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Disordered Eating and Risky Sexual Behaviors in College Women

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Disordered eating (DE) can negatively impact college students' psychological and physical health; it is crucial to understand DE and its connection to other disruptive and co-occurring disorders. This study investigated if DE behaviors increase the probability of one such issue, risky sexual behaviors (RSB). Participants included 240 single female college students. Multivariable logistic regression analysis indicated a positive correlation between DE and RSB, wherein 44.65% engaged in both DE and RSB ($p \leq 0.001$). Compared to students who did not engage in DE, those who did had 3.42 times higher odds of engaging in RSB. Implications are provided for college campuses.

Keywords: disordered eating, risky sexual behavior, college women, mental health

Introduction

With the prevalence of disordered eating (DE) negatively impacting college women's psychological and physical health, it is crucial to understand DE in relation to other co-occurring mental health disorders. One such example explored in this study are risky sexual behaviors (RSB), as these behaviors are prevalent and inherently threatening to college women's well-being. RSB increases a student's chances of unplanned pregnancy, STIs, and dropping out. To add to the existing literature and build awareness of co-occurring issues that clinicians may encounter when working with college women, this study investigated whether DE behaviors increase college women's probability of engaging in RSB.

Disordered Eating: Prevalence and Health Effects

In 2018, an estimated 16 million people of all ages and genders met clinical criteria for an eating disorder (ED; [Our World Data, 2018](#)), and many more cases are unrecorded or sub-clinical. ED's have the highest mortality rate of any mental disorder ([Smink, van Hoeken, & Hoek, 2013](#)), are comorbid with mood disorders ([Ulfvebrand, Birgegård, Norring, Högdahl, & von Hausswolff-Juhlin, 2015](#)), and severely impact a person's quality of life ([Solmi, Hatch, Hotopf, Treasure, & Micali, 2014](#)). ED's are most prevalent in college students ([Volpe et al., 2016](#)), making intervention during young adulthood a critical period ([Liechty & Lee, 2013](#)).

Eating disorders include, but are not limited to, Anorexia Nervosa, Bulimia Nervosa, and Binge-Eating Disorder. According to the Diagnostic and Statistical Manual of Mental

Disorders (DSM; American Psychiatric Association [APA], [2013](#)) Anorexia Nervosa (AN) includes restricting intake resulting in lower body weight, extreme fear of gaining weight, body image disturbances, and denial of seriousness of low body weight ([APA, 2013](#)). Bulimia Nervosa (BN) criteria include eating large amounts of food within a short, two-hour period and then participating in compensatory behaviors such as vomiting, laxatives, exercise, or diet pills to expel the food or calories; these behaviors are influenced by body shape and weight ([APA, 2013](#)). Binge-Eating Disorder (BED) includes recurring episodes of eating large quantities of food in a short period of time, often rapidly and in secret; these behaviors are often associated with a lack of self-control and subsequent shame ([APA, 2013](#)). It is important to understand eating disorders, as disordered eating behaviors are a sub-clinical version of these disorders.

Disordered eating (DE) is characterized by unhealthy weight control behaviors similar to AN, BN, and BED but the symptoms do not meet full criteria for an ED. DE behaviors can include dieting, using laxatives, diuretics, excessive physical activity, purging after meals, liquid diets,

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fasting, searching weight-loss techniques, and using weight-loss program. In the DSM (APA, 2013), Other Specified Feeding or Eating Disorder may be applied to those who participate in disorder eating behaviors. DE is considered a precursor to ED behaviors and can result in significant mental distress that can negatively impact psychological and physiological well-being, particularly for college students (Galmiche, Déchelotte, Lambert, & Tavolacci, 2019). This study will focus on DE behaviors, as the authors hope to contribute to the prevention and early intervention of those behaviors before they evolve into diagnosable ED's.

It is no secret that college women are susceptible to comparing themselves to the public figures whose presences amass social media outlets (Perloff, 2014) and those who surround them on college campuses. This comparison, namely to the ideal beautiful body, leaves little room for flaws; yet, this expectation of perfection is far from obtainable. This quandary, however, does not keep young women from trying to obtain the perfection that amasses social media (Fardouly & Vartanian, 2015) and whose presence can seem predominant on college campuses. These social comparisons on social media and on college campuses can have a negative impact on women's self-esteem and body image and can influence DE behaviors.

In a 10-year longitudinal study following 2,287 adolescents to college (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011) found that over half of the female adolescents who exhibited DE behaviors in adolescence carried them into adulthood. Solmi et al. (2014) also found that people with DE have higher odds of experiencing anxiety, drug-use, alcohol abuse, and suicidal ideation. DE is commonly associated with dysfunctional weight concerns, feelings of weight importance, depressive symptoms, and body dissatisfaction (Loth, MacLehose, Bucchianeri, Crow, & Neumark-Sztainer, 2014). Such symptoms are significantly connected to lower self-esteem and the desire to attain a more aesthetic body shape (Laporta-Herrero, Jáuregui-Lobera, Barajas-Iglesias, & Santed-Germán, 2016). This body surveillance and preoccupation with weight can take time away from life accomplishments, maintaining social relationships, feeling a sense of belonging, and thriving in work and school (Ackard, Richter, Egan, Engel, & Cronemeyer, 2013). Physically, underweight and overweight bodies (a) experience higher strain on cardiovascular, gastrointestinal, neurological, and endocrine systems; (b) report lower health-related quality of life (Ágh et al., 2016); and (c) report lower GPA, energy, and concentration (Maroto, 2013).

