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Co-morbidity of Mental Illness and Substance Abuse: A Study Examining the Rate of Illicit Drug Use as Self-Medication in Bipolar I and II Sufferers

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In the area of mental illness today, the presence of more than one mental illness or disorder at a given time is commonly observed by professionals. Known as co-morbid disorders, these relationships are often researched in terms of what specific illnesses and disorders commonly occur together, and why they occur together. Mental illness and substance abuse are two disorders which are frequently characterized as having a co-morbid relationship. The existing current body of research provides extensive research on several mental illnesses and substance abuse relationships, such as the relationships anxiety and schizophrenia have with alcohol and nicotine abuse. Current researchers emphasize the role that self-medication plays in substance abuse of the mentally ill. However, one area that seems to be lacking conclusive research is on the co-morbid relationship between bipolar disorder and substance abuse, specifically bipolar and illicit drug use. I propose a study which predicts that those with bipolar disorder, specifically bipolar I, have a higher level of drug use as a way to self-medicate themselves compared to those diagnosed with anxiety or schizophrenia.

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The relationship between mental illness and substance abuse is commonly referred to as a co-morbid illness. Co-morbidity is defined as the presence of two or more different disorder diagnoses, either together or one after the other, within a specific time frame (Graaf, Bijl, Smit, Vollebergh, & Spijker, 2002). In the Epidemiological Catchment Area study and the National Comorbidity Study, researchers found that 54%-56 % of those diagnosed with a DSM IV disorder also meeting criteria for another DSM IV diagnosis within their lifetime (Graaf et al., 2002).

Two specific diagnoses that have a high rate of co-morbidity are mental illness and substance abuse. Approximately 50% of those with a severe mental illness diagnosis also receive a diagnosis of a substance abuse disorder (Alverson, Alverson, & Drake, 2001). Schaar and

Ojchagen (2001) found that 61% of subjects diagnosed with depression, anxiety, borderline personality disorder or other diagnoses had an alcohol dependence or abuse disorder based on the Addiction Severity Index. Schaar and Ojchagen (2001) also found that 33% of participants had a drug dependence or abuse disorder based on the same survey (Schaar & Ojchagen, 2001). Researchers suggest that this high rate of co-morbidity between psychiatric diagnoses and substance abuse disorders can be extremely dangerous to those who are suffering, with patients reporting that they experience more severe symptoms, longer illness course, more needed treatment and higher service utilization rates (Graaf et al., 2002).

What might explain the co-morbidity between mental illness and substance abuse? Hartwell, Tolliver, and Brady (2009) hypothesize that the reason co-morbidity is so prevalent in this population is purely biological. Researchers argue that there are common neurobiological abnormalities in both people with a substance abuse disorder and people with a mental illness

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that makes them to become more susceptible to addiction. Researchers analyzed several mental illnesses, and looked at the specific biological components that make the sufferer more susceptible to addiction (Hartwell, Tolliver, & Brady, 2009). Hartwell et al. (2009) found that those with diagnosed anxiety have extra hypothalamic Corticotrophin releasing factor (CRF) neurotransmitter abnormalities, which are associated with depressive and anxiety symptoms. Furthermore, they found a positive association between CRF response during acute drug withdrawal and withdrawal related anxious, depressed or distressful feelings. Therefore, the researchers argue that CRF plays a part in the drug abuse and withdrawal process as well as the onset of the mental illness, which demonstrates the common biological component (Hartwell et al., 2009).

Similarly, biological commonalities are seen between schizophrenic patients and substance abuse sufferers. Hartwell et al. (2009) report that the areas of the brain known to be dysfunctional in those with schizophrenia are the same areas that mediate the dopamine reward system. Schizophrenic patients then experience difficulty in processing rewards and punishments, just like people with a substance abuse disorder. Researchers argue that this effort to constantly achieve rewards may make them more susceptible to abuse substances (Hartwell et al., 2009). While biological commonalities can be seen between substance abusers and schizophrenia and anxiety, there is not substantial evidence suggesting biological commonalities between bipolar disorder and substance abuse.

