance use problems, including cocaine and heroin dependence.

Procedure

BCT aims to maintain the couple’s drug and alcohol abstinence by teaching partners how to reward sobriety, which diminishes the occurrence of substance use, and favors supportive communication to prevent relapses. The treatment consists of 10–20 weekly couple sessions.

The sessions follow a structured format, starting with a presentation of the schedule. The clinician also inquires about the clients’ consumption behavior since the previous session. They then revise assignments and exercises, addressing previously encountered difficulties. If any problems have arisen since the last session, time is devoted to discussing and solving those issues. The session proceeds with new material, which can be delivered by psychoeducation, skills training, or role-play exercises. The session ends with new homework assignments for both the client and partner to work on until the next session (McCrady & Epstein, 2009).
The “sobriety contract” was one of the first concepts established in BCT (Keller, 1974). It describes the daily ritual where the person suffering from SUD formulates his/her intention to stay sober that day, and the partner verbally expresses support for those efforts. Clients who are receiving pharmacotherapy for their substance problem can take their medication at this time, as part of the routine. Adherence to the “sobriety contract” can be logged into a calendar for the therapist and client to monitor. Explicit instructions are given for the couple to refrain from talking about the addict’s past substance use outside the therapist’s office, in order to minimize the risk of substance-related conflicts. This type of situation can be periodically rehearsed in session for the therapist to provide feedback, if necessary (McCrady & Epstein, 2009).

In sessions and through various assignments, BCT attempts to enhance the client and partner’s relationship by promoting positive and gratifying paired activities. These include the “Catch Your Partner Doing Something Nice” assignment, or the “Caring Day” assignment. Shared rewarding activities is paramount for reintroducing positive feelings in the relationship. Effective and supportive communication skills are also taught. These skills include paraphrasing, empathizing, and validating one another’s experiences (McCrady & Epstein, 2009). These techniques are designed to increase relationship satisfaction and positive feelings, while diminishing the negative effects of stressors.

Another goal in BCT is relapse management. At the end of each session, therapists and clients discuss how to avoid relapses and what to do if they occur. Strategies commonly employed to avoid relapses are adherence to the “sobriety contract” and continued attendance at self-help group meetings. If relapses occur, clients are instructed to contact the therapist and resume with the skills they have learned in treatment. Great care is also invested in reframing what relapses signify: they should not be indicative of failure, but rather seen as opportunities to learn and adapt on the road to recovery (McCrady & Epstein, 2009).

Clients and therapists also negotiate pharmacological treatment for SUD. For example, alcohol-dependent clients can discuss their disulfiram prescription and negotiate a gradual reduction in dosage. They first discuss this topic in session, and it can later be integrated into the “sobriety contract” (McCrady & Epstein, 2009).

**Summary of Evidence**

BCT has been validated as an evidence-based treatment for alcohol misusing clients. It has been evaluated as equivalent or superior to other existing group interventions and couples therapy. Though most research applies to heterosexual couples whose male partner struggle with alcohol misuse, some evidence suggests benefits for couples whose female partner struggles with alcohol misuse. BCT's findings remain limited to alcohol misuse, and further efforts should expand the investigation on other substance and polysubstance misuse. Table 4 presents the sources reviewed in this section.
## Table 4 Overview of Sources Reviewed

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Experimental conditions</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowers &amp; al-Redha (1990)</td>
<td>16 services seeking couples with one substance abusing partner</td>
<td>BCT vs. individual therapy</td>
<td>Significant difference between condition in number of drinks per week</td>
<td>$d = 1.46$</td>
</tr>
<tr>
<td>McCrady et al. (1991)</td>
<td>45 couples with an alcohol abusing member</td>
<td>Minimal spouse involvement vs. alcohol-focused spouse involvement vs. BCT</td>
<td>Reduced alcohol use frequency for all groups. BCT group maintained effects, while other groups declined after 9-month follow-up</td>
<td>$d = 0.80$</td>
</tr>
<tr>
<td>O’Farrell et al. (1996)</td>
<td>36 couples with male partner recovering from alcohol problem</td>
<td>Individual therapy vs. BCT vs. interactional couples group</td>
<td>Reduced health care and judicial costs related to alcohol problem for clients following BCT</td>
<td>$d = 0.77$</td>
</tr>
<tr>
<td>McCrady, Epstein, Cook, Jensen, &amp; Hildebrandt (2009)</td>
<td>102 couples with female partner recovering from alcohol problem</td>
<td>BCT vs. individual therapy</td>
<td>Significant reduction in alcohol consumption for the BCT group</td>
<td>$d = 0.59$</td>
</tr>
</tbody>
</table>
A Review of CBT Treatments for Substance Use Disorders

