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Article 92

The Effects of Impairment Due to Eating Disorder Symptoms on Substance Use Disorder Recovery

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Abstract

This study provides a preliminary examination of the effects of impairment due to eating disorder symptoms on recovery from substance use disorder. Facebook was used to recruit 127 female participants in recovery from substance use disorder. Results indicate that participants with significant impairment due to eating disorder symptoms experienced a greater number of relapses from substance use disorder over the past 10 years as well as lower current self-reported recovery from substance use disorder (i.e., sobriety, personal health, citizenship) than participants without significant impairment due to eating disorder symptoms. These findings indicate the need for counselors to use an integrated treatment that addresses both eating disorder symptoms and recovery from substance use disorders.

Approximately 22.2 million Americans, ages 12 and older, have a diagnosis of substance use disorder (SUD; SAMHSA, 2013a). Many of these individuals are diagnosed with a comorbid mental health disorder (SAMHSA, 2013b). Individuals with SUD and a comorbid mental health disorder tend to experience more negative consequences, such as relapse, hospitalization, and violence, than those with a single disorder (Brunette, Mueser, & Drake, 2004). Many mental health disorders have a high

comorbidity rate with SUD. Eating disorders (EDs), particularly those involving "bulimic" behaviors, are one of these comorbid disorders. Studies have indicated that 50% of individuals with EDs abuse substances, compared to 9% of the general population (Bulik et al., 1992) and that 35% of individuals who have SUD have a comorbid ED (Root et al., 2010). Undiagnosed EDs and ED symptoms are often seen in individuals with SUD.

Research has indicated that individuals with both SUD and EDs have poorer prognosis and increased relapse rates when compared to individuals with a single diagnosis (Keel, Mitchell, Miller, Davis, & Crow, 1999; Krug et al., 2009). These individuals can experience significant impairments in psychosocial functioning, which affect all life areas (e.g., work, school, relationships). The severity of the impairments of SUD or EDs can lead to fatal consequences (e.g, increased risk of suicide). The risk of premature death increases when comorbidity is present (Arcelus, Mitchell, Wales, & Nielsen, 2011; Crow et al., 2009). Due to the high rate of comorbid SUD and EDs and potential for poorer prognosis and outcomes, it is important to better understand the effects that the comorbid disorders and their resulting impairment have on recovery from each disorder.

Research that explores the impairments resulting from comorbid SUD and EDs and their impact on recovery from SUD can assist in developing treatment and relapse prevention strategies. Hence, this study focuses on the effects of impairment due to ED symptoms on recovery from SUD. Particularly, this study adds to the literature by examining the effects of impairment due to ED symptoms on SUD recovery, as opposed to only examining the ED symptoms. The functional impairments (e.g., work performance, cognitive functioning) resulting from the disorders may have a different effect on recovery than symptoms themselves. Notably, up to 75% of individuals with EDs and 17% of individuals with SUD have co-occurring depression. Because symptoms of depression often mimic symptoms of SUD and EDs (Currie et al., 2005; Russell, Fuscaldo, & Ealey, 2008), it is possible that the results found may be a product of depressive symptoms as opposed to the relationship between impairment from ED symptoms and SUD recovery (e.g., depressive symptoms cause greater number of relapses). Therefore, depression was controlled for in this study.

Also of note, a variety of other mood disorders and concerns are frequently present with ED symptoms and SUD (e.g., physical or sexual abuse; Schneider, Burnette, Ilgen, & Timko, 2009; Treur, Koperdák, Rózsa, & Füredi, 2005; impulsivity; Bushnell, Wells, & Oakley-Browne, 1996; anxiety, neuroticism; Ferriter & Ray, 2011; family history of drug abuse and alcoholism; Baker, Mazzeo, & Kendler, 2007); these variables may have also influenced the results found. For the limited scope of this study though, controlling for only depression was deemed as appropriate. The variety of co-occurring disorders and issues further indicates the complexity of comorbid EDs and SUD and highlights the need to examine and understand comorbidity.

