Substance Use and Mental Health Disorders: Why Do Some People Suffer From Both?

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Social work intervenes with clients with co-occurring substance use and mental health disorders in their daily practice. Many social workers may not have a full understanding of the theories about why people have co-occurring disorders. The theory that social workers are most familiar with, the self-medication model, may not best explain the client’s experience and may cause social workers to overlook the needs of some clients. In this article, the four main models used to explain why people have co-occurring disorders are examined, empirical literature related to each model is critiqued, and implications for practice, policy, and research are discussed.

KEYWORDS co-occurring disorders, substance use disorders, mental health, models, theory

Co-occurring substance use disorders (SUD) and mental health disorders (MHD) are prevalent in the United States, affecting between 7 and 10 million adults (Kessler et al., 1997; Regier et al., 1990). According to a 2002 report from the Substance Abuse and Mental Health Services Administration (SAMHSA), adults with a SUD were almost three times more likely to have a MHD than those adults who did not have a SUD. The lifetime prevalence of substance abuse among people who have a MHD is typically estimated to be between 40% and 60%. Additionally, among people with mental health disorders, it is estimated that approximately 51% have a lifetime history of at least one SUD (SAMHSA).

Social workers frequently practice in mental health and substance use disorder treatment settings like hospitals, community mental health centers,
private practice, schools, and other community agencies where they are likely to encounter clients who have co-occurring disorders. Therefore, social workers should be familiar with the various etiological models of co-occurring disorders and the strengths and weaknesses of these models, in order to effectively assess and assist clients with co-occurring disorders. Therefore, one purpose of this article is to describe and critique four different models of the etiology of co-occurring disorders.

In 1998, in the journal *Addictive Behaviors*, Mueser, Drake, and Wallach completed an extensive review of the etiological theories of co-occurring disorders. In that review, the researchers chose to focus on schizophrenia and bipolar. In contrast, this article focuses on specific MHDs including mood disorders like major depression, bipolar disorder, and dysthmic disorder, and anxiety disorders such as panic attacks, phobias, generalized anxiety disorder, obsessive compulsive disorder, and posttraumatic stress disorder. Mood and anxiety disorders were selected because these disorders most commonly co-occur with SUDs. Furthermore, social workers who are not employed by a psychiatric unit or regularly working with clients who suffer from schizophrenia or bipolar disorder, are more likely to encounter co-occurring mood and anxiety disorders. Additionally, many social workers who are not in the field of addictions may not access an article like the review by Mueser, Drake, and Wallach in an addictions focused journal. Thus, additional purposes of this article are to build on the review completed by Mueser, Drake, and Wallach 13 years ago, to expand the types of disorders included as co-occurring disorders, and to make this important information accessible to social workers in all areas of practice.

Mueser and colleagues (1998) made several recommendations for future researchers examining the etiology of co-occurring disorders. They identified a need for prospective longitudinal assessments of those people diagnosed with co-occurring disorders and a need for more longitudinal research in general. They also indicated that there was a need for more studies addressing bipolar disorder and more studies evaluating subtypes, that is, groups of people with similar characteristics, among those with co-occurring disorders. Thus, an additional purpose of this article is to critically examine the research completed since 1998 on co-occurring disorders in light of these recommendations.

### TERMINOLOGY

Unless the social worker is working in a substance use disorder treatment setting, he or she may not work with the DSM-IV-TR criteria for SUDs. Therefore, a brief description is provided here. Typically, the term substance use disorder refers to meeting the American Psychiatric Association *Diagnostic and Statistical Manual* (DSM-IV-TR, 2000) criteria for substance
abuse or dependence of any substance including alcohol. Substance abuse, according to the DSM-IV-TR, is a pattern of substance use that leads to clinically significant problems (American Psychiatric Association [APA], 2000). Symptoms of abuse include failing to meet obligations at work, school, or home; using in dangerous situations; experiencing repeated legal problems; or experiencing social or relationship problems. A person meets criteria for substance abuse if he or she has one or more of these symptoms.

Substance dependence is the term used to describe someone who has more serious problems with substance use. A person with substance dependence may have symptoms such as tolerance; withdrawal; using the substance more or for a longer time than intended; being unable to cut down or control substance use; spending a lot of time getting, using, or feeling the effects of a substance; giving up or reducing social, job, or recreation activities; or continuing to use despite knowing that the substance use is causing or adding to a physical or psychological problem (APA, 2000). A person who has three or more of these symptoms would meet the criteria for substance dependence.

Many different terms have been used to describe people who suffer from co-occurring substance use and mental health problems. The most commonly used terms include mentally ill chemical abuser (MICA), dual diagnosis, co-morbid, co-occurring, and co-existing. Currently, the term used most consistently in the literature and in practice to describe people who have both mental health and substance use disorders is co-occurring. Some researchers (e.g., Velleman & Baker, 2008) have called this term into question because it seems to imply that the problems occurred at the same time or that the relationship of the occurrence of each problem is understood. However, because co-occurring is the term most frequently used in the current literature, this term will be used in this article.

