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Posttraumatic Stress Disorder and Substance Use Disorders in College Students

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Abstract

Research indicates that many college students report post-traumatic stress disorder (PTSD) or substance use disorder (SUD), yet there has been scant attention paid to the co-occurrence of these disorders in college students. This review examines the co-occurrence of PTSD and SUD in college students. Recommendations for counseling centers are provided regarding the assessment of this population, an overview of treatment issues, and three areas of clinical importance when working with this population: risk behaviors, interpersonal violence, and social isolation. Future directions for research are also suggested.

Keywords

Posttraumatic stress disorder (PTSD); substance use disorder (SUD); college students; treatment; trauma

INTRODUCTION

The college years are a period of transition into adulthood, and a growing literature points to the importance of viewing college students not just as a younger group of adults, but as a population unique in developmental life stage, culture, and environment (Arnett, 2000; Sher & Gotham, 1999). During this time, students experience adult freedoms and responsibilities in an environment where substance use is the norm (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). Substance use evolves with significant variability during college, against the backdrop of developmental milestones and environmental pressures and individual stressors (Bachman, O'Malley, Schulenberg, Johnston, Bryant, & Merline 2002; Kandel & Andrews, 1987; Windle & Davies, 1999). Substance use may pose a particular challenge for those already attempting to cope with a trauma history and resultant traumatic

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stress sequelae. Research with college students indicates that the lifetime rate of experiencing or witnessing at least one traumatic event (such as physical or sexual abuse or natural disasters) ranges from 67 to 86% (Bernat, Ronfeldt, Calhoun, & Arias 1998; Marx & Sloan, 2002, 2003; Scarpa, 2001; Scarpa et al., 2002; Sloan & Marx, 2004; Vrana & Lauterbach, 1994), and a substantial portion of these college students also report psychological sequelae resulting from that event (Lauterbach & Vrana, 2001; Vrana & Lauterbach, 1994). Many students experience traumatic and violent incidents such as arson, rape, assaults, and even murder occur while in college (Downey & Stage, 1999; Utterback & Caldwell, 1989), and substance use also places students at risk of experiencing traumatic events such as physical injury or sexual assault (Hingson, Heeren, Winter, & Wechsler, 2005; Wood & Sher, 2002). Taken together, these trends indicate that during their passage through the college years, many students are made vulnerable to both posttraumatic stress disorder (PTSD) and substance use disorder (SUD).

To date, traumatic sexual experiences have received the most research attention in the college population (e.g., Wood & Sher, 2002). Surveys indicate that between 20 and 32% of college students report a history of childhood sexual abuse (Fox & Gilbert, 1994; Messman-Moore, Long, & Siegfried, 2000), an event related to higher levels of PTSD symtomatology (Messman-Moore & Long, 2000; Messman-Moore et al., 2000; Ullman & Filipas, 2005). In a survey of 925 college women, 157 (17%) reported some form of child abuse (sexual, physical, or emotional) and 139 (15%) reported being raped as an adult (Messman-Moore & Brown, 2004). Surveys with college students indicate that 5.2% (70 of 1,395) of college women report sexual abuse or assault by a dating partner while in college (Harned, 2004). Prospective studies of completed rape (defined as completed oral, anal, or vaginal penetration) of college women have found rates of 3.4% (over 9 weeks; Gidycz, Coble, Latham, & Layman, 1993) and 9.5% (over 8 months; Messman-Moore, Brown, & Koelsch, 2005). College students with a history of childhood sexual abuse are more likely to be victimized while in college (Gidcyz, Coble, Latham, & Layman, 1993). Large-scale surveys have indicated that 72% of college women who are raped were intoxicated at the time of the assault (Mohler-Kuo, Dowdall, Koss, & Wechsler, 2004).