<table>
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<th>ing from alcohol problem</th>
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</table>
Detailed Review

BCT has been compared to individual treatment, group interventions, and other couple therapies. When compared to individual therapy, BCT seems to offer delayed effects (Bowers & al-Redha, 1990): levels of alcohol consumption were not significantly different across the different conditions immediately after treatment, but six months later, clients who received BCT maintained lower consumption compared to individual therapy recipients. Relationship ratings were also increased in the BCT condition at both six-month and one-year follow-ups.

In O’Farrell and colleagues’ study (1992) comparing BCT to interactional couples’ group therapy, BCT showed an initial advantage over group therapy, with lower levels of alcohol consumed during treatment, but the effects faded as treatment terminated. Marital outcomes (e.g., days spent separated, wife’s reported relationship satisfaction) were improved in the BCT condition, but the effect sizes diminished over time (O’Farrell et al., 1992). When BCT was compared to other couple therapies for alcohol abuse treatment, BCT was the only couples treatment to show continually decreasing alcohol intake outcomes as time went on, while other treatments showed weaker effects past the nine-month follow-up (McCrady et al., 1991).

In addition to the effectiveness of BCT, it has been shown to have positive cost–benefit outcomes. In O’Farrell and colleagues’ (1996) study, the cost–benefit ratio of BCT was compared to that of individual therapy and interactional couples’ groups. Findings indicated that the BCT group showed decreased judicial and medical costs in the two years following the intervention, relative to the other treatment types. Medical centers saved resources by offering BCT, since the therapy cost the centers less time and money than the standard procedures. The intervention was also shown to be more helpful than the other two treatments with respect to increasing abstinence for women reporting poor couple-adjustment at baseline (O’Farrell et al., 1996).

Although most evidence for BCT has come from analyses of couples where men are struggling with alcoholism, recent findings (McCrady, Epstein, Cook, Jensen, & Hildebrandt, 2009) show that alcohol-abusing women similarly benefit from BCT. They reported more days abstinent and a reduced number of days of heavy alcohol use, compared to individual therapy controls. These differences were maintained at follow-ups (6 and 12 months).

Unfortunately, there is a paucity of research exploring the efficacy of BCT for individuals misusing substances other than alcohol. Considering that this intervention model has great potential for reducing substance use problems and their secondary effects on significant others, we encourage further investigations by new research teams examining the evidence for BCT.
Conclusion

This model of treatment has been widely described in the literature, and empirical studies provide support for the approach, particularly for alcohol abusing clients. New research should investigate the effects of BCT on clients using non-alcohol substances or on clients suffering from polysubstance misuse to confirm the efficacy of this program for a wider range of clients.

Personality-Targeted Brief Interventions for Substance Misuse and Comorbid Psychopathology: A New Treatment Approach

SUDs have a high rate of co-occurrence with other psychiatric conditions, and as highlighted previously, comorbid psychopathology has been identified as a moderator of treatment response, even for traditional CBT interventions. Conrod and Stewart (2005) proposed an adaptation to the RP model for SUDs to incorporate findings from a large literature on common and specific risk factors across substance use and other psychiatric symptoms.