A more widely accepted theory to explain the high co-morbidity rate in mental illness and substance abuse is that the patients are self-medicating themselves to cope with mental illness symptoms (Harris & Edmund, 2005). Further, patients self-medicate themselves with substances, and use their symptoms as a way to justify their substance abuse, which is a sub-theory of self-medication called "Wrath of Grapes" (Frances, 1997). Suh, Ruffins, Robins, Albanese, and Khantzian (2008) define the Self-Medication hypothesis as the use of substances by those with a mental illness diagnosis "as a compensatory means to modulate affects and self soothe from their distressful psychological states and to manage emotional pain, anxiety and dysphoria, abusers use the drug to achieve emotional stability" (p.518). Suh et al. (2008) examined the charts of 402 clients who reported a lifetime use of substance abuse. Findings from this research suggest that those who experience post-traumatic stress symptoms are more likely to abuse cocaine compared to those with decreased depressive emotions, who are more likely to abuse alcohol. These data suggest that individuals may be drawn to a certain substance based on their symptoms, which they are trying to alleviate by using said substance.

Existing research focuses on mental illnesses' co-morbid relationship with alcohol and nicotine, with a lesser emphasis on their relationships with illicit drug use. The rate of co-morbidity of anxiety and substance abuse

disorders worldwide was found to be 20% and the rate of co-morbidity of schizophrenia and substance abuse disorders was found to be 47% (Swofford, Scheller-Gilkey, Miller, Woolwine, & Mance, 2000).

Anxiety disorders have a strong co-morbid relationship with substance abuse. Kandel, Huang, and Davies (2001) used individuals diagnosed with co-morbidity for 12 months to observe psychiatric symptoms. Researchers found that of the participants screened for an anxiety disorder, 20.8% had an alcohol abuse disorder, 20.4% had a nicotine abuse disorder, 37.5% had a cocaine abuse disorder, and 28.5% had another illicit drug abuse disorder (Kandel, Huang, & Davies, 2001).

Grant et al. (2005) examined the co-morbid relationship between anxiety and substance abuse, and defined the relationship between anxiety and alcohol dependence. Based on research findings from National Epidemiologic Survey on Alcohol and Related Conditions, the researchers found that 48% of people diagnosed with a social anxiety disorder (SAD) also met the criteria for an alcohol dependence disorder. Similarly, 13.1% of people with an alcohol dependence disorder also experienced some symptoms associated with social anxiety disorder.

In addition to alcohol abuse, nicotine abuse is also prevalent for those suffering from an anxiety disorder. Lasser et al. (2000) studied the relationship between nicotine and specific types of anxiety based on results from a national survey and found high rates of overlap between nicotine abuse with both Agoraphobia (35.9%) and panic disorder (38.4%). Researchers also report high rates of overlap between lifetime nicotine abuse with Generalized Anxiety Disorder (46%) and Post Traumatic Stress Disorder (45.3%) (Lasser et al., 2000). Op den Velde et al. (2002) also examined nicotine abuse rates in those with diagnosed PTSD. Their data suggests that those who were diagnosed with PTSD had a higher prevalence of nicotine dependence as opposed to the general population (26.4% of veterans with PTSD smoked 36-105 cigarettes weekly compared to 15% of the general population that smoked the same amount per week) (Op den Valde et al., 2002).

Sareen, Chartier, Paulus, and Stein (2006) are among the few researchers that examined the direct relationship between anxiety and drug use. Using results from two different national co-morbidity surveys, the NCS (USA) and the OHS (Ontario), the researchers found that those diagnosed with social phobia, agoraphobia, panic disorder, and generalized anxiety disorder were significantly associated with cocaine, stimulant and heroin use across their lifespan (Sareen, Chartier, Paulus, & Stein, 2006). The results of their research provide one of the few pieces of evidence suggesting this co-morbid relationship does exist, and indicates the need for more comprehensive studies that explore the relationship between anxiety and drug use.

Researchers suggest that the self-medication theory can account for substance abuse in those with anxiety. Bolton, Cox, Clara, and Sareen (2006) found that the participants who suffered from social phobia had the least percentage of self-medication, with 7.9% using either

drugs or alcohol to alleviate symptoms. People who suffered from generalized anxiety disorder had the greatest percentage of self-medication, with 35.6% using either drugs or alcohol to alleviate symptoms (Bolton, Cox, Clara, & Sareen, 2006). Their results came from asking participants questions on their drinking and drug use patterns regarding self-medication (e.g. "have you drank more than usual to alleviate your public speaking fears?"). This research provides compelling evidence that means of self-medication to alleviate mental illness symptoms are prevalent throughout specific mental illness populations.