Prevalence of PTSD in College Students

Many college students (especially women) have a history of trauma or experience a traumatic event while in college. Exposure to such traumatic events can result in the development of PTSD, an anxiety disorder characterized by “re-experiencing of an extremely traumatic event accompanied by symptoms of increased arousal and by avoidance of stimuli associated with the trauma” (American Psychiatric Association, 1994, p. 393). To meet the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, American Psychiatric Association, 1994), individuals must have experienced a traumatic event that involved a serious threat of injury to self or others and involved feelings of intense fear, hopelessness, or horror. In addition, the person must report one or more (out of 5) cluster B symptoms (re-experiencing the trauma though flashbacks or unwanted and intrusive memories), 3 or more (out of 7) cluster C symptoms (avoidance and attempts to not think about the traumatic experience), and 2 or more (out of 5) cluster D symptoms (hyperarousal, including hypervigilance and insomnia). Symptoms have to have lasted longer than one month and must also create significant impairment in functioning to meet diagnostic criteria for PTSD.

A substantial portion of trauma-exposed individuals do not meet full criteria for a PTSD diagnosis yet experience significant psychological distress that substantially impacts functioning (Schutzwohl & Maercker, 1999; Mendlowicz & Stein, 2000; Stein et al., 1997; Zlotnick et al., 2002). Thus, it has been noted that, as posttraumatic responses exist on a continuum, it may be useful to consider not only full blown PTSD, but also partial syndromes as well (Mylle & Maes, 2004; Schnurr, Ford, Friedman, Green, Dain, & Sengupta, 2000;

Schnurr, Friedman, & Vernardy, 2002). There has been some debate regarding how best to categorize *subclinical*, or *partial*, PTSD syndromes (Stein, Walker, Hazen, & Forde, 1997; Schnurr et al., 2002). One useful heuristic has been defined as meeting PTSD criteria but having two (rather than three) cluster C symptoms and/or one (rather than two) cluster D symptoms (Stein et al., 1997). The development of full or partial PTSD has direct implications for college students, as it has been proposed that 12% of students who are exposed to traumatic events will develop PTSD (Bernat et al., 1998). This estimate has been supported by prevalence surveys of college students meeting DSM-IV criteria for full or partial PTSD (see Table 1).

Other research providing preliminary diagnoses of PTSD from screening measures further confirms the estimate of 10–15% of students reporting full or partial PTSD. For example, Lauterbach and Vrana (2001) examined rates of traumatic exposure and traumatic stress symptoms in a sample (N = 402) of undergraduates; 13 (3%) students received a preliminary diagnosis of PTSD, and 20 (5%) fell one symptom short. In a sample of 151 college women who had reported a traumatic event since the age of 12, 17 (11%) received a lifetime diagnosis of PTSD (Krupnick, Green, Stockton, Goodman, Corcoran, & Petty, 2004). Finally, in a sample of 467 female college students, 39 (8%) received a preliminary diagnosis of PTSD (Hetzel & McCanne, 2005). This percentage was similar to the 6–7% of students reporting symptoms consistent with a preliminary PTSD diagnosis in over 2,000 college students (Blanchard, Rowell, Kuhn, Rogers, & Wittrock, 2005; Blanchard, Kuhn, Rowell, Hickling, Wittrock, & Rogers, 2004).

Prevalence of SUD in College Students

Large surveys of college students indicate that many have engaged in alcohol use (70–80%), marijuana use (20%), and/or cocaine use (1–2%) in the past month (O'Malley & Johnson, 2002). For a considerable number of college students, alcohol and other substance use develops into a substance use disorder (SUD). SUD is defined as a diagnosis of either substance abuse or dependence. A DSM-IV diagnosis of *substance dependence* requires 3 or more of the following 7 symptoms: tolerance to the substance; withdrawal; taking the substance in larger amounts or over a longer period of time than intended; persistent desire to cut down or control use; a great deal of time spent in activities to obtain, use and recover from use; important social, occupational, or recreational activities are given up or reduced because of substance use; and continued substance use despite having physical or psychological problems that have been caused or exacerbated by the substance. A diagnosis of *substance abuse* requires the endorsement of one of the following symptoms (and no diagnosis of dependence): recurrent use resulting in failure to fulfill role obligations at school, work, or home; recurrent use in hazardous situations (e.g., driving); recurrent substance-related legal problems; and/or continued substance use despite social or interpersonal problems (American Psychiatric Association, 1994).