This literature indicates that risk for SUDs and concurrent psychiatric problems exist along a number of continua, often based on personality traits and underlying cognitive/motivational profiles (Castellanos-Ryan et al., 2013; Rioux et al., 2016). These profiles can explain risk for future substance misuse, reasons for substance use/misuse, types of substances that are likely to be abused, and other important cognitive and behavioral tendencies, such as proneness towards disinhibited and antisocial behavior, depressive symptoms, or panic/anxiety (Conrod & Nikolaou, 2016). As illustrated in Figure 2, risk for psychopathology and SUD can be represented along five trait dimensions, each with its own specific cognitive, motivational profile and pattern of substance misuse and comorbid psychiatric problems. These risk trajectories have been shown to be associated with very different reasons for substance use. For example, an anxiety-sensitivity profile is consistently associated with substance use motives for anxiety and emotion regulation, whereas a sensation-seeking profile tends to be associated with substance use for enhancement reasons (e.g., Woicik et al., 2009). Beyond simple risk factors, these personality dimensions can also contribute to maintenance of substance related problems once they occur, making the personality profiles relevant as a target for treatment. For example, anxiety sensitivity is associated with intolerance of nicotine withdrawal symptoms and risk for early relapse during a smoking cessation attempt (Zvolensky et al., 2008).

Figure 3 is a reprint from Stewart and Conrod (2008) demonstrating how the RP model can be modified to differentially address these underlying risk trajectories in order to address vulnerability to substance misuse and psychiatric symptoms in a more personalized manner.
Procedure

Personality-targeted interventions can be offered in group or individual-based interventions, which tend to be brief (one to four sessions), due to the targeted nature of the intervention. As interventions target risk factors rather than problem symptoms, they can be offered as brief interventions for substance misuse or as a selective preventative intervention. In either format, four different intervention manuals have been developed to specifically target four personality risks: anxiety sensitivity, hopelessness, impulsivity, and sensation seeking. These traits are reliably measured using the Substance Use Risk Profile Scale (SURPS), a 23-item scale measuring these four traits (Woicik et al., 2009). This scale has been translated into several different languages and evaluated for use with individuals 12 years old and older. When SURPS is used as a screening tool, it is recommended to use the procedure described and validated by Castellanos-Ryan et al., (2011), by...
which individuals are identified as high-risk based on a standard deviation from the population from which they were screened. In other settings, this is not possible, so it is recommended to either use deviation from published standard norms, or the highest mean score of all four scales when deciding which personality-targeted intervention is most appropriate for an individual. In both scenarios, when an individual scores high (screens positive) on more than one personality risk factor, it is recommended to start intervening on the most deviant personality trait. Individuals with similar personality profiles are guided through the intervention when the scale is administered in group format.

The school-based intervention program is a very brief treatment offered over two to three sessions of 90 minutes over a two- to three-week period, for a total of three hours of therapy. The targeted nature of this intervention is conducive to brief therapy, given that the discussion topics and exercises are tailored to the needs of each specific personality profile. The treatment follows a structured format, using manuals to guide discussions and present exercises for each session. Manuals also feature vignettes to facilitate exchanges, normalize experiences related to the targeted trait, and encourage participant disclosure. The intervention manuals have been tailored to youth as young as 12 years of age (Preventure; Conrod et al., 2008; 2010) and for college students (Watt et al., 2006).

The first session aims to build a positive and engaging group dynamic, while building a common understanding of the problem. Clients start by setting long-term personal goals for themselves. After a brief discussion about obstacles to goal pursuit, the group is introduced to the personality trait, a frequent obstacle when pursuing personal goals. This component sets the personality trait as the center of therapy, and begins to focus attention on tackling obstacles and diminishing the consequences associated with the trait. To assist clients in managing their personality trait, the therapist presents a decision-making exercise that the group applies to a vignette. Clients then learn to deconstruct their experiences in sensation, thoughts, and behaviors, and to identify automatic thoughts as the catalyst for problematic behaviors and ineffective coping strategies. As homework, clients are asked to describe and deconstruct a situation in which they had difficulty managing their personality trait.

In the second session, clients learn to identify their cognitive distortions and challenge them. Cognitive distortions most relevant to each personality profile (e.g., jumping to conclusion for Impulsivity, catastrophizing for Anxiety Sensitivity, or internalization for Hopelessness) are presented, and members of the group share opinions about the distortions. The group moves on to identifying and confronting the distortion illustrated in a vignette. As a final exercise, clients retrospectively identify and challenge their own cognitive distortions. The treatment ends with a review of the material covered across the two workshops and a discussion about the importance of maintaining a healthy lifestyle and social relations in the pursuit of personal goals.

