

5-2016

# Substance Use Disorder Co-Occurring with Anxiety and/or Depression: Evidence-Based CBT

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## Recommended Citation

Rudman, Donara, "Substance Use Disorder Co-Occurring with Anxiety and/or Depression: Evidence-Based CBT" (2016). *Master of Social Work Clinical Research Papers*. Paper 660.  
[http://sophia.stkate.edu/msw\\_papers/660](http://sophia.stkate.edu/msw_papers/660)

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Substance Use Disorder Co-Occurring with Anxiety and/or Depression:  
Evidence-Based CBT

by

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MSW Clinical Research Paper

Presented to the Faculty of the  
School of Social Work  
St. Catherine University and the University of St. Thomas St. Paul, Minnesota  
in Partial fulfillment of the Requirements for the Degree of

Master of Social Work

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The Clinical Research Project is a graduation requirement for MSW students at St. Catherine University/University of St. Thomas School of Social Work in St. Paul, Minnesota and is conducted within a nine-month time frame to demonstrate facility with basic social research methods. Students must independently conceptualize a research problem, formulate a research design that is approved by a research committee and the university Institutional Review Board, implement the project, and publicly present the findings of the study. This project is neither a Master's thesis nor a dissertation.

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## Abstract

The purpose of this systematic review was to identify the effectiveness of Cognitive Behavioral Therapy (CBT) in lieu of current treatment as usual or the siloed system for treating Substance Use Disorder (SUD) or mental health diagnosis independently. The review examines clients who have been diagnosed with co-occurring SUD and anxiety and/or depression and are receiving treatment to help reduce substance use and anxiety and/or depression symptomology. The present research study endeavored to distinguish individual aspects that may lead to more successful treatment outcomes using CBT to treat SUD with anxiety and/or depression co-currently in one integrated treatment program. Nineteen studies met inclusion criteria for the present study. The findings demonstrated that CBT is effective in co-currently reducing SUD with anxiety and/or depression symptomology for clients seeking treatment. Of the nineteen studies, thirteen were found to be as or more effective than treatment without CBT. Many of the studies found elements that may influence outcomes with CBT treatment for SUD with anxiety and/or depression including: sample size, age, gender, race and ethnicity, severity of alcohol use and anxiety and/or depression, location of treatment center, training of staff/therapists. More research is needed on CBT treatment with SUD with anxiety and/or depression disorders looking at variables such as, cross training of staff and therapists in CBT and SUD, co-occurring treatment-based implementation programs and the hiring of more staff. The research would help to highlight evidence based research in the effectiveness of CBT treatment for SUD with anxiety and/or depression. Future research may increase funding from policy makers, stake holders, and influence decision-making at the program level with program managers and supervisors when considering a CBT co-occurring treatment program.

## **Acknowledgments**

I would like to thank Ande Nesmith, Ph.D., LISW for her persistence, time management and scheduling skills, support, and guidance throughout process of this research project. I am very grateful, and this paper would not be completed with her support. I would also like to thank my committee members, Susan Leskela, LICSW and Kate Pederson, LICSW for their great advice, feedback and direction; as well as being willing to volunteer their time to help support me through the process of writing this systematic review. Last but not least, I would like to thank my husband, our children and our friends for their love, support, and understanding. They are my cheerleaders in pulling me through to the finish line for this research paper and graduate program.

## **Substance Use Disorder Co-Occurring with Anxiety and/or Depression: Evidence-Based CBT**

Co-occurring disorder, dual-disorder or dual diagnosis disorders are simply defined as two disorders that occur together, at the same time (Co-Occurring Disorders, 2014). These co-occurring disorders do not discriminate and affect individuals from every walk of life: mothers, fathers, sisters, brothers, the poor, the wealthy, the adolescent, the adult, male, female, no defined race or ethnicity, the employed and the unemployed. There are no specific patterns, configurations or defined populations for those that are diagnosed with co-occurring Substance Use Disorder (SUD) and Mental Illness (MI), it is a diagnostic issue that does not differentiate within the human experience. Co-occurring disorders account for almost 50% of adults with severe mental illness (Drake & Brunette, 2007).

### **Literature Review**

The U.S. Department of Health and Human Services (1999) defines Mental Illness (MI) as “collectively all diagnosable mental disorders” or “health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning.” Substance Use Disorders are more serious than abuse, individuals have increased tolerance to illicit drugs or alcohol, incessant drug seeking behaviors, and a persistence of use despite the impact to social, environmental, physical and mental health issues (Center for Substance Abuse Treatment, 2005).

The statistics annually are staggering for MI and SUD co-occurrences, it is estimated that 43.7 million (18.6%) of Americans that are older than 18 have occurrences of some type of

mental illness. The prevalence of substance use disorder is 27.3 (8.8%) of the population in America. Of the 43.7 million adults diagnosed with Adult Mental Illness (AMI), 19.2% met the criteria for SUD. Amid the 9.6 million diagnosed with Serious Mental Illness (SMI), 27.3%, met the criteria for SUD. To put this into perspective, 6.4 percent of adults who did not have mental illness in the past year met criteria for a substance use disorder (Substance Abuse and Mental Health Services Administration, 2013).

Despite these high rates of co-occurrences SUD and MH are not fully understood. One disorder may not be caused by another, and in fact may have not caused the disorder to occur in the first place. This makes it difficult to establish a diagnosis and establish the comorbidity of the disorders.

There are several reasons for the co-occurring disorders. The National Institute on Drug Abuse describes three scenarios that can affect the diagnosis and treatment of co-occurring disorders. First, substance use can trigger mental illness, e.g., psychosis, depression and anxiety are common diagnoses that can be experienced after first-time substance use or long term usage. The National Violent Death Reporting System (NVDRS) reported in 2007 the suicide rate was the 11<sup>th</sup> reported cause of death among Americans. Alcohol was reported as a factor in nearly one-third of suicides reported (Suicides Due to Alcohol, 2007). Secondly, mental illness may lead to substance abuse. Clients who are experiencing different levels of mental disorders can abuse substances as a form of self-medication. For example, a client who suffers from social anxiety and may have a couple of drinks to “loosen up” and feel less anxious before going to his/her job or out to an event. Thirdly, the client may have pre-disposed genetic factors, brain deficits, and/or childhood trauma or stress (Why Do Drug, 2010).