Aside from anxiety and substance abuse, another co-morbid relationship exists between schizophrenia and substance abuse. Kamali et al. (2000) found that 40% of schizophrenic hospital inpatients had a lifetime experience with substance abuse, and 20% had current co-morbid schizophrenia and substance abuse (Kamali et al., 2000).

Swofford et al. (2000) specifically examined the relationships between schizophrenia and drug and alcohol abuse. Researchers found that 48% of patients with schizophrenia reported use of alcohol in the past and 36% reported use of drugs in the past. Of those 262 schizophrenic sufferers who reported that they have a history of drug and alcohol use, 23% of patients reported using only alcohol currently, 16% reported using illicit only drugs currently, and 26% reported currently using both (Swofford et al., 2000). This study is one of the few that exist that provide supporting evidence to the existence of the co-morbid relationship of schizophrenia and illicit drug use. Because the percentages are found to exist, it warrants more studies characterizing the co morbid relationship between illicit drug use and mental illness.

Existing research focuses on the relationship between schizophrenia and nicotine abuse. Kelly and McCreadie (2000) found that 68% of those who are diagnosed with schizophrenia were classified as heavy smokers, which means that those patients smoke more than 25 cigarettes daily. This number is vastly greater than the percentage of people in the general population who smoke 25 or more cigarettes a day, which is only 11% (Kelly & McCreadie, 2000).

There is little existing research linking self-medication theory to schizophrenia. Swofford et al. (2000) reviewed existing literature and found that schizophrenic patient do in fact use substances to alleviate symptoms. For example, schizophrenic patients tend to abuse stimulant drugs to alleviate symptoms of listlessness, impoverishment of affect and speech and anhedonia, which are all symptoms characterized by schizophrenia (Swofford et al., 2000). Researchers also reported that patients with schizophrenia use substances to alleviate the side effects of specific medications. Researchers argued that patients on medication experience a syndrome similar to Parkinson's (due to the effect it has on the dopamine system). Patients then abuse stimulants in order to get rid of those symptoms, and therefore self-medicate themselves (Swofford et al., 2000).

Little research examines the co-morbidity between bipolar disorder and substance abuse and dependence.

According to the DSM-IV-TR, an individual is diagnosed with bipolar disorder I when they experience one or more manic episodes or mixed episodes. A manic episode is a period of time of elevated or irritable mood lasting for at least one week for diagnosis. Feelings that occur in those experiencing bipolar I include flight of ideas, decreased need for sleep, and extreme goal oriented attitudes. An individual diagnosed with bipolar II has experienced at least one major depressive episode and at least one hypomanic episode (less severe mood switches than those present in bipolar I) (Fast, 2013). A major depressive episode can entail feelings of melancholy and catatonic features, and a hypomanic episode entails feelings of elevated or irritable mood with symptoms and feeling lasting longer than four days (Fast, 2013). The number of individuals suffering from both a bipolar diagnosis and a substance abuse disorder was found to be 60% (Grunebaum et al., 2006). Bipolar disorder has the highest co-morbidity level compared to the other two vastly studied co-morbidity relationship (schizophrenia and anxiety). Despite the high co-morbidity level of bipolar disorder, there is a lack of conclusive research concerning its relationship with substance abuse disorders.

Waxmonsky et al. (2005) examined the relationship between bipolar and nicotine and found that 31.2% of all enrolled in the National Institute of Mental Health's Systematic Treatment Enhancement Program for Bipolar Disorder (STEP-BD) reported that they were smokers.. More specifically, 33.2% of those who reported that they were smokers had a diagnosis of bipolar I and 26.4% had a diagnosis of bipolar II (Waxmonsky et al., 2005).

Grunebaum et al. (2006) studied the co-morbid relationship of alcohol abuse and bipolar disorder in their retrospective study and found that 58% of all bipolar participants had a co-morbid alcohol or drug abuse disorder. They also reported that 29% of people with alcohol abuse disorder developed bipolar disorder in childhood as opposed to the 6% of people with drug abuse disorder that developed bipolar in childhood. Researchers also suggest that those with both an alcohol and drug abuse disorder have a higher percentage of developing bipolar during childhood (Grunebaum et al., 2006).