Therefore, the research questions and hypotheses of this preliminary study are as follows: Do individuals with significant impairment due to ED symptoms report a significantly lower level of recovery from SUD than individuals without significant impairment due to eating disorder symptoms, when controlling for depression? It is hypothesized that individuals with significant impairment due to ED symptoms will report a significantly lower level of recovery than individuals without significant

impairment due to ED symptoms, when controlling for depression. Do individuals with significant impairment due to ED symptoms report a greater number of relapses from SUD over the past 10 years than individuals without significant impairment due to ED symptoms? It is hypothesized that individuals with significant impairment due to ED symptoms will report a significantly greater number of relapses over the past 10 years than individuals without significant impairment due to ED symptoms.

Methods

Participants

A volunteer sampling method was used to recruit participants (127 women, M_{age} = 36.5 years, age range: 18–67 years); this sample met the requirements of an *a priori* power analysis, which determined 114 participants were needed to obtain a medium effect size. In total, 186 participants completed the informed consent and began the survey; 16 individuals did not meet eligibility requirements, and 43 individuals did not complete the survey. Participants were required to be female, English-speaking, 18 years or older and without a legal guardian, and in self-reported recovery from SUD (i.e., "Are you in recovery or remission from substance use disorder, such as alcoholism, drug addiction?"). In an effort to obtain a sample with a range of severity in impairment due to ED symptoms, participants included only individuals who self-identified as women, as EDs are witnessed more frequently among woman than men (Wade, Keski-Rahkonen, & Hudson, 2011). See Table 1 for demographic information regarding racial/ethnic background and self-reported substance used before entering recovery (i.e., "During your time of substance use, what was your substance(s) of choice?").

Table 1

Demographic Information

Variable	*n*	*%*
Racial/Ethnic Background		
European American or Caucasian	98	77.2
Hispanic or Latina	5	3.9
Native American	5	3.9
African American	4	3.1
Asian American or Pacific Islander	3	2.4
Bi-Racial	2	1.6
Other / Declined to Answer	10	7.9
Substance Used Before Recovery		
Alcohol and Illicit Drugs	30	23.6
Only Illicit Drugs	28	22.0
Only Alcohol	26	20.5
Illicit and Prescription Drugs	14	11.0
Alcohol, Illicit Drugs, and Prescription Drugs	11	8.7
Only Prescription Drugs	8	6.3
Alcohol and Prescription Drugs	6	4.7
Declined to Answer	4	3.1

Procedure

This study was approved by the Florida State University Institutional Review Board. A link connecting potential participants to the informed consent and online survey was placed on the Facebook pages of consenting addiction and ED recovery organizations, as well as the researchers' pages. Friends and colleagues were invited to post the link on their Facebook pages. The link directed potential participants to a Web site describing the purpose of the study (i.e., to answer research questions pertaining to SUD and ED symptoms in an effort to increase awareness of the potential for relapse among individuals with SUD and EDs, influence the therapeutic process when working with individuals with SUD and EDs, and inform future research) and related background information on the comorbidity of EDs and SUD. Participants then clicked the link to the online informed consent page, which was obtained through the Florida State University's online survey management system.

After confirming eligibility and their understanding of the requirements of participating in the study, participants were able complete the 10 to 20 minute survey. Participants were offered a chance to be entered into a raffle to win one of two 10 dollar gift cards.

Of note, using convenience sampling and snowball sampling methods allowed individuals to self-select to participate; therefore, characteristics may not be representative of the general population of women in recovery from SUD (e.g., participants may have exhibited traits similar to those posting the study or of individuals who participate in online ED recovery organizations). Further, limitations and discussion regarding individuals who elected to not participate were not possible, as these individuals were unidentified (Creswell, 2008; Heiman, 2002).

Materials

Center for Epidemiologic Studies Depression Scale-Short Form (Andresen, Malmgren, Carter, & Patrick, 1994). The Center for Epidemiologic Studies Depression Scale-Short Form is a 10-item self-report measure designed to assess depression levels over the past 7 days. Items are scored on a 4-point Likert scale in which individuals indicate the amount of time that they have felt or behaved in a certain manner (e.g., "My sleep was restless.") over the past week (*rarely or none of the time, less than one day* to *all of the time, five to seven days*). The Center for Epidemiologic Studies Depression Scale-Short Form was used to control for depression in this study. This measure has psychometric properties similar to the original 20-item Center for Epidemiologic Studies Depression Scale (Radloff, 1977), showing high internal consistency (α = .86), high predictive validity (r = .97), high test-retest reliability (r = .85), and a negative correlation with positive affect (r = -.63). The Center for Epidemiologic Studies Depression Scale-Short Form has been validated with adult and geriatric populations, as well as with individuals with disabilities (Bradley, Bagnell, & Brannen, 2010; Miller, Anton, & Townson, 2008). The Cronbach's alpha for the present study was calculated to be .88.