Alcohol and substance use are common on college campuses. Of the 8 million college students in the US, between 6 and 11% of students met DSM-IV criteria for alcohol dependence and between 6 and 31% met criteria for alcohol abuse over the past year (Dawson, Grant, Stinson, & Chou, 2004; Knight, Wechsler, Kuo, Seibring, Weitzman, & Schuckit, 2002; Slutske, 2005). Regarding other substance use, a survey of over 10,000 students on 119 campuses revealed that 17% of college students used marijuana in the past month (up from 12.5% in 1993) and 14% report use of other substances (e.g., cocaine, LSD; Mohler-Kuo, Lee, & Wechsler, 2003), rates similar to those found in other large-scale surveys (CDC, 1997). Furthermore, heavy drinking and using other substances are commonly linked (Jones, Oeltmann, Wilson, Brener, & Hill, 2001). Thus, the alcohol use and substance use prevalent on college campuses put many students at risk for developing an SUD.

Comorbidity of PTSD and SUD in College Students

PTSD and SUD are consistently related in adults (see Najavits, Weiss, & Shaw, 1997; Ouimette & Brown, 2003; Stewart, 1996) and adolescents (Bensley, Spieker, Van Eenwyk, & Schoder, 1999; Giaconia, Reinherz, Paradis, & Stachwick, 2003; Kelley, Thornberry, & Smith, 1997; Kilpatrick, Acierno, Saunders, Resnick, Best, & Schnurr, 2000). Despite the ubiquity of substance use and trauma in college students, and the documented prevalence of both disorders in this population, the rate of co-occurrence of PTSD and SUD is currently unknown.

Research has consistently found an association between *trauma* and substance use in college students. Co-occurrence of substance use (especially alcohol) and sexual assault specifically have been studied (e.g., Abbey, 2002), and high rates of substance use are evident in older students (30+ years) who had experienced child sexual abuse (Brabant, Forsyth, & LeBlanc, 1997). The substance use that is prevalent in the college culture may pose a particular challenge for those already attempting to cope with a trauma history and resultant traumatic stress sequelae. Specifically, college students who are exposed to physical abuse or violence during their childhoods are more likely to develop problems with alcohol than students without such a history (Caetano, Field, & Nelson, 2003). Rodriguez-Srednicki (2001) surveyed a diverse sample of students (40% Hispanic, 28% black), and found that 147 of 441 women (40%; mean age 20.6 years) reported childhood sexual abuse (CSA). Furthermore, women with a history of sexual abuse reported a greater frequency of getting drunk than students who did not report CSA. Other research has revealed this relationship between trauma and drinking. Students with a history of trauma were also more likely to engage in risky behaviors such as self-injury, unprotected sex, and substance use (Green, Krupnick, Stockton, Goodman, Corcoran, & Petty, 2005), and college women who have experienced at least one incident of sexual aggression in the past year report more risky behaviors (e.g., drinking heavily, having a greater number of sexual partners) than those who had not experienced sexual aggression (Norris, Nurius, & Dimeff, 1996). College women who have experienced attempted or completed rape also drink significantly more than nonvictims (Corbin, Bernat, Calhoun, McNair, & Seals, 2001).

The PTSD-SUD literature points to a reciprocity between trauma, traumatic stress, and substance use (e.g., Ouimette & Brown, 2003). Specifically, the experience of posttraumatic stress symptoms may lead an individual to use substances which in turn places students at risk of experiencing traumatic events such as partner violence, physical injury, or sexual assault (Hingson, Heeren, Winter, & Wechsler, 2005; Shook, Geerity, Jurich, & Segrist, 2000; Wood & Sher, 2002), and could potentially increase of aggravate traumatic stress symptoms. Miranda and colleagues (2002) further explored the connection between traumatic sexual experiences and alcohol use in a sample of undergraduate female victims of sexual assault. As the severity of the sexual assault increased, so did the use of alcohol, indicating that women may drink to cope with the psychological distress resulting from sexual assault.