Cassidy, Ahearn, and Bernard (2001) found significant existing co-morbid relationships between bipolar and alcohol and drug abuse. Researchers found that 59.4% of patients hospitalized for episodes of bipolar disorders had a lifetime history of drug or alcohol abuse, 43.9% had a lifetime history of drug abuse alone, 48.5% had a lifetime history of alcohol abuse alone, 28.6% were actively abusing at least one drug, and 39.3% were actively abusing either alcohol or drugs (Cassidy, Ahearn, & Bernard, 2001). The researchers classified drug abuse into specific categories and reported that the highest percentage of bipolar patients who were currently using drugs were specifically using marijuana (22.2%) and cocaine (10.2%) (Cassidy et al., 2001).

Given the high rates of substance abuse by bipolar sufferers, self-medication in bipolar disorder has not been

sufficiently studied. Bizzari et al. (2007) are a few of the researchers that examined the theory of self-medication in bipolar disorder. Researchers found that patients with bipolar disorder and a substance abuse disorder had significantly higher score on the section of the Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS) that measured for self-medication rates and behaviors (Bizzari et al., 2007). The most common answers as to why they use substances included to alleviate mood symptoms, to achieve and maintain a sense of euphoria, and to increase energy (Bizzari et al., 2007). The SCI-SUBS is an assessment that contains 131 yes/no questions separated into six different domains that test for “substance use and improper use of drugs (22 items); sensitivity to drugs and substances (19 items); use of substances or drugs for self-medication (55 items); sensation seeking (eight items); attention deficit/hyperactivity symptoms (four items), and typical symptoms of substance use disorder (23 items)” (p. 216) (Bizzari et al., 2007).

Healy, Peters, Kinderman, McCracken, and Morriss (2009) specifically looked at the reasons why people with bipolar disorder abuse substances through clinical interviews. Researchers reported several answers given, and found that many of the answers included the need to deal with mood changes accompanied by bipolar. One example of an answer given was “When I was in that manic phase, I did dabble back into have coke. The coke was to keep up the happy. I liked coke more when I was high. The coke just kept that feeling going” (Healy, Peters, Kinderman, McCracken & Morriss, 2009). Other common responses they received fell into categories of wanting to feel normal again, managing stress, control symptoms of elevation and mood stages, either manic or depressive (Healy et al., 2009). This research supports the notion that bipolar sufferers are abusing substances for a variety of reasons and at different points in the illness.

Researchers argue that many variables account for the occurrence of co-morbidity. What is lacking, however, is the research linking several of these variables together in one comprehensive study. This study aims to establish a clear link between the co-morbid factors of mental illness, substance abuse, and self-medication, specifically bipolar disorder and illicit drug abuse as a way to self-medicate. A gap seen in the research with bipolar disorder is the differentiation between bipolar I and bipolar II, and how substance abuse is different in those two groups. Do those with bipolar report a higher level of drug abuse compared to those with anxiety or schizophrenia? Are there significant differences in the rates of illicit drug abuse in those with bipolar versus bipolar II? Do those with bipolar I indicate drug abuse as a way to self-medicate most often? Weiss et al. (2004) argue that bipolar patients that experience depressive or racing symptoms are the most likely to have a co-morbid substance abuse disorder, but there is a small amount of other research which examines this idea. Given this information regarding co-morbidity, I predict that:

1. Those with bipolar disorder will have a higher level of drug abuse compared to those diagnosed with anxiety or schizophrenia.

2. Those with bipolar I, who experience more periods of depression and mania, will engage in more illicit drug abuse compared to those with bipolar II.

3. Those with bipolar I will have higher scores on the self-medication section of the Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS) assessment compared to those with anxiety, schizophrenia or bipolar II.

PROPOSED METHOD

Participants

Participants will be recruited from large mentally ill, chemically affected (MICA) treatment centers throughout the Tri-State Area. With the patient’s permission, I plan to recruit 600 total participants; 200 participants with diagnosed disorders of both anxiety and illicit drug abuse, 200 participants with both schizophrenia and illicit drug abuse, and 200 participants with both bipolar disorder and illicit drug abuse. Participation will occur following release from the MICA center.