MODELS OF CO-OCCURRING DISORDERS

Four major theories or etiological models of co-occurring disorders are commonly discussed in the literature. These models include (1) the MHD-leads-to-SUD, or the self-medication model; (2) the SUD-leads-to-MHD model; (3) the third factor or common factor model; and (4) the combination model. These models are similar to the models examined by Mueser and colleagues (1998). In order to increase social workers’ familiarity with the development of co-occurring disorders, the remainder of this article is devoted to presenting and critically evaluating each model. By having familiarity with the etiological models of co-occurring disorders social workers may be better able to identify and effectively work with treat a client’s with co-occurring disorders.
MHD Leads to SUD—The Self-Medication Model

The self-medication model is the most commonly discussed etiological model of co-occurring SUDs and MHDs. While Mueser and colleagues (1998) argued that this model had minimal support based on their review, practitioners continue to frequently refer to this model when describing the reason why people have both SUDs and MHDs.

The self-medication model posits that people who suffer from a MHD use substances to relieve the symptoms of the MHD. Khantzian first described the self-medication model in 1974 and 1985 and later revised it in 1997. Based on his experience as a psychiatrist, Khantzian (1985) theorized that people use substances to cope with uncomfortable feelings or a negative affect. Khantzian initially proposed that people use specific substances to cope with specific mental health problems. For example, people suffering from anxiety would be likely to choose substances that make them feel calm, like sedatives and barbiturates. In contrast, people suffering from depression might choose a stimulant like cocaine. At the time, this was a unique perspective. Prior to the self-medication model, problems with addiction were viewed as problems associated with peer pressure, self-destruction, and deviant behavior.

Critics of Khantzian’s model pointed out that most people who use substances use alcohol and not illicit drugs that might better relieve their symptoms (Dackis & Gold, 1985; Frances, 1997; Goldsmith, 1993). In response, Khantzian (1997) clarified his statements explaining that, while there may be certain drugs that best relieved specific negative effects, oftentimes drug choice is based on availability. Furthermore, he explained, it is not necessarily a psychiatric condition that a person self-medicates, but a wide range of uncomfortable symptoms. Because other clinicians had noticed a similar pattern of MHDs and SUDs among their patients, Khantzian’s model of self-medication gained popularity and has been frequently referred to in the literature. Mueser and colleagues (1998) refer to this as the “alleviation of dysphoria” model and concluded that this more general definition of the self-medication model had some support in the empirical literature.

The self-medication model is related to theories of learning. In general, if a person finds that the use of a substance reduces negative feelings, then the person is likely to continue using the substance. For example, a woman who suffers from social anxiety may use alcohol because she finds that it helps her interact with people. According to social learning theory, the woman may have initially tried drinking in social situations because she observed that her friends seemed more social when they drank alcohol. Based on her observations of friends, the woman decided to try drinking in social situations. She would likely find that when she is drinking and interacting with others, she receives positive attention and reinforcement for her drinking
behavior. Therefore, that woman would be likely to continue drinking in social situations.

In order to study the self-medication model, researchers have examined various factors that might contribute to a mental health problem causing a substance use problem. For example, researchers have found that the severity or types of symptoms of mental health problems, such as mania, impulsiveness, re-experiencing symptoms, or aggression, may be more strongly associated with having a co-occurring SUD (e.g., Petrakis, Rosenheck, Desai, 2011; Shipherd, Stafford, & Tanner, 2005; Swann et al., 2007; Taft et al., 2007; Tull, Gratz, Aklín & Lejuez, 2010; Wu, Woody, Yang, Pan, & Blazer, 2011). In other words, the results of some of the studies identified indicate that a person with more severe symptoms of anxiety might be more likely to use substances than someone with less severe symptoms. Similarly, a person with bipolar disorder who is experiencing mania may be more likely to use substances than a person who is experiencing the depressive symptoms of bipolar disorder. While some of these studies were longitudinal (Shipherd et al., 2005), the other studies used a cross-sectional design (Petrakis, Rosenheck, Desai, 2011; Swann et al., 2007; Taft et al., 2007; Tull et al., 2010; Wu et al., 2011).

The expectations or cognitions a person has about the effects of alcohol or another substance may also play a role in the development of a co-occurring disorder. Studies examining the role of cognitions about substance use have found mixed results. Some researchers have found that people with more severe MHD symptoms reported greater expectations that substance use would reduce their negative symptoms (Bizzari et al., 2007; Bonn-Miller, Vujanovic, Tyler Boden, & Gross, 2011; O’Hare & Sherrer, 2011; Ullman, Filipas, Townsend, & Starzynski, 2005). However, Bizzari et al. (2007) and Ullman et al. (2005) also found that people with only a SUD (no co-occurring MHD) endorsed positive expectancies for alcohol at a similar or greater rate than those with co-occurring disorders. Thus, it may be that people with positive alcohol expectancies are more likely to use substances in response to positive and negative moods and that self-medication is not limited to people with diagnosable MHDs. It is important to note that all of the studies mentioned were cross-sectional, that is, data was collected at one point in time (Bonn-Miller et al., 2011; Bizzari et al., 2007; O’Hare & Sherrer, 2011; Ullman et al., 2005).