Despite the evidence linking trauma with alcohol use, little research has examined associations between PTSD and substance use. This may be due to the infrequent use of formal DSM-IV diagnostic criteria in college research. However, two studies have examined PTSD and substance use in college students. In one study, students diagnosed with PTSD reported drinking to higher levels of intoxication than students without PTSD (McDevitt-Murphy, Weathers, Flood, Eakin, & Benson, 2007). In another, there was not a significant association between PTSD and alcohol use (Marx & Sloan, 2003). However, the authors acknowledged that the low sensitivity of their measure of drinking and the low overall rates of alcohol consumption in their sample both may have obscured the relationship between PTSD and alcohol use. These findings suggest the degree of comorbidity of PTSD and SUD seen in adults and adolescents may also be present in college students. Further, though the literature documents substantial rates of sub-threshold PTSD symptomatology in college students (e.g., Lauterbach and Vrana, 2001), and sub-syndromal PTSD is known to be a risk factor for

negative psychological outcomes, including substance misuse, there has been surprisingly little research on associations between "partial PTSD" and substance use in college students.

In sum, students attending college with concurrent PTSD and SUD, or sub-threshold symptom constellations, are at risk for experiencing significant problems. College students with PTSD are more likely to drop out of college (Duncan, 2000), and substance use interferes with educational attainment and career development (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Gotham, Sher, & Wood, 2003; Newcomb, Scheier, & Bentler, 1993; Wood, Sher, McGowan, 2000). In addition, college students with a history of trauma are more likely to experience subsequent traumas (e.g., Messman-Moore & Long, 2000), and substance use is consistently linked to a sexual traumas (Wood & Sher, 2002) and severe injuries (Hingson, Heeren, Winter, & Wechsler, 2005). Therefore, providing treatment to college students may reduce their risk of experiencing further traumatic events, provide coping skills, keep them in school, reduce PTSD symptomatology and substance use, and lessen the degree of future impairment from both disorders.

IMPLICATIONS FOR COUNSELING CENTERS

In a larger context, the presenting problems of counseling center clients became more severe during the 1980s and 1990s, when there was a shift from addressing developmental and vocational concerns to psychiatric issues, including trauma and substance use (Bishop, 1992; Gilbert 1992; Gallagher, Gill, & Sysco, 2000; O'Malley, Wheeler, Murphey, & O'Connell, 1990; Stone & Archer, 1990). An examination of 13 years of intake data collected at a large Midwestern university revealed increases in prevalence of abuse and sexual assault (Benton, Robertson, Tsent, Newton, & Benton, 2003). During the most recent period assessed (1996–2001), the percentage of students presenting for treatment who reported physical abuse, sexual assault, and substance abuse was 12, 3.5, and 7%, respectively. A cluster analysis of 611 counseling center clients assessed in 6 areas of functioning (suicidality, thought disorders, physical problems, interpersonal problems, mood problems, and leisure activity impairment), 10% had significant impairment in all areas and 8% had problems with substance use (Heppner, Kivlighan, Good, Roehlke, Hills, & Ashby, 1994), a finding replicated by a subsequent study of 6 years of intake information (Pledge, Lapan, Heppner, Kivlighan, & Roehlke, 1998).

Given the severity of symptoms in college students, counseling centers are one of the first places college students experiencing academic, social, personal, and other serious problems will present for treatment (Rivinus, 1987, 1988; Robbins, May, & Corazzini, 1985; Stone & Archer, 1990). Regarding PTSD, it is likely that students will present shortly after experiencing trauma, or when the coping mechanisms that they have developed for a past trauma are no longer sufficient (Purves & Erwin, 2002). PTSD has also been linked to poorer health, a relationship mediated by avoidant coping strategies such as "trying to forget the whole thing" (Lawler, Ouimette, & Dahlstedt, 2005). Thus, students with PTSD may present to counseling centers for somatic complaints that are not directly related to the trauma. Furthermore, if alcohol is being used to cope with PTSD symptoms, students may present with an SUD. Matthews and colleagues (1998) found that close to 10% of the 1,081 students presenting for treatment reported binge drinking "several times per week" or "daily." Therefore, it is important that counseling centers use appropriate screening measures to identify PTSD and SUD.