## **Impact**

There are many negative implications including: disillusionment, hopelessness, isolation, physical and mental issues, families torn apart, divorce, child loss and placement through protective services, job losses, housing losses and social instability; these provide a descriptive picture of the fallout from MI and SUD co-occurring diagnoses. Adults diagnosed with major depression and SUD are at the highest risk for divorce (Breslau et al., 2011). The rate of individuals diagnosed with SUD and MH experience homelessness daily in the United States is 26.2% for individuals with MI and 34.7% for individuals with SUD (Current Statistics, 2010), 3.1 million individuals with MI experience joblessness (Substance Abuse, 2013), 2.2 million individuals with SUD experience joblessness (Substance Abuse, 2013). Rates of emergency room visits and health care costs go up exponentially with this population, in 2007 rates for MI and SUD individuals accessing the emergency department (ED) accounted for 12.5% all ED visits in the United States (Owens, Mutter & Stocks, 2010). The statistics on the detrimental impact and risks to the MI and SUD co-occurring population are very real. The implosion of support systems negatively impacts the individuals, and society as a whole.

## **Management**

Providers and clients often refer to the management of MI and SUD co-occurrences in the following ways: “treatment, the cure, the regimen, analysis, therapy, and recovery.” Recent research as revealed a siloed system of programs and providers that work to deliver services to treat MH and SUD. There is a startling lack of specialty trained and skilled practitioners and staff, a lack of standardized and evidence-based treatment, there are gaps in treatment methodology, and the delivery/cost of treatment programs all add to the barrier of providing



integrated services (Drake, O'Neal, & Wallach 2008; Horsfall, Cleary, Hunt, & Walter, 2009; Mohler, 2013; Porter, Stallings, & Burnett, 2010; Versland, & Rosenberg, 2008). The integrated services and providers work to treat the whole person within the context of multi-diagnoses and co-occurrences (Co-Occurring Disorders, 2012).

Clinical supervisor and program directors do acknowledge that clients who have co-occurring disorders will need to be provided with more services and more services and personnel that have specific training in co-occurring disorders, especially those diagnosed with MH and SUD. Training of skilled professional and staff require specialized trainers and courses designed to treat MH and SUD. These programs for training are expensive and qualified professional trainers in the field are limited and difficult to find (Horsfall, Cleary, Hunt, & Walter, 2009; Mohler, 2013; Porter, Stallings, & Burnett, 2010; Versland, & Rosenberg, 2008).

Integration of services into programs become difficult when determining which methodologies may work with co-occurring disorders. Clients that have been diagnosed with co-occurring disorders have been only receiving treatment for both at a rate of 12% annually (Epstein, Barker, Vorburger, & Murtha, 2004). Integration is further encumbered by financial burdens, the current siloed system of SUD and MH and professional disputes about who should be providing clinical treatment. Furthermore, there is an inordinate necessity attached to finding standardize methodologies, lengths of treatment, and publishing treatment and program outcome measures (2004).

## Treatment

Treatment programs have difficulty identifying and funding the length of treatment for clients. In 2015, the Healthcare Cost and Utilization Project (H-CUP), reported that the average annual cost for an adult hospitalized with co-occurring MH and SUD was \$12,600 (Hospitalizations, 2015). The Hazelden Betty Ford Foundation reports, “the typical cost for outpatient addiction treatment is \$10,000 and residential alcohol and drug rehab ranges between \$20,000 to \$32,000 depending on the level of services needed” (Top 5, n.d.). Length of stay plays an important factor in the cost of providing services. Residential treatment programs, which have longer stays and add to the expensiveness of treatment, have been reported as effective. Due to lack of standardization between programs makes it difficult to determine the transparency of these findings (Drake, O'Neal, & Wallach 2008).

As this review has identified, the current treatment for MH and SUD is siloed. So let's take a look at the treatment options available today for this population and ask ourselves, what evidence based strategies will work to treat MH and SUD concurrently in one treatment program? This systematic literature review will explore the efficacy of dual diagnosis with depression/anxiety with substance disorder using Cognitive Behavioral Therapy (CBT). CBT was developed by Dr. Aaron Beck in the 1960s and was originally developed to help treat depression. Since that time CBT has been found to be an effective, evidence-based therapy to treat multi-diagnoses. CBT is an evidence based therapy that is time-limited, addresses the here and now and is skills based (History of Beck, n.d.).

## **Conceptual Framework**

### **Systems Theory – Ecological Systems**

This literature review will use the theoretical viewpoint of Systems Theory with an emphasis in the Ecological perspective and will use empirical studies of MI, SUD diagnoses and CBT treatment modalities. Research which seemed to present significant conceptual formulations or empirical data were reviewed. Reference was made to studies in MI and SUD diagnoses and those in the field of CBT which appeared to be relevant to treatment outcomes in co-occurring diagnoses.

Systems Theory describes the interconnectedness, communication and structure in which a system may be defined. It is a set of elements, established in interrelation among themselves, and with their surroundings/environment (Bertalanffy, 1973). The Ecological perspective is an important system within Systems Theory. It is a larger system that incorporates a social system is that system's environment. The environment impacts and postulates the framework for the systems working within it (Miley, & Melia, 2013).

### **History**

Systems Theory research began following the World Wars in an attempt to construct how complex systems interact with relationships among foundational components and if these systems, whether social, biological or electrical have similar configurations, actions and/or behaviors and properties. So that researchers might be able to understand and develop a better comprehension of these complex occurrences to have a greater understanding of the unity between the sciences. These theories have been combined into what we know today as System Theory.

System Theory integrates the technical sciences and the social sciences. System Theory has been combined philosophy, theory, methodology and application to work in a symbiotic

relationship. It has been developed to examine cybernetics, complex adaptive and interconnected elements, software and computing, sociology and sociocybernetics, complex systems in the field of electronics, engineering and psychology (Environment and Ecology, n.d.). It is here in the field of sociology and psychology that we will focus on the principles of Systems Theory, in developing the holistic view of persons-in-environment, their contextual behavior and to strengthen one part of the system or subsystem to impact the whole, for this systematic literature review.

Systems Theory has been used in the target population for this study by examining co-occurring diagnoses with the treatment of CBT with success. This literature review will focus the scope of the research and examine CBT effectiveness on SUD, anxiety and depression diagnoses. Systems theory will provide the lens to help sift through the current research in the field, to provide a working framework for the systematic literature review. The framework will center around the ecological system that centers around the person, their social and cultural connections and environment.