The order of onset of the SUD and MHD is often examined in the literature. It is thought that if the onset of the MHD precedes the onset of the SUD, then self-medication may be a plausible explanation for the initiation of substance use. It is important to note that Mueser and colleagues (1998) argued that knowing which disorder came first is not informative about the cause of the disorder due to the gradual onset of disorders. Because of these concerns about research on the order of onset, Mueser, Drake, and Wallach chose not to further examine this concept in their review. However, because
many studies identified for this review included information about order of onset, it was decided to include this information in this article.

Researchers who have examined the order of onset of MHDs and SUDs have found supportive results (e.g., Abraham & Fava, 1999; Bernstein, Zvolensky, Sachs-Ericsson, Schmidt, & Bonn-Miller, 2006; Marquenie et al., 2007). However, Bernstein et al. (2006) did find exceptions in this pattern among people who used the drug Lysergic Acid Diethlamide (LSD) or suffered from marijuana dependence. This demonstrates that the order of onset may depend on the type of drug used. Similarly, Cougle, Bonn-Miller, Vujanovic, Zvolensky, and Hawkins (2011) found that in a nationally representative sample, 50% of those people with posttraumatic stress disorder (PTSD) reported that the onset of the PTSD preceded or occurred at the same time as the initiation of cannabis use. These results suggest that the other 50% of the sample reported that their PTSD symptoms occurred after the initiation of cannabis use. These exceptions may provide some support for the alternative hypothesis that a SUD leads to a MHD and will be discussed more in the next section. However, it is important to note that although a substance use disorder may precede a mental health disorder, this is insufficient to establish causality. There must be a statistical association between the two variables and no other viable causal explanation. While Marquenie et al. (2007) assessed for anxiety and substance dependence at baseline, 1 year, and 3 years after baseline, several of the studies described in this section are limited by their cross-sectional design (Abraham & Fava, 1999; Bernstein et al., 2006; Cougle et al., 2011).

SUD Leads to MHD Model

The model that a SUD leads to a MHD is often discussed as an alternative to the self-medication model. While the self-medication model is partially based on the social learning theory, the model that SUD leads to MHD was not developed from a specific psychological or sociological model. Instead, there are three different hypotheses about how a SUD can lead to a MHD. The first hypothesis is that activities associated with substance use cause disruptions in a person’s life and may lead to mental health problems (George, Nutt, Dwyer, & Linnoila, 1990 cited in Kushner, Abrams & Barchardt, 2000). For example, chronic alcohol dependence may lead to relationship problems in a marriage that may later end in a divorce. This major life disruption may cause the person to develop depression.

The second hypothesis is that substance use interrupts the desensitization process (Kushner et al., 2000). Previous researchers have found that the use of alcohol, barbiturates, and benzodiazepines can prevent the extinction of a fear response (e.g., Cameron, Liepman, Curtis, & Thyer cited in Kushner et al., 2000). Therefore, this hypothesis is typically associated with co-occurring anxiety and substance use disorders. Many people without
diagnosable anxiety disorders have situations that make them uncomfortable or cause them stress. Under normal circumstances, a person is exposed to a stressful situation over time (e.g., getting on an elevator, giving a public presentation). Typically, as the feared consequences of being in that situation do not occur, the person slowly becomes desensitized to the situation. That is, the fear response to that situation decreases. However, when a person is using substances in a feared situation, the desensitization process does not occur as it normally would. In other words, substances seem to dampen the desensitization process. For example, if a person uses alcohol before a presentation at work, the person may never adjust to the stress of the situation and may begin a pattern of chronic alcohol use. According to Cameron, Liepman, Curtis, and Thyer (cited in Kushner et al., 2000), this process may also put the person at a great risk for developing an anxiety disorder. While this is an intriguing hypothesis, there is limited research demonstrating that this is a pathway where a SUD causes a MHD. Furthermore, this relationship between substance use and anxiety disorders may also fit in the MHD leads to a SUD model.

The third hypothesis is that the chronic cycling of substance use, intoxication, and withdrawal can lead to mental health symptoms that might persist even after remission from substance use (Mueser, Noordsy, Drake, & Fox, 2003). For example, during withdrawal from alcohol intoxication, a person may experience depressive symptoms. This cycle may continue each time the person uses alcohol. According to this hypothesis, the depressive symptoms may remain even if the person abstains from alcohol use. That is, even when the person is not currently using alcohol, he or she will continue to experience depressive symptoms that may become a major depressive disorder.