Assessment of PTSD and SUD

The rates of trauma, posttraumatic stress sequelae, and substance misuse in college populations, and the association of PTSD with generalized anxiety disorder, major depression, and panic disorder in college students (Lawler et al., 2005), suggests that concurrent assessment of PTSD and SUD for students presenting other problems may improve treatment. Structured clinical

interviews are the "gold standard" of assessment of both substance use and posttraumatic stress disorders, but they tend to require clinical interviewers with specific training in the administration and scoring of the measures. Even among those with specialized training, administration can be cumbersome and time consuming, and thus structured interviews may not be well-suited to the needs of a college counseling environment.

Fortunately, a number of brief, self-report measures designed to evaluate posttraumatic stress and substance use symptomatology have been developed in the past two decades. For example, for the assessment of posttraumatic stress symptoms, the 17-item *PTSD Checklist*–Civilian Version (PCL-C; Weathers, Huska, & Keane, 1991; Weathers, Litz, Herman, Huska, & Keane, 1993) has been developed. This measure evaluates criteria B (reexperiencing), C (avoidance), and D (hyperarousal) of the PTSD construct consistent with the DSM-IV. The PCL has shown strong psychometric properties, including significant associations with diagnostic interview ratings for posttraumatic stress symptoms (Blanchard, Jones-Alexander, Buckley, Forneris, 1996; Weathers et al., 1993), and has been used to identify traumatic stress syndromes in college samples (Blanchard et al., 2005; Lawler et al., 2005; Ruggiero, Del Ben, Scotti, & Rabalais, 2003).

A number of self-report measures have been shown to be useful in screening for SUDs, including Michigan Alcohol Screening Test (MAST; Skinner & Sheu, 1982), the Drug Abuse Screening Test (DAST; Skinner, 1982), the CAGE (Ewing, 1984) and the Alcohol Use Disorders Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Grant, 1992). Among these, the AUDIT has been widely used in college student samples (e.g., Ehrlich, Haque, Swisher-McClure, & Helmkamp, 2006; Greenfield, Keliher, Sugarman, Kosloff, Reizes, Kopans, & Jacobs, 2003; O'Hare, 2005), and has been validated for use in this population (Fleming, Barry, & MacDonald, 1991; Kokotailo, Egan, Gangnon, Brown, Mundt, & Fleming, 2004; Shields, Guttmannova, & Caruso, 2004). This brief (10-item) measure assesses alcohol consumption and related problems and has been shown to correlate with other self-report alcohol screening tests (Allen, Litten, Fertig, & Babor, 1997). Importantly, the AUDIT has been found to show strong associations with impairment in social and personal domains (see O'Hare, 2005), and also has an item that assesses heavy episodic drinking. As such, the AUDIT may be especially useful in the assessment of drinking and consequences that may be most likely to occur in the college milieu.

Existing Treatment Programs for PTSD and SUD

Although individuals with histories of trauma are more likely to abuse substances, treatment has typically focused only on controlling PTSD symptoms and not the concurrent problems associated with SUD. An integrated approach which addresses PTSD and SUD concurrently is consistently recommended by clinicians and researchers as more likely to succeed, more sensitive to patient needs, and more cost-effective (Abueg & Fairbank, 1991; Brady, Killeen, Saladin, Dansky, & Becker, 1994; Brown, Recupero, & Stout 1995; Evans & Sullivan, 1995; Kofoed, Friedman, & Peck, 1993; Morrisey, Ellis, Gatz, Amaro, Reed, Savage, Ouimette, & Brown, 2003; Ruzek, Polusny, & Abueg, 1998). Data also show that individuals with PTSD and SUD prefer simultaneous treatment of both disorders (Brown, Stout, & Gannon-Rowley, 1998).