Clinical Impairment Assessment 3.0 (Bohn & Fairburn, 2008). The Clinical Impairment Assessment 3.0 is a 16-item self-report measure designed to assess degree of impairment in mood and self-perception, interpersonal and cognitive functioning, and work performance due to disordered eating over the past 28 days (of note, this measure does not examine ED symptoms themselves, as interest in the relationship between SUD

recovery and the consequences one experiences related to ED symptoms was present). Items require individuals to rate the extent to which eating habits, exercising, and feelings about eating, shape, and weight affect various situations, behaviors, and feelings (e.g., "Made it difficult to eat out with others?") on a 4-point Likert scale (*not at all* to *a lot*). A score of 16 or greater indicates a high level of impairment due to ED symptoms. The Clinical Impairment Assessment 3.0 has been validated among individuals in clinical and community settings, as well as with individuals at high risk for developing EDs (Vannucci et al., 2012). This measure has been shown to have high internal consistency (α = .94 – .97), high test-retest reliability (*r* = .94), adequate construct validity (*r* = .68 – .89), and convergent validity with attitudes about disordered eating (*r* = .27 – .68; Bohn et al., 2008; Reas, Rø, Kapstad, & Lask, 2010). The Cronbach's alpha for the present study was calculated to be .95. Participants in this study were placed into groups according to their scores on the Clinical Impairment Assessment 3.0 (with significant impairment due to ED symptoms $\geq$ 16, without significant impairment due to ED symptoms $\leq$ 15; Bohn and Fairburn, 2008).

World Health Organization Qualify of Life Brief Version (WHOQOL Group, 1998). The World Health Organization Qualify of Life Brief Version is a 26-item self-report measure designed to assess an individual's quality of life over the past 28 days. Items address issues related to quality of life and health (e.g., "How much do you need any medical treatment to function in your daily life?"). Items are scored on a variety of 5-point Likert scales (e.g., *very poor* to *very good*, *not at all* to *an extreme amount*). This study used the Betty Ford Institute (2007) definition of "recovery," which suggests the use of this instrument in recovery research. As such, the "personal health" component of recovery was measured through the "Psychological Health" and "Physical Health" domain scales and the "citizenship" component of recovery through the "Social Relationships" and "Environment" domain scales. This measure has high internal consistency overall (α= .88 – .89), adequate to high internal consistency among scales (α= .66 – .84), adequate content validity (*r* = .39 – .65), and adequate criterion validity (*r* = .28 – .65; Gau et al., 2010). The Cronbach's alpha for "recovery" in the present study was calculated to be .92, with "personal health" calculated at .90 and "citizenship" calculated at .82. The World Health Organization Qualify of Life Brief Version has been validated among a variety of populations, including individuals with mental health disorders (Skevington, Lotfy, & O'Connell, 2004; WHOQOL Group, 1998).

Background and Recovery Questions. Eleven multiple-choice and fill-in-the-blank items were used to collect data on participants' age, ethnicity, education, employment, relationship status, history of substance use (i.e., acknowledgement of past drug or alcohol addiction, type of substance(s) used), and SUD recovery (i.e., if a relapse occurred, number of times a relapse occurred over the past 10 years). The question of "How long have you been in recovery from substance use disorder (e.g., alcoholism, drug abuse)?" was used to measure the "sobriety" component of recovery, according to the Betty Ford Institute (2007) definition.