## **Methods**

This review has collected and analyzed nineteen different qualitative research studies. The paper is systematic review of research that has examined the effectiveness and connection between CBT treatment to treat co-occurring SUD with anxiety and/or depression.

## **Inclusion Criteria**

Inclusion criteria were attributes of the studies that are essential for their inclusion in the systematic review. This review's inclusion criterion includes research findings that are based on empirical articles of a quantitative design. The review focuses on the co-occurring diagnoses of

Substance Use Disorder (SUD) with anxiety and/or depression disorders. The treatment methodology was reviewed for evidence based strategies and included CBT as a treatment modality. The articles and research studies needed to have been conducted within the last ten years to provide the most recent research and information surrounding this topic. The samples were limited to adults over the age of 18 that have SUD with anxiety or depression. The process for inclusion is detailed in Table 1.

### **Search Strategy**

The search strategies used specific key words used to search the databases. These terms were then combined in the different databases for the best results. The databases that were used were PubMed and PsycInfo (PsycNet). The keywords used in the search include; co-occurring, dual-disorder, dual diagnosis, clinical trial, integrated, substance use disorder (SUD), chemical dependency, anxiety, and depression. The researcher reviewed peer reviewed journals. The researcher reviewed and screened the abstracts before deciding to include the articles into the study.

### **Data Abstraction**

The researcher reviewed peer reviewed journal articles, rejecting those that do not meet the quality guidelines for data abstraction, and reported the collected data in the final study. In order to evaluate the validity of the studies included, a scoring system was utilized (Table 1). The scoring system included four dimensions: the sample size, the sampling strategy, comparison groups and repeated measures. These four dimensions helped the researcher determine the method and quality of the articles to determine validity. The quality of data reported in summation form for the results of the quality data. The data has been added up and scores have been compared for poor, moderate and high quality of the research data. The table below reflects the rubric used to score articles included in the study.

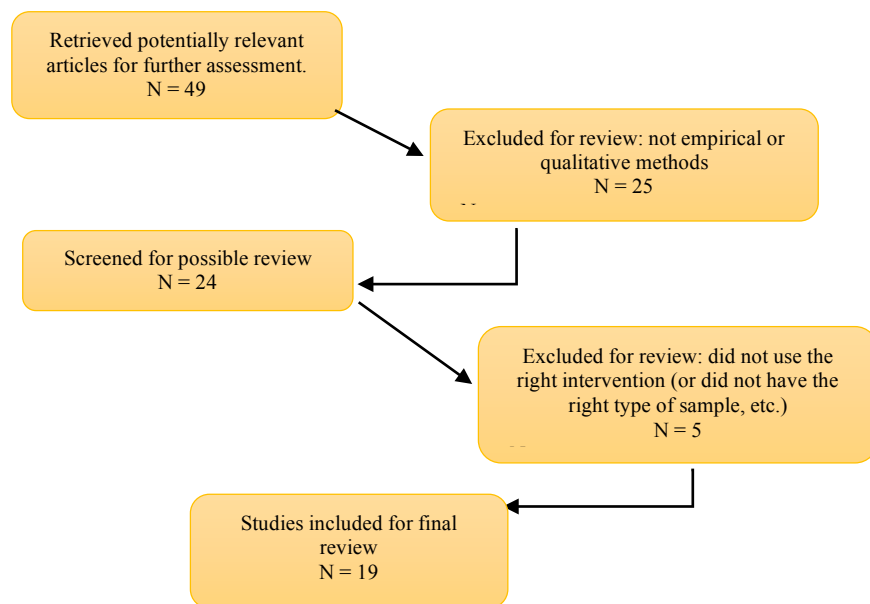
## Quality Analysis

**Table 1 Scoring System**

| Method            | Quality                         |                                 |                         |
|-------------------|---------------------------------|---------------------------------|-------------------------|
|                   | 1 (poor)                        | 2 (moderate)                    | 3 (high)                |
| Sample size       | <25                             | 26-50                           | ➤ 50                    |
| Sampling strategy | Convenience or snowball         | Matched                         | Random                  |
| Comparison        | None                            | Non-equivalent comparison group | Randomly assigned       |
| Repeated measures | Point-in-time (cross-sectional) | Pre-post tests                  | Measures >2 time points |

### Data Collection

Once the initial search was completed, the abstract and title of the journal article was reviewed to determine if it met the inclusion criteria. If the study met the initial inclusion screening, it was then reviewed in full for additional evaluation. Once screened, reviewed, and the articles met inclusion criteria, the studies were kept for the review. This review focuses on studies that meet the final inclusion criteria. In the initial search, 24 articles met inclusion criteria; however, upon further review of the full text, five were excluded for studies involving differing treatment goals and methodologies. This information was kept in a table and carefully reviewed to be later included in this review.

**Figure 1****Search Strategy****Findings**

The purpose of this systematic review was to examine the literature reporting the effectiveness of CBT as a treatment intervention for those who have a co-occurring SUD with anxiety or depression. Of the articles examined, 19 articles met inclusion criteria and were examined for this systematic review. Common themes were identified and included: variation in CBT models, treatment intervention comparison, treatment cost comparison, variations in treatment centers and validity of research studies. Table 2 outlines the reviewed studies.

**Table 2 Reviewed Studies**

| First Author, Year          | Sample Strategy | Comparison Group | Sample Size | Measures        | Themes  | Quality Score Sum |
|-----------------------------|-----------------|------------------|-------------|-----------------|---|-------------------|
| Worley, Tate, & Brown, 2012 | Random (3)      | Random (3)       | 209 (3)     | Repeated >2 (3) | -Integrated CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression | 12                |