The fourth hypothesis is the “trigger” hypothesis. This is the idea that some people may have a genetic predisposition to developing a MHD, and, by using substances, somehow trigger the MHD to emerge. While this hypothesis fits under the model that a SUDs leads to a MHD, having a genetic disposition to MHDs and SUDs could also be discussed under the model that some third variable leads to both problems. Clearly, there are multiple ways in which a SUD may lead to a MHD.

The research examining the SUD leads to MHD model is somewhat limited. One way to examine the model that SUDs lead to MHDs is to evaluate the family members of participants. In order to support the hypothesis that people have a genetic predisposition (the “trigger” hypothesis) to developing a SUD, one would expect than the relatives of a participant with a SUD would have higher rates of SUD only and SUD with MHDs, but not MHDs alone. For example, several researchers have used the Vietnam Era Twin Registry (VETR) which consists of 3,360 pairs of twins with 1,868 monozygotic and 1,492 dizygotic pairs. Participants completed interviews in 1987 and 1992. Lin et al. (1996) evaluated 234 twin pairs from the VETR where one
twin met criteria for major depressive disorder and one did not. Lin et al. found that the twin with a major depressive disorder was more likely to have a SUD (defined as any substance other than alcohol in the study) but not more likely to have an alcohol use disorder. Lyons et al. (2006) evaluated the same data set and found that genetic factors may be related to the development of co-occurring major depressive disorder and alcohol use disorder. Furthermore, Lyons et al. found that among participants with both major depressive disorder and alcohol use disorder, 82.6% reported that the onset of the alcohol use disorder preceded the onset of the major depressive disorder. This result provides additional support for the SUD leads to MHD model. Additionally, Lyons et al. found that participants with both disorders also reported more severe symptoms of each disorder. These results seem to coincide with conclusions made by Mueser and colleagues (1998) that most of the research they reviewed did not find consistent differences between groups of people with a MHD and a SUD and those with a MHD only. Furthermore, Mueser and colleagues (1998) concluded that there was little support for the common factor model of genetic vulnerability.

While family studies try to address the genetic components of co-occurring disorders, few recent studies have addressed the other three hypotheses. Some researchers have found that psychedelic drug use has been associated with triggering mental health problems such as panic attacks (e.g. Abraham & Fava, 1999; Bernstein et al., 2006; Bonn-Miller et al., 2007). Others have found support for the third hypothesis that a MHD is likely to occur shortly after using or discontinuing substance use (Frank, Boland, Novick, Bizzarri, & Rucci, 2007). Again, these results seem to agree with the conclusions made by Mueser and colleagues (1998) in their review that “these models remain largely theoretical and untested” (p. 727). As with the studies included in the previous section, many of the studies used to examine the SUD leads to MHD hypothesis are cross-sectional (Abraham & Fava, 1999; Bernstein et al., 2006; Bonn-Miller et al., 2007; Frank et al., 2007). However, Nunes, Liu, Samet, Matseoane, and Hasin (2006) used a longitudinal design that included baseline, 6-month, and 12-month measures.

Common Factor Model

The third model of co-occurring disorders that is discussed in the literature is the common factor or third factor model (e.g. Kushner et al., 2000). This model posits that some third factor causes or increases the risk of both MHDs and SUDs occurring in a person. Many third factors have been discussed in the literature, with the most common being biological factors and environmental factors.

Biological factors, such as gender, personality traits, and a family history of MHD and SUD problems, have been discussed in the literature as increasing the risk of both MHDs and SUDs in a person. Gender has been
discussed as a risk factor for increased occurrence of certain MHDs and SUDs, however, differing results have been found in the literature. Based on two recent reviews of the literature, it appears that among people receiving treatment for a SUD, women seemed to have more problems in various areas of life such as childcare and finances (Greenfield, Back, Lawson, & Brady, 2010; Tuchman, 2010). In contrast, using cross-sectional designs, researchers have found that men have more problems specifically with substances (more problem days) and more severe mental health problems (Grunebaum et al., 2006; Mangrum, Spence, & Steinley-Bumgarner, 2006).

Researchers have also examined how certain personality traits like antisocial personality traits (ASPD) and anxiety sensitivity may be related to having co-occurring SUDs and MHDs. While ASPD does not fall under the mood disorder category identified earlier, it is included here because it has strong associations with SUDs and was included in the review by Mueser and colleagues (1998). In general, results indicate men with ASPD may have more severe SUD symptoms (Goldstein et al., 2007), may be more likely to have alcohol or drug dependence (Grekin, Sher, & Wood, 2006), and impulsivity may play an important role (Grekin et al., 2006; Miller, Vogt, Mozley, Kaloupek, & Keane, 2006). Goldstein et al. (2007) and Miller and colleagues (2006) used a cross-sectional designs, while Grekin et al. (2006) used a longitudinal design.