Results

An independent-samples t-test was used to compare the mean number of relapses over the past 10 years among individuals with significant impairment due to ED

symptoms and individuals without significant impairment due to ED symptoms. Levene's Test for Equality of Variance for the sample was significant (p = .002), and as a result, Welch's t-statistic was calculated. Individuals with significant impairment due to ED symptoms (n = 42, M = 2.6, SD = 2.557) had a significantly greater number of relapses than individuals without significant impairment due to ED symptoms (n = 85, M = 1.54, SD = 1.842); t (127) = 2.383, p = .02 (one-tailed; see Table 2). There was a medium effect size difference in the means, Cohen's d = .476 (Cohen, 1988; Murphy & Myors, 2004). Therefore, participants with significant impairment due to ED symptoms experienced a significantly greater number of relapses from SUD over the past 10 years (difference in Ms = 1.06) than participants without significant impairment due to ED symptoms.

Table 2

Independent-Samples T-Test Comparing Mean Number of Relapses of Individuals with Significant Impairment due to ED Symptoms and Individuals without Significant Impairment due to ED Symptoms (n = 127)

Group	*N*	*Mean*	*SD*	*Mean Difference*	*Sig. (1-tailed)*
With ED Impairment	42	2.60	2.557	1.054	0.02*
Without ED Impairment	85	1.54	1.842		

Note. ED = eating disorder. *p < .05.

A Multivariate Analysis of Covariance, computed using an alpha level of .05, was used to compare mean self-reported sobriety, personal health, and citizenship (i.e., recovery) among individuals with significant impairment due to ED symptoms and individuals without significant impairment due to ED symptoms, when controlling for depression. Levene's Test for Equality of Variance for the sample was not significant for the variables of sobriety (p = .168), personal health (p = .818), or citizenship (p = .680), indicating homogeneity of variance was present for all dependent variables. The differences between the groups were revealed to be significant according to Wilks' Lambda, at F (3, 122) = 2.774, p = .044. Individuals with significant impairment due to ED symptoms were shown to have significantly lower self-reported sobriety (n = 42, M = 42.52, SD = 67.20; n = 85, M = 59.19, SD = 73.98; F (1, 124) = 5.83, p < .05), personal health (n = 42, M = 146.09, SD = 35.18; n = 85, M = 186.58, SD = 39.23; F (1, 124) = 123.867, p < .001), and citizenship (n = 42, M = 133.04, SD = 31.17; n = 85, M = 158.25, SD = 27.13; F (1, 124) = 50.293, p < .001) than individuals without significant impairment due to ED symptoms, when controlling for depression. There was a medium effect size difference in the means, partial η^2 = .064 (Murphy & Myors, 2004). Furthermore, this effect was greater than the effect of depression on recovery (partial η^2 = .618). Therefore, participants with significant impairment due to ED symptoms experienced lower current self-reported recovery from SUD (i.e., sobriety, personal health, citizenship [difference in Ms = 16.67, 40.49, and 25.21, respectively]) than participants without significant impairment due to eating disorder symptoms, when controlling for depression. See Tables 3 and 4 for further information.

Table 3

Descriptive Statistics of a Multivariate Analysis of Covariance Examining Differences in Self-Reported Sobriety, Personal Health, and Citizenship (i.e., Recovery) among Individuals with Significant Impairment due to ED Symptoms and Individuals without Significant Impairment due to ED Symptoms, when Controlling for Depression (n = 127)

Variable	*n*	*Mean*	SD
Sobriety			
With ED Impairment	42	42.52	67.20
Without ED Impairment	85	59.19	73.98
Personal Health			
With ED Impairment	42	146.09	35.18
Without ED Impairment	85	186.58	39.23
Citizenship			
With ED Impairment	42	133.04	31.17
Without ED Impairment	85	158.25	27.13

Note. ED = eating disorder.

Table 4

Multivariate Analysis of Covariance Examining Differences in Self-Reported Sobriety, Personal Health, and Citizenship (i.e., Recovery) among Individuals with Significant Impairment due to ED Symptoms and Individuals without Significant Impairment due to ED Symptoms, when Controlling for Depression (n = 127)

Effect	*Wilks' Lambda*	*F*	*P*	partial η^2
Depression	.382	65.841	.00*	.618
ED Impairment	.939	2.774	.04*	.064

Note. ED = eating disorder. *$p < .05$

Discussion

Previous research has estimated that 35% of individuals with SUD have comorbid EDs (Root et al., 2010). It was not surprising that significant impairment due to ED symptoms were seen in 33% of participants in this study ($n = 42$), without controlling or matching participants. This finding added to current research regarding frequent comorbidity of ED symptoms and SUD (Bulik et al., 1992; Root et al., 2010), as it suggested that impairment due to ED symptoms was prevalent in individuals in recovery from SUD as well.