| First Author, Year   | Sample Strategy | Comparison Group   | Sample Size | Measures        | Themes  | Quality Score Sum |
|--|-----------------|--------------------|-------------|-----------------|---|-------------------|
| <b>Worley, et al., 2012</b>                                    | Random (3)      | Random (3)         | 201 (3)     | Repeated >2 (3) | -Integrated CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression                                 | 12                |
| <b>Worley, Tate, McQuaid, Granholm &amp; Brown, 2013</b>       | Random (3)      | Random (3)         | 237 (3)     | Repeated>2 (3)  | -Integrated CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression                                 | 12                |
| <b>Watkins, et al., 2014</b>                                   | Matched (2)     | Non-equivalent (2) | 299 (3)     | Repeated>2 (3)  | -Group CBT<br>-TAU Comparison Group<br>-Treatment Cost Effectiveness for CBT<br>-Residential Treatment Setting<br>-Treatment for SUD w/Depression | 10                |
| <b>Watkins, et al., 2011</b>                                   | Matched (2)     | Non-equivalent (2) | 299 (3)     | Repeated>2 (3)  | -Group CBT<br>-TAU Comparison Group<br>-Residential Treatment Setting<br>-Treatment for SUD and Depression  | 10                |
| <b>Lopez, 2015</b>   | Convenience (1) | Non-equivalent (2) | 166 (3)     | Repeated>2 (3)  | -Traditional CBT<br>-Pharmacological Comparison Group<br>-Clinic Treatment Setting<br>-Treatment for SUD w/Depression                             | 9                 |
| <b>Hunter, Witkiewitz, Watkins, Paddock &amp; Hepner, 2012</b> | Random (3)      | Non-equivalent (2) | 299 (3)     | Repeated>2 (3)  | -Group CBT<br>- TAU Comparison Group<br>- Residential Treatment Setting<br>-Treatment for SUD w/Depression  | 11                |
| <b>Hunter, et al., 2012</b>                                    | Random (3)      | Random (3)         | 73 (3)      | Repeated>2 (3)  | -Group CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression                                      | 12                |
| <b>Haller, 2016</b>  | Random (3)      | Random (3)         | 123 (3)     | Repeated>2 (3)  | -Integrated CBT<br>- Cognitive Processing Therapy (CPT) Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression      | 12                |
| <b>Glasner-Edwards, 2006</b>                                   | Random (3)      | Random (3)         | 148 (3)     | Repeated>2 (3)  | -Integrated CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression                                 | 12                |
| <b>Cui, 2015</b>   | Random (3)      | Random (3)         | 214 (3)     | Repeated>2 (3)  | -Integrated CBT<br>- 12-Step Comparison Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Depression and Physical Comorbidities      | 12                |



| First Author, Year    | Sample Strategy | Comparison Group | Sample Size | Measures            | Themes  | Quality Score Sum |
|-----------------------|-----------------|------------------|-------------|---------------------|---|-------------------|
| Lanza, 2007           | Convenience (1) | Random (3)       | 50 (2)      | Repeated>2 (3)      | - Traditional CBT<br>- ACT and Control Comparison Groups<br>-Prison Treatment Setting<br>-Treatment for SUD w/Anxiety and/or Depression                       | 9                 |
| Watt, 2006            | Random (3)      | Random (3)       | 221 (3)     | Cross-Sectional (1) | -Brief CBT<br>- Group Seminar w/psych ethics<br>-Outpatient Treatment Setting<br>-Treatment for Drinking Behavior w/Anxiety                                   | 10                |
| Kushner, et al., 2009 | Matched (2)     | Random (3)       | 48 (2)      | Cross-Sectional (1) | -Hybrid CBT<br>-TAU Comparison Group<br>-Residential Treatment Setting<br>-Treatment for SUD w/Anxiety  | 8                 |
| Kushner, et al., 2006 | Matched (2)     | Random (3)       | 63 (3)      | Cross-Sectional (1) | -Integrated CBT<br>-TAU Comparison Group<br>- Day Treatment Setting<br>-Treatment for SUD w/Anxiety   | 7                 |
| Bergly, 2014          | Convenience (1) | None (1)         | 85 (3)      | Cross-Sectional (1) | - Traditional CBT<br>- Anger Management, MI, Applied Relaxation, Relational Comparison Groups<br>-Inpatient Treatment Setting<br>-Treatment for SUD w/Anxiety | 6                 |
| Courbasson,2008       | Convenience (1) | None (1)         | 59 (3)      | Pre and Post (2)    | -Group CBT<br>-One Treatment Group<br>-Outpatient Treatment Setting<br>-Treatment for SUD w/Anxiety   | 7                 |
| Kushner, et al., 2013 | Random (3)      | Random (3)       | 344 (3)     | Repeated>2 (3)      | -Hybrid CBT<br>-PMRT Comparison Group<br>-Residential Treatment Setting<br>-Treatment for SUD w/Anxiety   | 12                |
| McEvoy, 2007          | Matched (2)     | None (1)         | 484 (3)     | Pre and Post (2)    | -Traditional CBT<br>- One Treatment Group<br>- Outpatient Treatment Setting<br>-Treatment for SUD w/Anxiety   | 8                 |

### Validity of Research Studies

The nineteen studies used were scored based upon their validity. The measures used to determine validity were based on: sample size, sampling strategy, comparison and repeated measures. Table 1 gives an explanation of the method and a breakdown of scoring quality. The individual score for each measure was then summed to create an over-all validity score for each

study. Using this method, the possible range for scores was 4-12. The actual scores ranged from 6 to 12 with the mean score of 10.1. Scores from 8-12 would represent moderate to high quality, therefore, with a mean of 10.1, the overall validity for the studies reviewed, were more than respectable.

### **Variation in Cognitive Behavioral Therapy Models**

Nineteen studies were reviewed for the efficacy of using CBT as a method of treatment for co-occurring SUD with depression or anxiety. Of the 19 studies, four of the studies used traditional CBT, two of the studies used Hybrid CBT (HCBT), seven of the studies used Integrated CBT (ICBT), one study used Brief CBT (BCBT) and five studies used Group CBT (GCBT). Overall this systematic review confirms that all five modalities of CBT were effective in the treatment and reduction of alcohol abuse and improvement of mental health symptoms.

**Traditional CBT.** Using the subset of studies reviewed that directly relate to traditional CBT, the average quality score was an 8. While the average quality score was less than that of this overall review, it is still of moderate to high quality range, and therefore acceptable to review the effectiveness of CBT. In the four studies using traditional CBT, the Bergley (2014) study examined treatment options for clients with SUD as a stand-alone diagnosis and clients with SUD with anxiety or dual-diagnosis, the researchers found that CBT came in fourth for treatment modalities; behind improving relationships with family/important others, applied relaxation, and psychodynamic therapy. However, the study noted that those with SUD with anxiety needed more mental health interventions and longer treatment for their needs to be met. Therefore, treatment facilities need to have mental health staffing and programs that meet the needs for clients with SUD and mental health comorbidities (Bergly, Grawe, & Hagen, 2014). In

Minnesota, the Department of Human Services, has added the requirement that mental health services need special licensing requirements for the treatment of substance use disorder.