Personality-targeted interventions have also been evaluated when delivered in an individual format to adults living in the community who suffer from SUDs (Conrod et al., 2000) or anxiety disorders (Olthuis et al., 2015). The adult, individual format is very similar to
the group-based format described heretofore and can even be distance-delivered through telephone or email coaching (Olthuis et al., 2015).

Evidence

A recent review of personality-based model of intervention for substance misuse has been conducted by Conrod and Nikolaou (2016). Table 5 is a reformatted version of the table presented in Conrod and Nikolaou (2016). A description of individual studies follows.
### Table 5 Overview of Sources Reviewed

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Experimental conditions</th>
<th>Outcome</th>
<th>Effect size</th>
</tr>
</thead>
</table>
| Conrod et al. (2000)                 | 123 alcohol and/or prescription drug-dependent women | Personality-targeted interventions vs. control (informational video) | Alcohol use<br>Alcohol quantity x frequency<br>Dependence Symptoms<br>Remission<br>Prescription drug use | $d = 0.47$  
$N.S.$  
$d = 0.47$  
$d = 0.46$  
$d = 0.58$ |
| Conrod et al. (2006)                 | 297 high-risk high school drinkers  | Personality-targeted interventions vs. control | Alcohol use (4 mos.)<br>Binge drinking (4 mos.)<br>Drinking problems (4 mos.) | $N.S.$  
$d = 0.37$  
$d = 0.32$ |
| Watt et al. (2006)                   | 107 college students                | Personality-targeted interventions vs. control | Drinking frequency<br>Drinking problems                                      | $N.S.$  
$d = 0.37$ |
| Conrod et al. (2008, 2010, 2011)     | 347 high-risk high school students  | Personality-targeted interventions vs. Control | Alcohol use (6 mos.)<br>Binge drinking (6 mos.)<br>Drinking problems (6 mos.)<br>Drinking problems (2 yr.)<br>Drug use Frequency (2 yr.) | $d = 0.22$  
$d = 0.21$  
$d = 0.35$  
$d = 0.33$  
$d = 0.25$  
$d = 0.16$  
$d = 0.80$ |
### A Review of CBT Treatments for Substance Use Disorders

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample Characteristics</th>
<th>Interventions Compared</th>
<th>Outcomes</th>
<th>Effect Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lammers et al. (2011)</td>
<td>699 high-risk high school drinkers</td>
<td>Personality-targeted interventions vs. control</td>
<td>Alcohol use (12 mos.)&lt;br&gt;Binge drinking (12 mos.)&lt;br&gt;Drinking problems (12 mos.)</td>
<td>N.S.&lt;br&gt;d = 0.33 N.S.</td>
</tr>
<tr>
<td>Conrod et al. (2013); Mahu et al. (2015)</td>
<td>995 high-risk high school students</td>
<td>Personality-targeted interventions vs. control</td>
<td>Alcohol use (2 yr.)&lt;br&gt;Drinking Quantity (2 yr.)&lt;br&gt;Binge drinking (2 yr.)&lt;br&gt;Binge drinking-frequency (2 yr.)&lt;br&gt;Binge drinking-growth (2 yr.)&lt;br&gt;Drinking problems (2 yr.)&lt;br&gt;Cannabis use (2 yr.)</td>
<td>d = 0.68&lt;br&gt;d = 0.36&lt;br&gt;d = 0.88&lt;br&gt;d = 0.38&lt;br&gt;d = 2.07&lt;br&gt;d = 1.02 N.S.</td>
</tr>
<tr>
<td>Newton et al. (2016)</td>
<td>493 high-risk high school students</td>
<td>Personality-targeted interventions vs. control</td>
<td>Alcohol use (3 yr.)&lt;br&gt;Binge drinking (3 yr.)&lt;br&gt;Drinking problems (3 yr.)</td>
<td>d = 0.47&lt;br&gt;d = 0.65&lt;br&gt;d = 0.54</td>
</tr>
<tr>
<td>Olthuis et al. (2015)</td>
<td>80 anxiety-sensitive adults from the community</td>
<td>CBT intervention over the phone vs. control (waitlist)</td>
<td>Alcohol use</td>
<td>Not reported</td>
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<td></td>
<td></td>
<td></td>
<td>Binge drinking</td>
<td>Not reported</td>
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<td></td>
<td></td>
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<td>Drinking problems (physiological)</td>
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<td></td>
<td>Drinking problems (interpersonal)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>$d = 0.64$</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$d = 0.48$</td>
</tr>
</tbody>
</table>
The personality-targeted CBT approach has been evaluated in a number of randomized trials. One trial used a treatment-matching design in which substance misusing participants were randomized to participate in brief personality-targeted interventions or identical brief CBT interventions that did not target their primary personality profile, and both interventions were compared to a brief supportive counselling session (Conrod et al., 2000). This trial showed that substance using women reporting a range of substance use behaviours and problems responded more favorably to a brief intervention if that intervention targeted their most prominent personality trait. These findings were subsequently replicated in samples of early-onset adolescent drinkers (Conrod et al., 2006) and anxiety-sensitive college students (Watt et al., 2006). Since the personality-targeted approach mainly addresses the management of personality risk, rather than specifically managing substance misuse, many of these trials also showed that concurrent mental health symptoms were reduced by the intervention, in addition to problematic substance use behaviours (Castellanos-Ryan & Conrod, 2006; O’Leary-Barrett et al., 2013; Olthuis et al., 2015; Watt et al., 2006). Furthermore, as these traits have been shown to be highly predictive of adolescent-onset substance use, misuse, and problems (see Castellanos-Ryan et al., 2013), the personality-targeted approach has also been shown to be a highly effective strategy for preventing substance misuse and concurrent emotional and behavioral problems among high-risk youth (Conrod et al., 2008, 2010, 2011, 2013; Mahu et al., 2015; O’Leary-Barrett et al., 2010; 2013). This approach has proven to be effective when delivered in different cultural and educational contexts as well (e.g., Lammers et al., 2011 and Newton et al., 2016).