To date, much of the PTSD research has been conducted with adult who have been experiencing symptoms for years. While this research indicates that the typical trajectory of adolescent PTSD and substance abuse is considerable impairment into adulthood (Green, 1993; Ouimette & Brown, 2003), recent research indicates that these trajectories may be more amenable to change if addressed earlier in their development (Najavits, Gallop & Weiss, 2006). Although many programs have been proposed to treat SUD with counseling center clients (e.g., Gonzales, 1988; Kinney & Peltier, 1986; Lenhart & Wodarski, 1984), there have been no published

studies of treatments for college student reporting PTSD and SUD. Instead, counseling centers provide brief individual or group counseling to students reporting PTSD or SUD (Barnette, 2001; Cooper & Archer, 1999; Golden, Corazzini, & Grady, 1993; Rivinus, 1987), or refer them to external treatment. However, there has been no empirical evaluation of these treatments. Therefore, an empirically developed and efficacious treatment addressing both PTSD and SUD would be a valuable asset for campus counseling centers. Given the problems associated with PTSD and SUD comorbidity (Giaconia, Reinherz, Paradis, & Stachwick, 2003), a treatment addressing both PTSD and SUD could greatly enhance the quality of life of a considerable number of undergraduates.

In the past 15 years, several treatments have been developed to address PTSD and SUD in adults (Najavits, 2004). However, many do not have published evidence of treatment efficacy (Abueg, Lang, Drescher, Ruzek, Aboudarham, & Sullivan, 1994; Evans & Sullivan, 1995; Miller & Guidry, 2001; Trotter, 1992), and others have not yet been documented (Bollerud, 1990; Meisler, 1999). To date, four different treatments addressing PTSD and SUD have been empirically evaluated, such as *Substance Dependence PTSD Therapy* (SDPT; Triffleman, Carroll, & Kellogg, 1999; Triffleman, 2000), *Transcend* (Donovan, Padin-Rivera, & Kowaliw, 2001), *Concurrent Treatment of PTSD and Cocaine Dependence* (CTPCD; Back et al., 2001; Brady, Dansky, Back, Foa, & Carroll, 2001), and *Seeking Safety* (Najavits, 2002).

Although each of these four treatments is promising, there may be obstacles to their implementation with college students. First, the college year is temporally constrained by semester breaks and summer vacations. Therefore, it may be difficult to incorporate lengthy treatments such as SDTP and *Transcend* in the college setting, both of which take months to complete. Second, the intensity of the treatments is an important consideration. Staff and students may not have the time to commit to several sessions per week, such as the 10 hours per week required by *Transcend.* Therefore, students requiring this level of treatment may be appropriate for external referral. Third, the counseling center will have to commit time and resources for training staff to delivering these treatments. Fourth, some of these treatments focus on substances other than alcohol. For example, CTPCD, while a shorter treatment, focuses primarily on cocaine abuse, a substance that is infrequently used by college students. Therefore, these treatments will most likely have to be adapted for the college student population.

Treatment Considerations for College Students with PTSD and SUD

Whether treated in individual counseling or in groups, college students with PTSD may have certain characteristics that differentiate them from the adult population, with which most of the treatments for PTSD have been developed. For example, the duration of time since the trauma may be shorter than for veteran or community samples (Kolts, Lombardo, & Faulkner, 2004). Therefore, campus counselors may be addressing traumas that have happened recently. As such, the focus of treatment may be to help the student cope with the immediate response to the trauma and reestablish the student's sense of safety. Treatment may be more preventative in nature, avoiding further development of symptoms, rather than addressing symptoms that have become established over time. The type of traumatic event may also have different implication for the development of PTSD. Research with college women indicates that traumatic bereavement or physical assault is less likely to lead to the development of PTSD than sexual assault (Krupnick, Green, Stockton, Goodman, Corcoran, & Petty, 2004). Therefore, college counselors should be trained to deal with sexual traumas. It also appears that the frequency of traumatic events is of less clinical importance than the nature of the event: students who have undergone single or multiple sexual traumas, a particularly invasive event, are equally likely to develop PTSD (Krupnick, Green, Stockton, Goodman, Corcoran, & Petty, 2004).

Dialectical Behavior Therapy (DBT; Linehan, 1993) is a widely used and empirically validated treatment initially developed for individuals with Borderline Personality Disorder. In recent years, this approach has been adapted for a number of other presenting psychological problems. The theoretical underpinnings and many of the techniques that are central to DBT (e.g., focus on emotion regulation, modification of problematic cognitions, skills training) have been suggested to be potentially useful in treating individuals with PTSD (see Becker & Zayfert, 2001; Wagner & Linehan, 2006). Further, some have argued that early trauma is often central to the development of BPD, and as such, many of the features of DBT designed to treat BPD are in fact uniquely well-suited to treating trauma and its sequelae more broadly (e.g., Lanius & Tuhan, 2003; Becker & Zayfert, 2001). Although theory and some preliminary data point to promise for this approach in addressing PTSD, it is important to note that DBT has not been rigorously tested in the treatment of PTSD (Wagner & Linehan, 2006). Moreover, there have been no examinations of DBT as applied to co-occurring PTSD and SUD, in adult or college populations.