Overall, these results are consistent with the conclusions made by Mueser and colleagues (1998) that there is a strong relationship among ASPD, SUDs, and MHDs. However, it remains unclear exactly what role antisocial personality disorder has in the etiology of co-occurring disorders. That is, it remains unclear whether ASPD is really a risk factor for SUDs and MHDs, or whether the symptoms of ASPD disorder simply tend to coincide with SUDs. However, as indicated by Mueser and colleagues (1998), there is research indicating that those with full symptoms of ASPD have the highest risk of SUD (Goldstein et al., 2007). Mueser and colleagues (1998) concluded that there was modest support for ASPD as a common factor model explaining the etiology of co-occurring disorders.

Like antisocial personality disorder (ASPD), anxiety sensitivity has been examined as a possible third factor in the development of co-occurring SUDs and MHDs. People with more severe anxiety sensitivity are at a greater risk of developing anxiety related disorders, especially panic-related disorders (Taylor cited in DeHaas, Calamari, Bair, & Martin, 2001). Additionally, more severe anxiety sensitivity has been related to increased use of alcohol and anxiolytic (e.g., barbiturate) use (Kushner et al., 2000; Stewart, Samoluk, & McDonald cited in DeHaas et al., 2001).

Several studies have addressed the relationship among anxiety sensitivity, SUDs, and MHDs. Forsyth, Parker, and Finlay (2003) used a cross-sectional design and grouped 94 veterans in inpatient SUD treatment into three groups based on their level of anxiety sensitivity. Using the
Addiction Severity Index, the researchers found that the high anxiety sensitivity group experienced more psychiatric complications associated with SUD. DeHass and colleagues (2001) found similar results. In their cross-sectional study of 88 participants from an inpatient program, those with SUD and anxiety or SUD and a mood disorder had higher scores on the anxiety sensitivity instrument than those with an SUD only. Based on the results of these studies, it seems that people who suffer from anxiety sensitivity may have more severe mental and substance use problems. However, it remains unclear whether these results provide additional evidence for the common factor model or the self-medication model. It may be that people with more severe mental health symptoms may be at a greater risk of using substances to control those symptoms.

Other factors like trauma exposure (Bolton, Litz, Britt, Adler, & Roemer, 2001; Clark, De Bellis, Lynch, Cornelius, & Martin, 2003) have been examined as third factors contributing to the development of co-occurring MHDs and SUDs. For example, people exposed to trauma may be at risk of developing both a SUD and a MHD. In a longitudinal study, Clark and colleagues (2005) found that a history of physical or sexual abuse in adolescents and young adults did predict primary major depressive disorder and alcohol use disorder later in life. Similarly, Sartor et al. (2010) found that women exposed to trauma had higher rates of alcohol dependence whether or not they met the criteria for PTSD. In their cross-sectional study, Sartor et al. (2010) also found that women with PTSD had higher rates of major depressive disorder.

Other demographic variables have been described as potential third factors in the development of co-occurring SUD and MHD. These factors include race (Grubaugh et al., 2006), education, social economic status (SES), age (Breslau, Davis, & Schultz, 2003; Martins et al., 2007), and living situation (Barrett & Turner, 2006). Unfortunately, little recent literature has addressed these variables. Further, these variables are somewhat difficult to separate from one another. Education and SES are closely related to one another, and race often influences both SES and education. Some studies described in this article have addressed at least one of these demographic variables in their results. For example, in the Martins et al. (2007) study that looked at trauma and SUD, researchers found that those with a current AUD were more likely to be older, poorer, have less education, and be White. Those with a current SUD were more likely to be younger, poorer, have less education, and to be non-White. Grubaugh et al. (2006) compared MHD and mental health service use among African-American and Caucasian veterans. The researchers found that Caucasians were more likely to have a history of sexual abuse and a greater number of traumas, while African Americans were more likely to have a SUD-related diagnosis and were more likely to use Veterans Administration (VA) substance use and urgent care services. Barrett and Turner (2006) addressed the role of environmental factors by looking a family structure and how it relates to the development of substance
use problems. Results showed that more White participants lived in mother and father homes while over half of the African-American participants lived in single parent or extended family homes. Mother and father families had a significantly higher SES, perceived more family support, reported lower exposure to stress and lifetime traumas, lower substance use by family, and lower parental approval of substance use.

The results of the third factor studies described in this section seem to corroborate with a review article on risk factors for alcohol and other drug use disorders by Marsh and Dale (2006). The authors concluded that while peer and environmental factors have an important role in the development of SUDs, family factors, psychological difficulties, and emotional distress may have a more important role. It should also be noted that the family studies that were included in the SUD leads to MHD section could have been included here. It could be that there is a genetic risk for both SUD and MHD. However, it could also be that family plays an important role on the environment in which a child develops. That is, it could be that a parent with depression contributes genetically to the risk of the child developing depression, but this may also create a more stressful environment for a child and may affect the child’s development.