Conclusion

This novel treatment model shows great promise as both an effective model for detection and prevention of substance related problems in youth, as well as an effective model to personalize interventions, while maintaining their brevity for active substance misusers. The interventions also have the advantage of addressing concurrent mental health and personality factors that are known to maintain many substance use problems, and complicate their treatment. Furthermore, because the intervention approach does not directly target substance use behaviors, but rather risk factors for such behaviors, the approach can be easily adapted to the context of early intervention or prevention as well as the relapse prevention stage, and can address all forms of substance misuse associated with a particular personality trait, rather than having to focus on one target behavior.

Concluding Remarks

It is clear that there are many readily available, effective CBT treatments for substance abusing clients. This chapter reviewed several CBT interventions targeting substance misuse, including RP, MBRP, CRA, GSC, BCT, and personality-targeted interventions. The relapse prevention model applies cognitive behavioral strategies to help substance users achieve and maintain sobriety.
A Review of CBT Treatments for Substance Use Disorders

The GSC model seems to be best suited for non-severe substance users, and its four-session model makes it an excellent choice for time-efficient first-line care for SUD. Although GSC is efficient, this model cannot serve as the sole line of treatment for substance use problems, given that non-responders do not benefit from additional sessions of GSC.

For clients and partners struggling with substance use, BCT is a worthwhile treatment to consider. It has been recognized as an evidence-based treatment by the American Psychological Association’s 12th Division. Considering the empirical support for BCT in the domain of alcoholism, it is now more urgent than ever to verify its effectiveness for individuals misusing other substances.

For clients facing professional, intimate, and social difficulties associated with substance misuse, the multimodal approach proposed by the CRA model is also very promising. Due to the variety of possible approaches, this treatment can be tailored to best fit clients’ immediate needs. The CRAFT module is an innovative way of reaching and providing support for substance using clients through their significant others, especially for treatment refusing clients who would probably be inaccessible to clinicians with conventional treatment recruitment methods.

MBRP is an innovative treatment in the domain of SUD and the field of addiction in general. Integrating mindfulness meditation with cognitive therapy gives a novel approach to relapse prevention, which usually promotes the avoidance of situations likely to trigger relapses. MBRP does this as well, but through the lens of mindfulness, which can help substance users develop strategies to manage cravings and distress and might provide alternatives to avoiding triggers. Despite the encouraging evidence for MBRP, we would like to point out that the mindfulness exercises may not be suited to certain clients who are unable to engage in meta-cognition or exert control in high-risk situations.