The Kushner (2009) study examined SUD with anxiety and discovered that traditional CBT was able to reduce anxiety by almost 50%, in the 30-day follow-up outcome versus the control group. The study also reported a decrease in clients who met the diagnostic criteria for SUD in the treatment group versus the control group, at the 30-day follow-up. The control group in the study reported more days drinking and bingeing than the treatment group (Kushner et al., 2009).

**Group CBT.** Using the subset of studies reviewed that directly relate to group CBT, the average quality score was a 10. The average quality score was equal to that of the overall study, falling in the moderate to high quality range, and clearly suitable to review the effectiveness of group CBT. There were five studies that used Group Cognitive Behavioral Therapy (GCBT), which is CBT treatment modalities delivered in small or large group settings. Small group sessions tended to be able to incorporate more of the dynamic cognitive and behavioral interventions while the large group (over 12) delivered a more cognitive/psycho-education behavioral therapy (Whitfield, 2010). In the Hunter (2012) study it was unclear at how large the groups were at any given time, as they included four sites test sites with both control and test groups, plus rolling enrollment after four weeks. The Hunter study did conclude that GCBT was effective at reducing depressive symptoms with SUD during treatment and may improve client abstinence (Hunter, Witkiewitz, Watkins, Paddock & Hepner, 2012).

In the Courbasson (2010) study GCBT was used to treat SUD and anxiety in a small group setting for 10-weeks in two-hour sessions. This study found significant reductions with the

GCBT group in anxiety related symptoms with co-occurring SUD and thus led to improvement and reduction in negative thinking patterns, but reported no increase in positive thinking patterns and there was limited change for alcohol use in social situations (Courbasson, Nishikawa, 2010). The study reported that a short-coming of this study may be the 10-week duration. But overall there was a reduction in anxiety and SUD use.

**Brief CBT.** Using the subset of studies reviewed that directly relate to brief CBT, the average quality score was a 10. The average quality score was equal to that of the overall study, it falls in the moderate to high quality range, and clearly suitable to review the effectiveness of brief CBT. In the one study for Brief Cognitive Behavioral Therapy (BCBT), which is a CBT treatment modality delivered in a brief setting. Brief sessions are limited to four to eight sessions, instead of the treatment as usual, at 12-20 sessions (Cully & Teten, 2008). In the Watt (2006) study, BCBT was delivered to 221 first year students with anxiety and high alcohol usage. BCBT was used in small groups for 3-one hour sessions. The Watt revealed that BCBT produced a substantial reduction in high anxiety and a 50% reduction in “hazardous alcohol use (Watt, Stewart, Birch & Bernier, 2006).

**Integrated CBT.** Using the subset of studies reviewed that directly relate to integrated CBT, the average quality score was over 11. The average quality score was above the overall study score falling in the moderate to high quality range, and clearly with this high of a quality score demonstrates a good application of these studies to review the effectiveness of integrated CBT. There were seven studies for Integrated Cognitive Behavioral Therapy (ICBT), which is a CBT treatment modality delivered in an integrated setting. ICBT is designed to focus on substance use in an individual or group session. There are three modules that help to decrease substance

use. The modules focus on psycho-education, mental health symptom reduction, and cognitive restructuring (Integrated Cognitive Behavioral Therapy, 2016).

In one study by Worley (2012), a longitudinal research design was used to study SUD with depression, using ICBT. The study proposed that a longitudinal study may provide support for the use of ICBT versus 12-Step Program in treating SUD and depression in treatment settings. Both groups decreased substance use dramatically, the 12-Step group from 95% at baseline to 57% at the 18-month follow-up and ICBT from 92% to 52% at the 18-month follow-up. Both groups had a decrease in depression, the 12-Step group from 27% at baseline to 20% and the ICBT group from 29% to 22%. The findings indicate that ICBT group decreased substance more than the 12-Step group alone, although both groups had primarily the same efficacy for decreasing depression (Worley et al., 2012).

**Hybrid CBT.** Using the subset of studies reviewed that directly relate to hybrid CBT, the average quality score was a 10. The average quality score was equal to that of the overall study, it falls in the moderate to high quality range, and is clearly suitable to review the effectiveness of hybrid CBT. There were two studies that used Hybrid Cognitive Behavioral Therapy (HCBT), which is a CBT treatment modality that incorporates standard CBT with panic disorder components and incorporates treatment strategies that disrupt the connection between anxiety and alcohol use (Kushner et al., 2013). In the Kushner (2013) study, they determined that by adding HCBT to Alcohol Use Disorder (AUD) treatment, alcohol use significantly decreased as well as anxiety levels. HCBT was found to be more effective 4-months post treatment. Thus the association between anxiety and drinking motivation can be improved and recovery can be more effective by treating both co-occurring disorders.

### **Treatment Intervention Comparison**

Of the nineteen studies, the treatment interventions identified were: Progressive Muscle Relaxation Training, Treatment As Usual, Group Seminar w/Psychology Ethics, Acceptance and Commitment Therapy (ACT), 12-step, Cognitive Processing Therapy (CPT), Anger Management, Motivational Interviewing, Applied Relaxation, Relational (family/significant others) and Pharmacological. Other factors in treatment interventions were small/large group treatment or individual sessions.

There were six out of 19 studies that supported other treatment modalities, such as 12-step, as a superior treatment or had mixed result for CBT managing symptoms of SUD with anxiety and/or depression (Bergley, Gråwe, & Hagen, 2014; Cui, Tate, Cummins, Skidmore, & Brown, 2015; Glasner-Edwards, et al., 2006; Hunter, et al., 2012; Lanza, García, Lamelas, & González-Menéndez, 2014; Lopez & Basco, 2015; Worley, Tate, & Brown, 2012). Of the six studies, five focused on SUD with depression and one focused on SUD with anxiety. The range for the quality score for these studies was 6-12. The scores ranged from moderate to high quality (6-12).

### **Treatment Cost Effectiveness**

Of the nineteen studies selected to be reviewed, one study specifically looked at the cost benefits of using CBT to treat co-occurring SUD with depression (Watkins, et al., 2014). While this was the only study that evaluated cost effectiveness, the quality score was a 10, the quality score fell within the moderate to high ranking. The finding was additionally supported by the other studies. It stands to reason that the treatment method, that was more effective, would ultimately be the most cost effective. The Watkins (2014) study examined GCBT delivered in a

residential treatment setting that focused on SUD and depression delivered in tandem with residential treatment services. Their control group received only residential treatment services.