Results supported the hypothesis that individuals with significant impairment due to ED symptoms would report a significantly greater number of relapses than individuals

without significant impairment due to ED symptoms. Results also supported the hypothesis that individuals with significant impairment due to ED symptoms would report a significantly lower level of self-reported sobriety, personal health, and citizenship (i.e., recovery) than individuals without significant impairment due to ED symptoms, when controlling for depression. These findings supported current literature, with regard to comorbidity resulting in poorer prognosis and increased relapse rates among individuals who have comorbid EDs and SUD (Keel et al., 1999; Krug et al., 2009); importantly, it expands these negative implications to comorbidity of SUD and impairment due to EDs (i.e., not necessarily diagnosable EDs or ED symptoms). Therefore, not only does the amount or intensity of ED symptoms affect recovery from SUD disorder, but perceived impairment may as well (i.e., regardless of how few or many ED symptoms are present, greater impairment may impact recovery). Of note, the effects of impairment due to ED symptoms on SUD recovery was greater than the effects of depression on SUD recovery.

These results supply a variety of implications for clinicians and treatment facilities working with women with SUD as well as comorbid SUD and ED symptoms and related impairment. The findings of this preliminary study align with previous research suggesting that individuals with dual diagnosis or symptoms of multiple disorders tend to experience an increased number of relapses (Drake & Mueser, 2000; Krug et al., 2009). The results also support previous research suggesting that ED symptoms are negatively related to quality of life (Engel, Adair, Hayas, Abraham, 2009), or "recovery" as defined by the Betty Ford Institute. Perhaps having symptoms of both disorders encourages symptoms of each disorder to progress or be maintained. Awareness of this is important, as counselors need to be able to assist individuals with comorbid symptoms of SUD and EDs in recovering from both disorders simultaneously; integrated treatment (i.e., both disorders treated concurrently) has been shown to lead to the best prognosis in persons with a dual diagnosis of SUD and other mental health disorders (Drake, Mueser, Brunette, & McHugo, 2004). Only 17% (n = 51) of 351 publically-funded addiction treatment providers that provided structured outpatient treatment or treatment of a greater level were found to treat EDs along with SUD (Gordon et al., 2008). This statistic highlights the need for clinicians and treatment facilities to be knowledgeable about and implement the most effective forms of treatment for comorbid SUD and EDs, as this study found that individuals with impairment due to ED symptoms experienced greater relapse from SUD as well as lower quality of life. Further highlighting this need is that comorbidity results in an increased mortality rate (Keel et al., 2003).

Often women in therapy for issues other than EDs do not disclose ED symptoms and resulting impairment (Barth, 2008). Therefore, clinicians should inquire about ED symptoms and impairment, rather than assume that individuals will be forthcoming. These results imply that clinicians who work with SUD can encourage individuals with significant impairment from ED symptoms to continue psychotherapy, join a support group, or remain in contact with the clinician after they enter recovery and for a long-term period (e.g., more than 10 years), as these results indicate that having significant impairment from ED symptoms may make staying in a state of SUD recovery more challenging. Clinicians can help individuals minimize the tendency to cope with the symptoms of and impairment due to EDs by exhibiting behaviors characteristic of SUD.

This can be done by providing individuals with suggestions for alternative coping strategies, as well as guiding and encouraging individuals to practice using these novel strategies. Further, these results imply that discussing relapse prevention among individuals with comorbid impairment from ED symptoms and SUD is also important, as an increased rate of relapse from SUD was found when impairment from ED symptoms was present. The finding that impairment due to ED symptoms had a greater effect on SUD recovery than depression further indicates this need (i.e., whether or not depression is present, impairment due to ED symptoms may influence recovery from SUD).

Additionally, an implication derived from the lower quality of life found among individuals with comorbid SUD and impairment from ED symptoms, is the need for clinicians to assist clients in increasing personal health (i.e., psychological health, physical health) and citizenship (i.e., social relationships, environment) and, therefore, increasing recovery. This may be done through encouraging clients to remain in therapy or attend a support group, exercise and eat a balanced diet (e.g., by referring clients to a nutritionist and exercise physiologist), participate in activities that allow for the development of friendships, maintain friendships, and volunteer in a role they find meaningful. By doing so, as well as by maintaining sobriety, clients may experience an increase in quality of life.