Fortunately, research indicates that college students with PTSD are good candidates for treatment. For example, recent research with students with PTSD has found that they do not exhibit the memory deficits or cognitive impairments often evident in the adult population (Kolts, Lombardo, & Faulkner, 2004; Twamley, Hami, & Stein, 2004). Other research has indicated that the symptoms of PTSD in college students are not as severe as in community samples (Filipas & Ullman, 2006), and that although students exhibit symptoms of PTSD they may not concurrently report dysfunction in social, occupational or other areas (Thatcher & Krikorian, 2005). Therefore, college students with PTSD may have a baseline level of coping and adaptability skills that is higher than in a community sample. This will provide counselors the opportunity to implement adaptive coping strategies before maladaptive coping strategies (e.g., social distancing, substance use) become more established. This approach may be particularly helpful for college students with PTSD and SUD, who may cope with their distress though behaviors that place them at a greater risk for harm and re-traumatization. There are several areas that may be of clinical importance, including risk behaviors, interpersonal violence, and social isolation.

College students with PTSD and SUD appear to engage in significantly more *risk behaviors* than other students. The risk of substance use is well established: alcohol use is the greatest single contributor to college student morbidity and mortality, contributing to an estimated 1,717 deaths among college students in 2001 (Hingson, Hereen, Winter, & Wechsler, 2005). However, students with PTSD may be at a higher risk for experiencing subsequent traumatic experiences through their behaviors or high levels of distress. Female college students with a history of trauma report greater frequency of engagement in risky coping strategies such as using alcohol or drugs (Corbin, Bernat, Calhoun, McNair, & Seals, 2001; Krupnick, Green, Stockton, Goodman, Corcoran, & Petty, 2004; Miranda, Meyerson, Long, & Simpson, 2002) or engaging in risky sexual behaviors such as having multiple partners (Filipas & Ullman, 2006; Green et al., 2005; Norris et al., 1996). Higher levels of PTSD symptoms have also been related to revictimization (Messman-Moore, Brown, & Koelsch, 2005). These experiences are likely to worsen their symptoms further. This cycle is evident in research indicating that college women who had multiple experiences of sexual assault in childhood and adolescence exhibited worse PTSD symptoms than college women without a history of trauma or trauma just in childhood and adulthood (Kaltman, Krupnick, Stockton, Hooper, & Green, 2005). The perception of control may contribute to this cycle. Specifically, increased symptoms of PTSD were significantly associated with perceptions of under control in college females, especially those with multiple traumas (Bolstad & Zinbarg, 1997). This finding may have implications for treatment–counselors can fodus on the student's perceptions of control, especially their abilities to prevent subsequent traumatic events. Therefore, counselors working with this population may want to address any risky behaviors endorsed by the student.

Interpersonal violence is also an area of concern for college students. Anger and hostility are traits that students with PTSD and SUD may exhibit in the course of treatment, especially men. Recent research with college students found that male students who were exposed to a potentially traumatic event (e.g., assault, motor vehicle accident) and reported symptoms of PTSD were more likely to experience more anger, aggression, and violence than men without symptoms of PTSD (Jakupcak & Tull, 2005). The research with women is mixed, with some research indicating that PTSD symptoms have also been associated with acting out aggressively in college women (Filipas & Ullman, 2006) and other research indicating that PTSD is not associated with the perpetration of violence (Green et al., 2005). It is likely that coupling these traits with substance use may lead to a lack of inhibition of these aggressive impulses, increasing this risk that the student may injure himself or others. The romantic partners of these individuals may be particularly at risk, consistent with other research that indicates that alcohol use increases the risk for experiencing both verbal and physical courtship violence, either male on female or female on male (Shook, Gerrity, Jurich, & Segrist, 2000). As such incidents can increase the risk for subsequent traumatization, it may be beneficial for counselors to address the topics of anger expression and partner violence with students reporting PTSD and SUD.