Procedure

All participants will be re-assessed six weeks after release from MICA center. Only those who still meet DSM IV criteria for their previous diagnosis (e.g. bipolar disorder) will be asked to continue. Those diagnosed with bipolar disorder will be further classified by either bipolar I or bipolar II diagnosis. Each participant will be required to download an electronic application on their mobile device to track their drug usage patterns. Each participant will be given a personal identification number to log into the application, where their submissions will be directly sent to the researcher’s device. Participants will be instructed to log drug usage after it occurs and write the specific drug they used. Participants will then be required to electronically take the self-medication section of the Structured Clinical Interview for the Spectrum of Substance Use (SCI-SUBS) (see appendix). This is a fairly new measure that has been used to assess the specific details of the relationship between substance abuse and mental illness (Bizzari et al., 2007). We will compare self-medication scores for the section between each participant group. Over a 12 month period of time, research assistants will be going to the locations of participants to test their urine for illicit drugs daily to make sure the participants are being truthful in their responses. Both participants and research assistants will be compensated for their time.

CONCLUDING REMARKS

Limitations

One major limitation of this study is that participants would be gathered using convenience sampling. Because of confidentiality issues, participants were gathered based on willingness to participate, so we do not know if it is a proper representation of the entire population. Another concern of this study is that it will be difficult to determine the role that certain medications have on the expression of symptoms of bipolar disorder. Each participant may be taking different medications based on which ones they were prescribed, and it is unknown in this study to what degree the participants were adhering to these medications and how the medication was affecting the symptoms. Another concern in this study is effectively validating the level of truthfulness in each participant. If participants do not log every drug use, the results of this study could be affected. Urine is used to validate subjects' self-report. However, this does not confirm that participants are, in fact, logging every single usage.

Significance

Co-morbidity between bipolar disorder and substance abuse disorders is a relationship that has little current existing research that examines specific diagnoses with specific substances. This study aims to add to the limited number of available resources on the relationship. If the results support my hypothesis, then professionals will be better able to understand why those with bipolar commonly abuse substances more frequently, and consequently develop methods that more effectively treat those suffering from bipolar and substance abuse disorders. Specifically, if the results support my hypotheses, then it may demonstrate the need for different types of treatment for those with bipolar I and substance abuse opposed to those with bipolar II and substance abuse.

APPENDIX

DOMAIN III. USE OF SUBSTANCES OR DRUGS AS SELF-MEDICATION

A. Mood/Anxiety

Did you ever use caffeine, tobacco, alcohol, drugs or medications without the advice of your doctor in order to...

42. ...improve your mood (for example, to feel less irritable, angry, or sad)? No Yes
43. ...relieve tension, anxiety, or any kind of discomfort or to escape from your troubles? No Yes
44. ...sleep? No Yes
45. ...be more assertive or self-confident? No Yes
46. ...tolerate long periods of sadness? No Yes
47. ...increase your creativity? No Yes
48. ...help make important or difficult decisions? No Yes
49. ...feel capable of doing things successfully? No Yes
50. ...alleviate excessive tiredness? No Yes
51. ...increase your energy? No Yes