Combination Model

As has been indicated in the previous sections examining the different models of co-occurring disorders, one model does not seem to have significantly more support than the others. This is also evidenced by the fact that many of the studies had mixed results. For example, the results of some studies showed support in part for the self-medication model but also showed some support for the common factor model. For this reason, some researchers have discussed the possibility that the etiology of co-occurring disorders is actually some combination of the three models discussed in this article (Kushner et al., 2000). Kushner and his colleagues eloquently described the different combinations in the following ways, the initiation and maintenance of the disorders are different, the etiological processes are different in different people, and the etiological processes interact and/or overlap.

The first way that the models of co-occurring disorders is combined is that certain processes may be responsible for the initiation of a co-occurring disorder, but other processes are responsible for the maintenance of the disorders. For example, a person may develop anxiety due to a genetic disposition and the environment in which he lives. Then, that person experiments with alcohol and finds that it helps relieve some of his anxiety symptoms in certain situations. However, as that person continues to use alcohol, he begins to experience increased anxiety upon withdrawal from alcohol. Then, that person uses more alcohol to relieve those symptoms that are actually being exacerbated by the substance use.
The second way in which a combination of theories is discussed is that the etiological process may be different in different individuals. The best example of this variation of the model is the research on gender differences. Several research articles reviewed pointed to differences between men and women (e.g., Kessler et al., 1997; Mangrum et al., 2006). These differences were especially evident in cases of trauma exposure and PTSD. Most of the results indicated that women, because they experience different types of trauma, have different reactions to the trauma and may be more at risk for developing PTSD than a SUD (Mangrum et al., 2006; Olff, Langeland, Draijer, & Gersons, 2007). In contrast, results seem to indicate that men are less at risk of developing PTSD after experiencing trauma. However, when men do develop PTSD, they may also be at risk of using substances to cope (Breslau et al., 2003). In addition, because a common coping mechanism for women who experience rape or sexual abuse is disengagement, women may be more likely to use alcohol to help them disengage (Olff et al., 2007). As more women have been exposed to combat situations in Iraq and Afghanistan, it will be interesting to see if these gender differences remain in future research. Personality traits, like antisocial personality disorder and anxiety sensitivity, often associated specifically with men and women respectively, may also play a similar role in gender differences seen between men and women who develop co-occurring disorders.

It also seems clear that different types of mental health disorders may put different types of people at a greater risk of developing a co-occurring disorder. The results of the studies reviewed indicated that people with bipolar disorder typically experience more impulsivity and are at a greater risk of using illicit substances (Bizarri et al., 2007; Swann et al., 2007). The studies reviewed also seem to indicate that cognitions about drinking, which are related to the self-medication model, differ among people (Bizzari et al., 2007; Cooper, Frone, Russell, & Mudar, 1995; Ullman et al., 2005). Thus, it could be that people with more positive expectancies from alcohol will be more likely to use alcohol to self-medicate. How these cognitions about drinking develop was not really addressed in the literature reviewed. One could hypothesize that family and friends influence some of these cognitions. For example, children who grow up in homes where their parents drink after a hard day at work or when they are stressed out may be more likely to use alcohol at a later age to cope with stress because they observed it as being an effective way to cope by watching their parents.

The third way in which the combination of theories is discussed is that the etiological processes of developing a co-occurring disorder may overlap or interact. An example of this combination might be a woman who may have a genetic disposition for depression and a SUD. She may be living in an environment where a family member uses substances and there may not be a lot of support to be abstinent from substances. If she experiments with cocaine or LSD at an early age, she may then trigger her first episode of
major depression. The process becomes even more complicated if she continues to use substances because she believes that it relieves her depressed mood.

Mueser and colleagues (1998) included a brief description of a “bidirectional model” but concluded that “these models remain largely theoretical and untested” (p. 727). Clearly, multiple combinations of the three main theories examined in this article are possible. It does seem that there are various ways in which a person may develop both a SUD and a MHD. However, the specific mechanisms that cause the disorders in each person are not yet clear.

**SUMMARY AND OVERALL CONCLUSIONS FROM RESEARCH**

This article analyzed and discussed four different models of the etiology of co-occurring disorders. While there was not definitive support for any one model, each model seems to have its place in helping researchers and practitioners better understand co-occurring disorders. The self-medication model has made an important contribution. This model fits well with other psychological theories of learning and behavior. Further, it makes intuitive sense to clinicians, clients, and researchers that some people may use drugs to help deal with negative emotions. While this model makes intuitive sense to practitioners, the research supporting this model remains limited and inconclusive. Even though additional research has been conducted to further investigate this model, the general conclusion made by Mueser and colleagues (1998) that there is little support for the self-medication model, seems to continue to be accurate.

The SUD leads to MHD model is an important alternative framework. There clearly seems to be cases where use, especially of certain types of drugs, has lead to the development of a MHD. Unfortunately, very few studies really examined this model. It is interesting that 13 years after the review conducted by Mueser and colleagues, there is still limited research supporting this model.