Their findings indicate that GCBT delivered during residential treatment would cost \$35,000. Whereas, those who did not receive GCBT during treatment would need to separately access residential treatment for SUD, medication management for SUD with depression and additional mental health services to treat depression, with a cost estimate of \$57,300 to \$103,300 in total. Treating patients who suffer from both SUD and mental health diagnosis costs more, due to increased staff training needs and program implementation, however based on the Watkins' findings, providing combined services for both mental health and SUD in one treatment setting saves money in the long run and more clients receive services for their mental health (Watkins).

Funding for co-occurring SUD and mental health is at the heart of the issue for the development and start of many programs that would benefit SUD and co-occurring disorders. It should be noted that multiple studies indicated that it would be cost beneficial, lead to better treatment outcomes and reduced SUD with anxiety and depression, (Watkins, et al., 2011; Lopez & Basco 2015; Kushner, et al., 2006; Kushner, et al., 2009).

### **Variations in Treatment Centers**

Of the nineteen studies reviewed there were multiple settings that the studies used to run and gather their research information. The treatment settings identified were: inpatient (1), prison (1), day treatment (1), outpatient in either a hospital or clinic setting (10), residential treatment (6).

## Limitations

A limitation of this study is the fact that only nineteen studies met this review's inclusion criterion. This is due to the limited amount of research that has been published on Cognitive Behavioral Therapy (CBT) with co-occurring Substance Use Disorder (SUD) with anxiety and/or depression research participants. Using CBT for treating co-occurring SUD with anxiety and/or depression is relatively new and research is just catching up to an identified need in the field of mental health diagnoses with SUD as a comorbidity.

An additional limitation of the research was that there were multiple studies that drew their sample from VA facilities and those clients tended to be predominately male and Caucasian. The high validity scores, which were 12, of these studies, show that CBT is an effective treatment for SUD with anxiety and/or depression for this population. There were two studies that were not affiliated with the VA that had high validity scores of 12, showing the potential for this finding to be true of other demographic groups. Further studies that score highly in the areas that were used to rate validity (sample size, sampling strategy, comparison and repeated measures), would be needed to reach this conclusion. This literature review does improve upon current research and knowledge on the effectiveness of CBT treatment for SUD with anxiety and/or depression. This literature review brings together various studies, within the last 10 years that focus on CBT as an effective treatment for SUD with co-occurring anxiety and/or depression, furthermore it applies qualitative measures to determine the validity of the current research.

A third limitation of the study was that the participants selected for the studies were volunteers. Non-mandated study participants are probably more treatment seeking and would be



more interested in the benefits and goals of CBT. This bias is true in both treatment group in comparative studies, and therefore the relative benefit of CBT would still be valid. However, assessing the overall benefit from CBT to a non-volunteer group is undetermined.

## **Discussion**

### **Implications for Social Work Practice**

“How wonderful is that nobody need wait a single moment to improve the world” – *Anne Frank*. This comes as no surprise to the thousands of dedicated social workers in the field, that know every person has the potential if given the opportunity for personal growth and/or symptom reduction. This systematic review adds to the current literature that CBT is an effective treatment modality for SUD with co-occurring anxiety and/or depression, providing social workers an evidence-based tool to utilize in meeting the needs of this hard-to-treat population.

Because every client responds differently, a variety of treatment techniques are needed. For existing clients, who are not responding to other treatment modalities, such as 12-Step, TSA, and Motivational Interviewing, consideration should be given to applying CBT as an additional treatment methodology to help improve outcomes. CBT was shown to be more effective than single treatment modalities and provides a more consistently effective treatment option when compared to other treatment interventions. Furthermore, for new clients CBT should be considered as the first choice for treatment for clients at risk for both SUD and anxiety/depression.

With this in mind, to expand the application of this therapy; there will be a need to find, educate and train social workers in the field of CBT with SUD and co-occurring disorders. Those trained currently in SUD should consider training in CBT, conversely those trained in CBT

should consider getting training in SUD. It is likely those trained in CBT could easily acquire the skills for SUD, while those in SUD would need to not only acquire mental health knowledge and the required licenses but CBT skills as well. Furthermore, government or program centers would be well advised to incentivize cross-training, as this would lower costs.

### **Implications for Research**

Future research needs to address: the training of CBT therapists to help with the validity of the current research, gathering more evidence for cost effectiveness of combining CBT with SUD for the treatment of SUD with anxiety and/or depression, early intervention, treating different ethno-demographic groups, and extending CBT interventions tailored to teens and children. One challenge will be to have clinicians demonstrate fidelity to the CBT model so audits and ongoing trainings should be incorporated into future studies.

Other things to consider are additional follow-up studies that can measure long-term outcomes. Many of the studies due to funding and client participation were unable to collect data past 6-months. More studies need to focus on additional point in time measures, such as studies that can use multiple point-in-time administration of data collection from participants to drive higher validity. The diversity of voluntary participants for future research needs to be more rigorous in future studies to include a variety of cultures, classes, races, and etc...

### **Conclusion**

In conclusion, this research study explored the effectiveness of CBT treatment for clients with SUD with anxiety and/or depression and how CBT can have a positive impact in reducing symptoms of SUD and anxiety and/or depression for individuals. The benefits of research are to

improve outcomes and prove the benefit of CBT to a larger and more diverse group. Treatment programs need to address lack of funding for programming, examine early prevention strategies and provide incentives for cross-training in CBT and SUD. CBT treatment for SUD with anxiety and/or depression, when compared to other treatment modalities, was the most effective treatment modality recognized to reduce SUD with anxiety and/or depression.