52. ...alleviate boredom? No Yes
53. ...achieve or maintain a sense of euphoria? No Yes
- B. Improving performance
- Did you ever use caffeine, tobacco, alcohol, drugs or medications without the advice of your doctor in order to...
54. ...feel better after something bad happened? No Yes
55. ...be more competitive? No Yes
56. ...relax after work or during weekends? No Yes
57. ...tolerate persistent pain or other physical symptoms? No Yes
58. ...express bottled-up anger? No Yes
59. ...help control your anger? No Yes
60. ...escape from reality? No Yes
61. ...control repetitive thoughts, urges or images that bother you? No Yes
62. ...control repetitive behaviors that bother you? No Yes
- C. Social disinhibition
- Did you ever use caffeine, tobacco, steroids, alcohol, drugs or medications without the advice of your doctor in order to...
70. ...increase your self-confidence when talking with other people? No Yes
71. ...increase your self-confidence in sex? No Yes
72. ...increase your confidence in particular situations such as artistic performances and important meetings? No Yes
73. ...feel at ease in romantic relationships? No Yes
74. ...be able to participate at parties, in group games, or in group sports? No Yes
75. ...talk or not be shy with people that you don't know very well? No Yes
76. ...get over fear of being judged by others? No Yes
77. ...get over fear of being considered stupid or foolish? No Yes
78. ...avoid appearing nervous, for example, by blushing, shaking, sweating? No Yes
79. ...reduce the fear of fainting in public or in situations you believe to be important? No Yes
80. ...avoid feeling uncomfortable when just thinking about the above situations? No Yes
- D. Weight control
- In order to control your weight, did you ever take substances...
81. ...such as amphetamines, ecstasy, cocaine, diet pills or other psychostimulants? No Yes
82. ...such as thyroid hormones, steroids, diuretics, laxatives or enemas? No Yes
83. ...to make you vomit? No Yes
84. ...along with intense physical exercise? No Yes
- E. Body image
- Did you ever take drugs because you felt...
85. ...dissatisfied with your physical appearance? No Yes
86. ...you were not muscular enough? No Yes
87. ...sexually unattractive? No Yes
- Did you ever...
88. ...try to improve your physique by taking steroids? No Yes
89. ...take steroids without considering the health consequences? No Yes
90. ...continue taking steroids despite negative effects such as excessive hair growth, loss of sexual interest, rage reactions, or prostate or other medical problems? No Yes
- F. Other conditions
- Did you ever use alcohol, drugs or medications in order to...
91. ...reach a new dimension? No Yes
92. ...get in touch with the spirit world? No Yes
93. ...take part in magical or secret ceremonies? No Yes
94. ...expand your mind or enhance your spirituality? No Yes
95. ...meditate? No Yes
96. ...reach a higher level of self-awareness? No Yes

REFERENCES

- Agosti, V., Nunes E, & Levin, F. (2002). Rates of psychiatric comorbidity among U.S. residents with lifetime cannabis dependence. *American Journal of Drug and Alcohol Abuse*, 28, 643-652.
- Alverson, H., Alverson, M., & Drake, R. E. (2000). An Ethnographic study of the longitudinal course of substance abuse among people with severe mental illness. *Community Mental Health Journal*, 36(6),