The common factor model describes certain conditions or situations that may put a person more at risk of developing both a MHD and a SUD. Based on the review of literature, knowing about ASPD and anxiety sensitivity may be important factors in understanding co-occurring disorders. Additionally, other factors such as trauma exposure and SES seem to be important common factors. As mentioned previously, these results partially agree with the conclusions of Mueser and colleagues (1998) who stated that there seems to be modest support for ASPD as a common factor model.

The final model described in this article was the combination of theories. While it is the more complicated model, based on this review of the literature, this is likely the most accurate way to describe the etiology of
co-occurring disorders. This conclusion is somewhat of a departure from the conclusions of Mueser and colleagues who included only a brief section on the “bidirectional model” (p. 727). As has been described, there are multiple ways in which these theories may interact. This points to the heterogeneous nature of the etiology of co-occurring disorders and may be why one of the simpler models has not had full support in the literature. It seems that development of co-occurring disorders is different for different people and deconstructing all the possibilities through research is challenging.

As previously described, Mueser and colleagues (1998) made several recommendations for future research on the etiology of co-occurring disorders. One recommendation was to do more prospective longitudinal assessments of people with co-occurring disorders and another was to have more longitudinal research in general. Based on the description of the literature in this article, it seems that there is still a significant need for more longitudinal research on co-occurring disorders. While several studies identified in this article did use a longitudinal design, none of the studies used a prospective design. Furthermore, the majority of the studies identified used a cross-sectional design.

Another recommendation was for more studies addressing bipolar disorder. Several studies that included bipolar disorder were included in this article. Overall, the results of those studies indicated that the severity of the symptoms and the impulsivity associated with bipolar disorder may be related to the development of co-occurring disorders.

Mueser and colleagues (1998) also recommended that researchers further evaluate the subtypes of people with co-occurring disorders. The results of many of the studies described in this article seem to address this recommendation. For example, some studies have found that those with an earlier age of onset of a SUD or a MHD may be more likely to develop a co-occurring disorder or a more severe co-occurring disorder. Women exposed to trauma may be more likely to develop a co-occurring disorder. Additionally, people with more severe MHD symptoms may be more likely to develop a co-occurring SUD disorder.

**IMPLICATIONS FOR SOCIAL WORK**

Based on the description and critique of the models of co-occurring disorders described in this article, there are important implications for social work policy, research, and practice. These implications bring to surface the role and responsibility of social workers as a change agent in working with individuals living with co-occurring disorders in all levels of practice. Minkoff and Cline (2004) summarized a need for multi-system changes by pointing out that individuals living with co-occurring disorders are “... experienced as ‘misfits’ at every level-at the system policy level, at the program design level,
at the clinical practice level, and at the clinician competency and training level . . . .” (p. 66).

Implications for Policy
There are several implications for policy related to the information described in this article. The first implication is a need for a change in the policies about how people with SUDs are treated. Based on literature reviewed in this article, it is clear that SUDs are common and frequently co-occur with MHDs. Unfortunately, the consequences for the use of substances often involve criminal charges. Oftentimes, people who suffer from SUDs end up in jail or prison. Gary Fisher, in his book *Rethinking Our War on Drugs* (2006) makes several suggestions for changes in national policy. His suggestions include re-conceptualizing addiction as a public health problem rather than a law enforcement problem.

One way to look at co-occurring disorders as a public health issue may be to examine the impact of these disorders on medical expenditures. A report published by the Department of Social and Health Services (DSHS) in 2011 confirms that untreated substance abuse is a significant contributing factor in one’s onset of chronic disease, progression of chronic disease, mortality risk, and increased medical expenditures. Another DSHS report (2010) indicates that the expansion of substance abuse treatment reduced growth in medical costs serving Medicaid disabled clients with substance abuse problems over time. Furthermore, the risk of arrest was found to be significantly less for physically or mentally incapacitated state-funded cash and medical benefits recipients who received substance use disorder treatment, thus saving costs of $18,393 per case for crime victims and taxpayers and offsetting the cost of $6,504 per person substance abuse treatments (DSHS, 2009). Instead of dealing with co-occurring disorders with interventions such as incarceration, policy that transitions to dealing with co-occurring disorders with prevention and substance use disorder treatment will not only reduce medical expenditures but also contribute to shaping public perceptions about individuals living with the double stigma of co-occurring disorders.

As debates over Health Care Reform continue to take place, social workers have a great opportunity to take an advocate role in bringing attention to national and state policy promoting increased funding for behavioral health, particularly as a way to address co-occurring disorders as a public health issue and to combat public stigma about individuals living with the disorders. Change in federal and state policy and increased funding for addressing co-occurring disorders on the macro level will trickle down to change in community agency policy, improving service delivery and practice behaviors for individuals living with co-occurring disorders on the mezzo level. Furthermore, social workers can take on an educator role in helping
clients with co-occurring disorders understand the implications of Health Care Reform on their services.