Personality-targeted CBT is a newer adaptation of the CBT model, and it might be particularly helpful when attempting to prevent onset of substance abuse with young adolescents or when addressing concurrent psychiatric problems with adult substance abusing clients.

Each program tackles SUDs in a different way, but, despite obvious differences in their approaches, these models all seem to share the same logic: orienting clients towards a meaningful goal, teaching necessary skills to successfully achieve the goal, and establishing plans to face potential relapses. Given the coherence in these concepts, it is possible that these treatment models can be integrated, which could hopefully lead to a unified program based on the best components each model has to offer.

In terms of treatment efficacy, it is difficult to state whether one intervention is definitively better than another. Considering the conclusions drawn from project MATCH, it is unlikely that CBT treatments differ in any measurable way. Perhaps there is truth in Imel and colleagues’ (2008) remark that most psychotherapies, if conducted in good faith, generate similar outcomes for most alcohol misusing clients. The choice for an appropriate
A Review of CBT Treatments for Substance Use Disorders

treatment model boils down to the client’s specific needs and the availability of qualified psychotherapists ready to implement these treatments.

Although CBT interventions have demonstrated utility in treating SUDs, for the most part, they have yet to be tested on clients suffering from comorbid disorders. In fact, none of the treatment models described here have developed specific methods tailored to dual diagnosis (i.e., patients with both SUDs and other psychiatric conditions). However, there is some evidence from the MBRP and personality-targeted approaches that concurrent mental health symptoms are affected by these interventions (Witkiewitz & Bowen, 2010; O’Leary-Barrett et al., 2013; Olthuis et al., 2015). Conrod and Stewart (2005) also observed that few programs seemed to effectively treat dual-diagnosis clients, and those that did show effectiveness targeted depression, which reasserts the hypothesis that CBT for depression and substance use have a conceptual overlap. Moreover, O’Leary-Barrett et al. (2013) showed in an evaluation of the specificity of different personality-targeted interventions that reduction of depression symptoms resulted from brief CBT interventions, regardless of the focus of the interventions, whereas the reduction of conduct problems was only observed in individuals who received interventions targeting impulsivity.

Other well-established treatment models exist to address mental health problems and substance use comorbidity. For example, the Seeking Safety Program, which addresses PTSD and substance use problems, has been shown to be effective in reducing both PTSD symptoms and substance use outcomes. This evidence-based program emphasizes the need for clients to develop a safer lifestyle than the one they were leading before seeking treatment.

Considering the high prevalence of people with substance use problems and mental health difficulties, future research in CBT for SUDs should focus on the development of models that can address the needs of clients with comorbid disorders, and strive to integrate intervention components from various models to provide clients with the best care possible.

Finally, the CBT model does appear to be moderately effective in helping substance using clients reduce their substance use, when tested under rigorous experimental conditions. What is also needed are larger implementation trials to investigate the environmental, social, and clinical conditions that most facilitate the effective implementation of these interventions to patients living in the community in the most cost-effective way. Newer studies are demonstrating that brief interventions for alcohol problems can be delivered over the Web and on average produce small effects on drinking behavior and problems. Higher intensity interventions based on the RP model (e.g., CBT4CBT) have been adapted for Web-based self-guided administration and have been shown to be effective compared to standard care in reducing substance use problems. However, this research is in its infancy and will require larger and more rigorous trials to determine if, and for whom, such Web-based interventions can achieve the same effectiveness as face-to-face therapies (see review by Carroll, 2014).
References


Castellanos-Ryan, N., Rubia, K., Conrod. P. J. (2011). Response inhibition and reward response bias mediate the predictive relationships between impulsivity and sensation seek-


A Review of CBT Treatments for Substance Use Disorders


A Review of CBT Treatments for Substance Use Disorders


A Review of CBT Treatments for Substance Use Disorders


A Review of CBT Treatments for Substance Use Disorders


A Review of CBT Treatments for Substance Use Disorders


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