- 557-569. Retrieved from www.springerlink.com/content/1573-2789
- Bizzarri, J. V., Sbrana, A., Rucci, P., Ravani, L., Massei, G., Gonnelli, C., ...Cassano, G.B. (2007). The spectrum of substance abuse in Bipolar disorder; Reasons for use, sensation seeking and substance sensitivity. *Bipolar Disorders*, 9, 213-220. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/17430295>
- Bolton, J., Cox, B., Clara, I., & Sareen, J. (2006). Use of alcohol and drugs to self-medicate anxiety disorders in a nationally representative sample. *Journal of Nervous and Mental Disease*, 194(11), 818-825. Retrieved from <http://myuminfo.umanitoba.ca/Documents/2028/>
- Cassidy, F., Ahearn, E. P., & Carroll, B. J. (2001). Substance Abuse in Bipolar Disorder. *Bipolar Disorder*, 3, 181-188. doi: 10.1176/appi.ajp.162.5.1008
- Fast, J. A. (2013). The Two Main Types of Bipolar Disorder. Retrieved March 20, 2013, from <http://www.bipolarhappens.com/bipolar-i-and-bipolar-ii/>
- Graaf, R.D., Bijl, R. B., Smit, F., Vollebergh, W., & Spijker, J. (2002). Risk factors for 12-month comorbidity of mood, anxiety, and substance use disorders: Findings from the Netherlands Mental Health Survey and Incidence Study. *The American Journal of Psychiatry*, 159(4), 620-629. Retrieved from <http://journals.psychiatryonline.org/>
- Grant, B.F., Hasin, D.S., Blanco, C., Stinson, F.S., Chou S.P., Goldstein R.B.,...Huang, B. (2005). The epidemiology of social anxiety disorder in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, 66, 1351-1361
- Grunebaum, M. F., Galfalvy, H. C., Nichols, M., Caldeira, N., Sher, L., Dervic, K.,...Oquendo, M.A., (2006). Aggression and substance abuse in bipolar disorder. *Bipolar Disorders*, 8, 496-502. DOI: 10.1111/j.1399-5618.2006.00349.x
- Harris, K. M., & Edlund, M. J. (2005). Self-medication of mental health problems: New evidence from a national survey. *Health Services Research*, 40(1), 117-134. doi:10.1111/j.1475-6773.2005.00345x
- Hartwell, K. J., Tolliver, B. K., & Brady, K. T. (2009). Biological commonalities between mental illness and addiction. *Primary Psychiatry*, 16(8), 33-39. Retrieved from http://mbldownloads.com/o809PP_Hartwell.pdf
- Healy, C., Peters, S., Kinderman, P., McCracken, C., & Morriss, R. (2009). Reasons for substance use in dual diagnosis bipolar disorder and substance use disorders: A qualitative study. *Journal of Affective Disorders*, 113, 118-126. doi: 10.1016/j.jad.2008.05.90
- Kamali, M., Kelly, L., Gervin, M., Browne, S., Larkin, C., & O'Callaghan, E. (2000). The prevalence of comorbid substance misuse and its influence on suicidal ideation among in-patients with schizophrenia. *Acta Psychiatrica Scandinavica*, 101(6), 452-456. doi: 10.1034/j.1600-0447.2000.10106452
- Kandel, D. B., Huang, F. Y., & Davies, M. (2001). Comorbidity between patterns of substance use dependence and psychiatric syndromes. *Drug and Alcohol Dependence*, 64, 233-241. Retrieved from www.elsevier.com/locate/drugaledep
- Kelly, C., & McCreadie, R. (2000). Cigarette smoking and schizophrenia. *Advances in Psychiatric Treatment*, 6, 327-331. doi:10.1192/apt.6.5.327
- Kumari, V., & Postma, P. (2005). Nicotine use in schizophrenia: The self-medication hypotheses. *Neuroscience and Biobehavioral Reviews*, 29, 1021-1034. Retrieved from <http://web.as.uky.edu/biology/faculty/cooper/Bio401G/nicotineSchiz.pdf>
- Lasser, K., Boyd, J. W., Woolhandler, S., Himmelstein, D. U., McCormick, D., & Bor, D. H. (2000). Smoking and mental illness: A population based prevalence study. *Journal of the American Medical Association*, 284, 2606-2610.
- Morissette, S. B., Tull, M. T., Gulliver, S. B., Kamholz, B. W., & Zimering, R. T. (2007). *Psychological Bulletin*, 133(2), 245-272. Retrieved from www.psycnet.apa.org/journals/bul/133/2/245.pdf
- Op den Velde, W., Aarts, P. G. H., Falger, P. R. J., Hovens, J. E., Van Duijn, H., De Groen, J. H. M. (2002). Alcohol use, cigarette consumption and chronic post-traumatic stress disorder. *Alcohol & Alcoholism*, 37, 355-361.
- Sareen, J., Chartier, M., Paulus, M., & Stein, M. (2006). Illicit drug use and anxiety disorders: Findings from two community surveys. *Psychiatry Research*, 142, 11-17. Retrieved from <http://pauluslab.ucsd.edu/assets/site/files/SareenAnxDrugUse2006.pdf>
- Schaar, I., & Ojehagen, A. (2001). Severely mentally ill substance abusers: An 18 month follow up study. *Journal of Social Psychiatry & Psychiatric Epidemiology*, 36, 70-78. Retrieved from www.link.springer.com/journal/127
- Self-Medication Hypothesis; Connecting affective experience and drug choice. *Psychoanalytic Psychology*, 25(3), 518-532. doi:10.1037/0736-9735.25.3.518
- Swann, A. C., Dougherty, D. M., Pazzaglia, P. J., Pham, M., & Moeller, F. G. (2004). Impulsivity: A link between bipolar disorder and substance abuse. *Bipolar Disorders*, 6, 204-212.
- Swofford, C. D., Scheller-Gilkey, G., Miller, A. H., Woolwine, B., & Mance, R. (2000). Double-Jeopardy: Schizophrenia and substance use. *American Journal of Drug and Alcohol Abuse*, 26(3), 343-353. Retrieved from <http://informahealthcare.com/ada>
- Waxmonsky, J. A., Thomas, M. R., Miklowitz, D. J., Allen, M. H., Wisniewski, S. R.,... Zhang, H (2005). Prevalence and correlates of tobacco use in bipolar disorder: data from the first 2000 participants in the Systematic Treatment Enhancement Program. *General Hospital Psychiatry*, 27, 321-328. Retrieved from <http://www.bhwellness.org/wp-co>

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