Implications for Practice

There are also several implications for social work practice. Most importantly, social workers need to have minimal knowledge about each of the models of co-occurring disorders to avoid falling into the trap of assuming that the client is self-medicating. By having a better understanding of the various models, social workers will be better able to assist clients living with co-occurring disorders in all phases of assessment, planning, intervention, and evaluation, allowing for the development of an individualized plan of care.

Another implication for social work practice is that social work students and practitioners need more training in understanding and assisting clients with co-occurring disorders. Social work educators need to take an active role in engaging students in confronting their own misconceptions and discomfort about working with clients with co-occurring disorders. Instead of focusing on a client with a co-occurring disorder as someone in need of specialized care, social work educators can help students look at each client holistically, utilizing knowledge about an ecological perspective, strengths perspective, and social work commitment to promoting social justice. In the field, social workers in all areas of micro practice need to adapt asking about substance use and mental health disorders as part of a standard assessment, instead of leaving it to practitioners specializing in co-occurring disorders. Offering continuing education courses on working with clients with co-occurring disorders, targeting all micro level practitioners, for instance, may aid in an increased comfort and confidence level of practitioners.

Social workers also need to take a leadership role in educating other social workers, nurses, doctors, and other colleagues about the various relationships between substance use problems and mental health problems. Social workers are especially well prepared for this leadership role because of their training in using the strengths perspective as well as the ecological perspective. Social workers may be able to help others take an alternative, less critical and more understanding view of those clients who use substances thus promoting “partnering with” clients rather than “treating” clients. Coupled with education about co-occurring disorders, policy change in addressing co-occurring disorders as a public health issue with potential benefits to everyone might encourage practitioners to confront their philosophical and attitudinal biases toward individuals living with co-occurring disorders. This could in turn minimize or eliminate obstacles individuals living with co-occurring disorders may experience in seeking services from various community agencies.
Implications for Research

The literature reviewed and models of co-occurring disorders described in this article also have implications for research. Because there is no clear answer to why some people have both disorders, more research is needed. Clearly, more research on each of the models described in this article is needed. There seems to especially be a lack of research on the SUD leads to MHD model. Therefore, more research on how the initiation and use of substances may lead to a mental health problem is necessary. The other model that needs additional research is the combination model. It will be important to have a better understanding of how the different models and processes interact. To fully examine the models of co-occurring disorders, large, longitudinal studies will be necessary. By using a longitudinal design and participants who are adolescents or younger, the order of onset of SUDs and MHDs will be able to be better examined. Furthermore, by including large samples in the longitudinal studies, various environmental factors that may contribute to both disorders could be examined. Understanding what and how environmental factors may contribute to co-occurring disorders will allow practitioners to fine-tune evidence-based interventions available to clients with co-occurring disorders.

In addition, continued research on evidence-based interventions may assist in strengthening policy and funding for behavioral health. For instance, social workers can contribute to the body of knowledge about effective ways to address co-occurring disorders through evaluating various intervention methods with possible causes of co-occurring disorders in mind. Additionally, it is possible that the most helpful research on understanding the etiology of co-occurring disorders could come from understanding what treatments are effective for different people. By researching what helps, the underlying mechanisms of the disorder could be better understood. Social workers are the ideal leaders in conducting research that gives voice to clients with co-occurring disorders.

More research is needed on veterans returning from Operation Iraqi Freedom and Operation Enduring Freedom to further understand the implications of exposure to trauma on co-occurring disorders. Similarly, other people who may experience high levels of stress and emotional distress need to be included in future research. This may include different racial and ethnic groups including people living at a low social economic status, those in less stable living situations, people from rural and urban geographic areas, and different racial and ethnic groups.

In addition to the recommendations for future research to continue the current lines of research on understanding the etiology of co-occurring disorders, a further recommendation would be to reconsider the conceptualization of co-occurring disorders in practice and research. Instead of considering each as an independent disorder that exists in the same person,
researchers should consider co-occurring substance use and mental health disorders as something that occurs on a continuum or even consider it as a different type of disorder. That is, perhaps all people who suffer from substance use disorders or mental health problems also have some of the other problem. This is similar to the quadrants described by the Center for Substance Abuse Treatment (CSAT), which classifies people with co-occurring disorders as Quadrant I: Less severe mental disorder/less severe substance disorder; Quadrant II: More severe mental disorder/less severe substance disorder; Quadrant III: Less severe mental disorder/more severe substance disorder; and Quadrant IV: More severe mental disorder/more severe substance disorder (Center for Substance Abuse Treatment, 2005).

Alternatively, it may be that the conceptualization of substance use and mental health disorders is not accurate. It could be possible that these two disorders are not really separate at all. If these are not really separate disorders, it does not make sense to think about or research one causing the other.

CONCLUSION

There is a great need for multi-system change in improving the quality of life for individuals living with co-occurring disorders. Changes in policy, service delivery, and practice, supported by ongoing evidence-based research will allow improvements in the environments in which individuals with co-occurring disorders function and live thus maximizing their chance of success as productive and valued members of the community.

REFERENCES