Self-blame for the traumatic incident also appears to be linked a greater risk for sexual revictimization. Specifically, college women who exhibit PTSD symptoms following a sexual assault are more likely to blame themselves for the incident than women who do not report PTSD symptoms (Arata & Burkhart, 1996; Filipas & Ullman, 2006). Self-blame, in turn, has been linked to greater consensual sexual activity, which places the student at risk for subsequent traumatization (Arata, 2000). Therefore, discussing the student's self-blame for the traumatic incident may help reduce the risk of the student experiencing subsequent victimization.

Finally, research suggests that college students with PTSD and SUD may experience *social isolation* from others. In college women, PTSD symptoms are associated with withdrawing from others (Filipas & Ullman, 2006), emotional numbing and avoidance (Flack, Milanak, & Kimble, 2005), as well as anxiety and social distress (Feerick & Snow, 2005). All of these symptoms may lead the individual to become detached from the social environment. It has been hypothesized that college women with a history of trauma may create a cycle in which women seek out fewer social contacts, become less competent in their social interactions, which in turn increases social anxiety (Feerick & Snow, 2005). Given the disinhibiting effects of alcohol and its role in facilitating social interaction (e.g., Borsari & Carey, 2006), these students may use alcohol to cope with their social anxiety (which in turn places them at greater risk of experiencing subsequent trauma). This potential cycle of trauma, social anxiety, and substance use further recommends the approach of addressing both PTSD and SUD concurrently.

Future Directions

The research reviewed here indicates that many college students experience comorbid PTSD and SUD and present unique challenges to counseling center staff. However, gaps in the current research indicate several promising areas of research in this population. First, the etiology and prevalence of comorbid PTSD and SUD in college students deserves detailed study. This research will foster a better understanding of how college students develop and cope with PTSD and SUD, and how the sequelae of each disorder are related to each other. Identification of regional, ethnic, and socio-economic moderators of the prevalence and severity of PTSD and SUD would have important implications for treatment and preventative efforts. Second, continued research with students presenting for treatment for PTSD and SUD will allow us to determine if they differ not only from their college peers but also from adults and adolescents with the comorbid disorders. The fact that the students are able to attend school indicates a certain level of adaptation; however, what contributes to this ability to reach a relatively high level of functioning is not known. Many possibilities have been suggested (e.g., lesser severity

of the event and/or symptoms), but these have not been systematically researched in the college setting. Finally, much work needs to be accomplished in the college setting regarding the development of new treatments or the adaptation of existing treatments. This work will identify unique characteristics of college students that may hinder therapeutic progress.

In sum, research indicates that a considerable number of college students exhibit comorbid PTSD and SUD and experience significant distress from their symptoms. The majority of these students will initially report to the campus counseling center for treatment. While referral to community-based providers is always an option, counseling centers have the unique opportunity to considerably reduce the students' impairment by implementing proper assessment and treatment. However, little is known about the etiology, maintenance, and resolution of these comorbid disorders in the college setting. Future research will increase the ability of college counseling centers to provide state of the art treatment to these students in need.

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TABLE 1

Prevalence of PTSD in college samples

Study	PTSD Prevalence	Sample	Diagnosis
Bernat et al., 1998	4% (38/937)	General student population	Full, lifetime
Schaaf and McCanne, 1998	7% (31/475)	General student population	Full, lifetime
Scarpa et al., 2002	14% (73/518)	General student population	Full, current
Twamley et al., 2004	16% (38/235)	General student population	Full and partial, current
Marx and Sloan, 2003	17% (104/603)	General student population	Full, current
Ullman and Filipas, 2005	79% (246/311)	College students with a history of sexual trauma	Full, current
Lawler et al., 2005	13% (17/138)	College students with a trauma history at campus health center	Full, current
Green et al., 2005	8% (17/209)	College students with a history of sexual trauma	Full, lifetime
McDevitt-Murphy et al., 2007	7% (30/450)	General student population	Full, current