## References

- Bergly, T. H., Gråwe, R. W., & Hagen, R. (2014). Domains and perceived benefits of treatment among patients with and without co-occurring disorders in inpatient substance use treatment. *Journal of Dual Diagnosis, 10*(2), 91-97. doi:10.1080/15504263.2014.906134
- Bertalanffy, L. (1973). *General system theory: Foundations, development, applications* (Rev. ed.). New York: G. Braziller.
- Breslau, J., Miller, E., Jin, R., Sampson, N. A., Alonso, J., Andrade, L. H., Bromet, E. J., de Girolamo, G., Demyttenaere, K., Fayyad, J., Fukao, A., Galaon, M., Gureje, O., He, Y., Hinkov, H. R., Hu, C., Kovess-Masfety, V., Matschinger, H., Medina-Mora, M.E., Ormel, J., Posada-Villa, J., Sagar, R., Scott, K. M., Kessler, R. C. (2011). A multinational study of mental disorders, marriage, and divorce. *Acta Psychiatrica Scandinavica, 124*(6), 474-486. <http://doi.org/10.1111/j.1600-0447.2011.01712.x>
- Bronfenbrenner Ecological Theory - SlideShare. (2015). Retrieved October 20, 2015, from <http://www.slideshare.net/aislado/bronfenbrenner-ecological-theory>
- Center for Substance Abuse Treatment. (2005). *Substance Abuse Treatment for Persons With Co-Occurring Disorders*. Rockville (MD): Substance Abuse and Mental Health Services Administration (US). *Treatment Improvement Protocol (TIP) Series, No. 42., 2 Definitions, Terms, and Classification Systems for Co-Occurring Disorders*. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK64184/>
- Co-Occurring Disorders. (2014). *Psychology Today*. Retrieved September 22, 2015, from <https://www.psychologytoday.com/conditions/co-occurring-disorders>
- Co-Occurring Disorders and Integrated Dual Diagnosis Treatment (IDDDT). (2012, February). National Alliance on Mental Illness (NAMI). Retrieved September 23, 2015, from [http://www.namihelps.org/IDDDT-Fact-Sheet\\_final.pdf](http://www.namihelps.org/IDDDT-Fact-Sheet_final.pdf)
- Courbasson, C. M., & Nishikawa, Y. (2010). Cognitive behavioral group therapy for patients with co-existing social anxiety disorder and substance use disorders: A pilot study. *Cognitive Therapy & Research, 34*(1), 82-91. doi:10.1007/s10608-008-9216-8
- Cui, R., Tate, S. R., Cummins, K., Skidmore, J. R., & Brown, S. A. (2015). Chronic physical health problems moderate changes in depression and substance use among dual diagnosed individuals during and after treatment. *Substance use & Misuse, 50*(2), 174-183. doi:10.3109/10826084.2014.962052
- Cully, J.A., & Teten, A.L. 2008. *A Therapist's Guide to Brief Cognitive Behavioral Therapy*. Department of Veterans Affairs South Central MIRECC, Houston.

- Current Statistics on the Prevalence and Characteristics of People Experiencing Homelessness in the United States. (2010). Retrieved September 23, 2015, from [http://homeless.samhsa.gov/ResourceFiles/hrc\\_factsheet.pdf](http://homeless.samhsa.gov/ResourceFiles/hrc_factsheet.pdf)
- Drake, R. E., Mueser, K. T., & Brunette, M. F. (2007). Management of persons with co-occurring severe mental illness and substance use disorder: program implications. *World Psychiatry, 6*(3), 131–136.
- Drake, R. E., O'Neal, E. L., & Wallach, M. A. (2008). A systematic review of psychosocial research on psychosocial interventions for people with co-occurring severe mental and substance use disorders. *Journal of Substance Abuse Treatment, 34*(1), 123-138. doi:<http://dx.doi.org.ezproxy.stthomas.edu/10.1016/j.jsat.2007.01.011>
- Environment and Ecology. (2015). Retrieved October 20, 2015, from <http://environment-ecology.com/general-systems-theory/137-what-is-systems-theory.html#History>
- Epstein J., Barker, P., Vorburger, M., & Murtha, C. (2004). Serious mental illness and its co-occurrence with substance use disorders, 2002. *DHHS Publication No. SMA 04- 3905, Analytic Series A-24*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.
- Glasner-Edwards, S., Tate, S. R., McQuaid, J. R., Cummins, K., Granholm, E., & Brown, S. A. (2007). Mechanisms of action in integrated cognitive-behavioral treatment versus twelve-step facilitation for substance-dependent adults with comorbid major depression. *Journal of Studies on Alcohol and Drugs, 68*(5), 663-672. doi:10.15288/jsad.2007.68.663
- Haller, M., Norman, S. B., Cummins, K., Trim, R. S., Xu, X., Cui, R., . . . Tate, S. R. (2016). Integrated cognitive behavioral therapy versus cognitive processing therapy for adults with depression, substance use disorder, and trauma. *Journal of Substance Abuse Treatment, 62*, 38-48. doi:<http://dx.doi.org.ezproxy.stthomas.edu/10.1016/j.jsat.2015.11.005>
- History of Beck Institute. (2015). Beck Institute. Retrieved September 23, 2015, from <http://www.beckinstitute.org/beck-institute/History-of-Beck-Institute/248/>
- Hospitalizations Involving Mental and Substance Use Disorders Among Adults, 2012. (2015, June). Healthcare Cost and Utilization Project (H-CUP).
- Horsfall, J., Cleary, M., Hunt, G. E., & Walter, G. (2009). Psychosocial treatments for people with co-occurring severe mental illnesses and substance use disorders (dual diagnosis): A review of empirical evidence. *Harvard Review of Psychiatry (Taylor & Francis Ltd), 17*(1), 24-34. doi:10.1080/10673220902724599
- Hunter, S. B., Watkins, K. E., Hepner, K. A., Paddock, S. M., Ewing, B. A., Osilla, K. C., & Perry, S. (2012). Treating depression and substance use: A randomized controlled trial. *Journal of Substance Abuse Treatment, 43*(2), 137-151. doi:10.1016/j.jsat.2011.12.004 [doi]