Finally, the finding that relapses from SUD over a 10-year period were greater among individuals with impairment due to ED symptoms implies that conceptualizing recovery from SUD as a lifelong process may be helpful for clients if a relapse occurs. Helping clients view relapse as a learning experience, which can be successfully overcome, allows them to avoid discouragement and to continue striving toward abstinence (DiClemente, Holmgren, & Rounsaville, 2011).

Limitations

This study had several potential limitations. A cross-sectional design was used, preventing causal relationships from being inferred. Furthermore, utilizing a dichotomous categorical variable added the threat of low statistical power; an *a priori* power analysis was completed in an effort to decrease this limitation. The use of electronic surveys and Facebook presented high selection bias. Individuals who did not have computer access (e.g., individuals currently in residential treatment centers) or a Facebook account did not have the opportunity to participate. As participants completed this survey at undesignated locations and times, participants may have been distracted by external factors. Also, participants recruited via convenience sampling may not be representative of the general population being examined. Individuals not significantly experiencing ED or SUD symptoms may not have felt the need to participate in an effort to inform future research and interventions.

Another limitation is that participants were simply asked to state how many times they have experienced relapse and no validity check was completed. Further, if one's definition of “recovery” or “relapse” did not match with the definition used for the purpose of this study, symptoms and diagnoses may have been inconsistent across participants. Controlling for severity and duration of substance use would have been valuable, as having experienced the disorder for a longer period of time or to a higher degree may have caused recovery to be more challenging (e.g., Gilbertson, Prather, & Nixon, 2008). This may have been the cause of relapse, as opposed to impairment from

ED symptoms influencing relapse. The examination of the impact of past 28-day impairment due to ED symptoms on past 10-year relapse could also be examined in the reverse relationship (i.e., history of relapse predicting more recent impairment).

Finally, a significant limitation of this study was that the Clinical Impairment Assessment 3.0 (Bohn & Fairburn, 2008) did not assess ED symptoms themselves, but instead measured impairment from ED symptoms. It may be that the impact of ED symptoms on SUD recovery increases with the quantity of ED symptoms, regardless of the impact the symptoms are having. Due to the limitations of this measure, the implications are limited to only those experiencing impairment from ED symptoms, regardless of severity of the symptoms.

Suggestions for Future Research

Future research should expand upon this preliminary study, with a focus on the specific effects that ED symptoms and impairments have on SUD symptoms. This focus will help to improve counselors' ability to treat individuals who exhibit comorbid ED and SUD symptoms. Future research should use a longitudinal design or validity checks to more accurately measure sobriety and relapse. Future research should use measures with strong psychometric properties that provide a specific definition of "relapse" and not solely rely on a self-report measure of relapse. Relapse prevention for individuals with SUD who have ED symptoms and resulting impairment should also be explored. Furthermore, the timeline of recovery from SUD should be examined. By knowing when specific changes may occur over the course of recovery (e.g., if or when recovery reaches a ceiling for improvement), counselors can assist individuals in developing realistic expectations regarding recovery and address feelings and events that may happen. Future research should expand this study to include male participants and a more racially and ethnically diverse sample.

Research should examine the relationship between recovery from SUD and ED symptoms or diagnosis, as opposed to only impairment from ED symptoms. A measure designed to diagnose SUD and ED symptoms would be beneficial. It may be that a relationship is present between ED symptoms and recovery from SUD, regardless of the impact that the ED symptoms are having on one's life. Also, a variety of factors, in addition to depression, affect EDs and SUD, such as anxiety (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004) and social support (Venner et al., 2006). Future research should examine any difference in the influence of these factors on recovery from SUD, both with and without the presence of impairment from ED symptoms. This information may be important for counselors working with individuals with dual diagnoses or symptoms to be aware of in order to provide the most effective treatment possible.

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Note: This paper is part of the annual VISTAS project sponsored by the American Counseling Association. Find more information on the project at: http://www.counseling.org/knowledge-center/vistas