- Hunter, S. B., Witkiewitz, K., Watkins, K. E., Paddock, S. M., & Hepner, K. A. (2012). The moderating effects of group cognitive-behavioral therapy for depression among substance users. *Psychology of Addictive Behaviors, 26*(4), 906-916. doi:10.1037/a0028158
- Integrated Cognitive Behavioral Therapy (ICBT) | AHSIR. (2016). Retrieved March 29, 2016, from <http://sites.dartmouth.edu/ahsir/treatmentservices/behavioral-therapies/icbt/>
- Kushner, M. G., Donahue, C., Sletten, S., Thuras, P., Abrams, K., Peterson, J., & Frye, B. (2006). Cognitive behavioral treatment of comorbid anxiety disorder in alcoholism treatment patients: Presentation of a prototype program and future directions. *Journal of Mental Health, 15*(6), 697-707. doi:10.1080/09638230600998946
- Kushner, M. G., Maurer, E. W., Thuras, P., Donahue, C., Frye, B., Menary, K. R., . . . Van Demark, J. (2013; 2012). Hybrid cognitive behavioral therapy versus relaxation training for co-occurring anxiety and alcohol disorder: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 81*(3), 429-442. doi:10.1037/a0031301
- Kushner, M. G., Sletten, S., Donahue, C., Thuras, P., Maurer, E., Schneider, A., . . . Van Demark, J. (2009). Cognitive-behavioral therapy for panic disorder in patients being treated for alcohol dependence: Moderating effects of alcohol outcome expectancies. *Addictive Behaviors, 34*(6-7), 554-560. doi:10.1016/j.addbeh.2009.03.011
- Lanza, P. V., García, P. F., Lamelas, F. R., & González-Menéndez, A. (2014). Acceptance and commitment therapy versus cognitive behavioral therapy in the treatment of substance use disorder with incarcerated women: Drug abuse treatments to incarcerated women. *Journal of Clinical Psychology, 70*(7), 644-657. doi:10.1002/jclp.22060
- Lopez, M. A., & Basco, M. A. (2015). Effectiveness of cognitive behavioral therapy in public mental health: Comparison to treatment as usual for treatment-resistant depression. *Administration and Policy in Mental Health and Mental Health Services Research, 42*(1), 87-98. doi:10.1007/s10488-014-0546-4
- McEvoy, P. M., & Shand, F. (2008). The effect of comorbid substance use disorders on treatment outcome for anxiety disorders. *Journal of Anxiety Disorders, 22*(6), 1087-1098. doi:<http://dx.doi.org.ezproxy.stthomas.edu/10.1016/j.janxdis.2007.11.007>
- Miley, K., & Melia, M. (2013). *Generalist social work practice: An empowering approach* (7th ed.). Boston: Pearson.
- Mohler, M. J. (2013). Collaboration across clinical silos. *Frontiers of Health Services Management, 29*(4), 36-44. <http://ezproxy.stthomas.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=keh&AN=88003930&site=ehost-live>
- Owens P.L., Mutter R., Stocks C, (2010, July). Mental Health and Substance Abuse-Related Emergency Department Visits among Adults, 2007. *HCUP Statistical Brief #92*. July 2010.

Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb92.pdf>

Porter, E., Stallings, K., & Burnett, R. (2010). Treatment options for individuals with dual diagnosis. *Journal of Human Behavior in the Social Environment*, 21(7), 849; 849-857; 857.

Substance Abuse and Mental Health Services Administration, Results from the 2012 National Survey on Drug Use and Health: Mental Health Findings, NSDUH Series H-47, *HHS Publication No. (SMA) 13-4805*. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2013.

Suicides Due to Alcohol and/or Drug Overdose; A Data Brief from the National Violent Death Reporting System. (2007). Retrieved September 22, 2015, from [http://www.cdc.gov/violenceprevention/pdf/nvdrs\\_data\\_brief-a.pdf](http://www.cdc.gov/violenceprevention/pdf/nvdrs_data_brief-a.pdf)

Top 5 most frequently asked questions. (2015). Hazelden Betty Ford Foundation. Retrieved September 24, 2015.

U.S. Department of Health and Human Services. (1999) Mental Health: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services; Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

Watkins, K. E., Hunter, S. B., Hepner, K. A., Paddock, S. M., de la Cruz, E., Zhou, A. J., & Gilmore, J. (2011). An effectiveness trial of group cognitive behavioral therapy for patients with persistent depressive symptoms in substance abuse treatment. *Archives of General Psychiatry*, 68(6), 577-584. doi:10.1001/archgenpsychiatry.2011.53 [doi]

Watkins, K. E., Cuellar, A. E., Hepner, K. A., Hunter, S. B., Paddock, S. M., Ewing, B. A., & de, I. C. (2014). The cost-effectiveness of depression treatment for co-occurring disorders: A clinical trial. *Journal of Substance Abuse Treatment*, 46(2), 128-133. doi:10.1016/j.jsat.2013.08.006

Watt, M., Stewart, S., Birch, C., & Bernier, D. (2006). Brief CBT for high anxiety sensitivity decreases drinking problems, relief alcohol outcome expectancies, and conformity drinking motives: Evidence from a randomized controlled trial. *Journal of Mental Health*, 15(6), 683-695. doi:10.1080/09638230600998938

Whitfield, G. (2010). Group cognitive-behavioural therapy for anxiety and depression. *Advances in Psychiatric Treatment*, 16(3), 219-227. Retrieved March 29, 2016.

Why do drug use disorders often co-occur with other mental illnesses? (2010, September). Retrieved September 22, 2015, from <http://www.drugabuse.gov/publications/comorbidity-addiction-other-mental-illnesses/why-do-drug-use-disorders-often-co-occur-other-mental-illnesses>

- Worley, M. J., Tate, S. R., & Brown, S. A. (2012). Mediation relations between 12-step attendance, depression and substance use in patients with comorbid substance dependence and major depression. *Addiction (Abingdon, England)*, *107*(11), 1974-1983. doi:10.1111/j.1360-0443.2012.03943.x [doi]
- Worley, M. J., Tate, S. R., McQuaid, J. R., Granholm, E. L., & Brown, S. A. (2013). 12-step affiliation and attendance following treatment for comorbid substance dependence and depression: A latent growth curve mediation model. *Substance Abuse*, *34*(1), 43-50. doi:10.1080/08897077.2012.691451
- Worley, M. J., Trim, R. S., Roesch, S. C., Mrnak-Meyer, J., Tate, S. R., & Brown, S. A. (2012). Comorbid depression and substance use disorder: Longitudinal associations between symptoms in a controlled trial. *Journal of Substance Abuse Treatment*, *43*(3), 291-302. doi:<http://dx.doi.org.ezproxy.stthomas.edu/10.1016/j.jsat.2011.12.010>
- Versland, A., & Rosenberg, H. (2008). Substance abuse administrators' attitudes regarding psychosocial functioning of persons with single diagnoses versus severe dual diagnoses. *Journal of Dual Diagnosis*, *4*(2), 126-141. doi:10.1080/15504260802066786