DE Behavior: Diet Pills and Liquid Diets. Dieting is a prevalent kind of DE behavior. In a study assessing dieting patterns among adolescents and young adults, Liechty and Lee (2013) found that 27% of women and 11% of men reported dieting to lose weight in young adulthood. Dieting is a broad reaching term that encompasses any behavior

used to reduce body weight, including the use of diet pills or maintaining liquid-only diets. Diet pills are associated with increased heart rate, blood pressure, kidney problems (Weissman, 2001), and are considered a form of DE. In a 10-year longitudinal study on DE, Neumark-Sztainer (2011) considered diet pills an extreme form of weight control behavior. Likewise, liquid diets (or substituting with liquid meal replacement) are also categorized as DE.

DE Behavior: Laxatives and Vomiting. Laxatives and vomiting are considered DE purging compensatory behaviors that mimic the psychopathology found in ED. Numerous studies have categorized compensatory behaviors, such as laxative and self-induced vomiting, as a form of DE (Greenleaf, Petrie, Carter, & Reel, 2009; Neumark-Sztainer et al., 2011; Stephen, Rose, Kenney, Rosselli-Navarra, & Weissman, 2014; Kelly-Weeder, 2010). Furthermore, the American College Health Association–National College Health (ACHA) Assessment II (2013), which collected data from 289,024 students across 223 U.S. universities, categorized these behaviors as DE. The official ED Diagnostic Scale (Stice, Fisher, & Martinez, 2004) also includes laxative use and self-induced vomiting as disordered eating behaviors. Finally, Stephen et al. (2014) and Weeder et al. (2010) found that college students who participate in these behaviors perceive themselves as overweight, report higher depression scores, and lower self-esteem.

DE Behavior: Excessive Physical Activity. Compared to other compensatory behaviors, exercise is considered a part of a healthy lifestyle, which complicates the symptom. Exercise becomes disordered when exercise is used with the deliberate intent to lose weight or maintain weight-loss. Among college students, exercise is the most common weight control method, with nearly 73% of students reporting exercising to lose weight (Kelly-Weeder, 2010); this is particularly prevalent among college athletics. Among 204 college athletes, 25.5% showed signs of DE and were more likely to use exercise as a means of controlling body weight over other DE behaviors (e.g., vomiting, dieting, using laxatives, or diuretics; Greenleaf et al., 2009).

DE Behavior: Fasting. Restricting caloric intake to levels below energy requirements through fasting, skipping meals, or reducing portion sizes is a common DE behavior (Schaumberg & Anderson, 2016) prevalent among college students. A study measuring DE among college students (n=526), found that nearly 23% used fasting as a means to lose weight (Kelly-Weeder, 2010). Dietary restrictions such as fasting are considered to be a significant risk factor in the development and maintenance of DE behaviors and associated cognitions (Puccio, Kalathas, Fuller-Tyszkiewicz, & Krug, 2016; Stice, Davis, Miller, & Marti, 2008). Stice et al. (2008) found that fasting is a stronger risk factor for bulimic pathology than self-reported dieting, and Puccio et al. (2016) found fasting behaviors increase disordered bingeing

behaviors. Fasting, when not associated with cultural norms or traditions, is a form of DE that, if left untreated, may develop into a diagnosable ED (Schaumberg & Anderson, 2016).

DE behaviors such as dieting, purging, excessive exercising, or fasting pose a threat to the well-being of college students. With the prevalence and negative outcomes associated with DE, it is incumbent upon mental and medical health care professionals to assess not only DE among students, but also be mindful of other behaviors and mental health symptoms that might negatively impact well-being. One example that is also prevalent among college students includes Risky Sexual Behaviors (RSB). RSB can increase a student's chances of contracting adverse diseases and negatively impact physical and mental health (Fischer & le Grange, 2007; Ramrakha, 2000). As such, it is important for university health providers to understand, assess, and intervene with students participating in RSB. While there are risks associated with all genders, the primary focus of this study is college women; as such, the associated risks are framed specifically as they relate to women.

Risky Sexual Behaviors: Prevalence and Mental & Physical Health Effects

RSB are prevalent among college women and have the potential to induce unwanted consequences to a student's mental health, physical well-being, and parental status. In 2016, the Centers for Disease Control and Prevention (CDC; 2016) found that nearly half of the 20 million people diagnosed with sexuality transmitted infections (STI) each year are young people aged 15–24 years, many of which come from college students who underestimate the severity of risky sex (CDC, 2016). Additionally, nearly one in 10 dropouts among female students are because of unplanned births (Prentice, Storin, & Robinson, 2012). RSB can include having sex under the influence of drugs or alcohol, exchanging sex for money, participating in sexual acts without contraception or with inconsistent use of contraception, contracting STIs, using the morning-after pill, and abortion. These behaviors and outcomes are shown to have a negative impact on a person's mental and physical well-being and may be more prevalent among those with a previous psychiatric diagnosis (Bennett, 2000).

RSB: Sex Under the Influence of Drugs and Alcohol. Researchers continue to report that adolescents in the U.S. comprise approximately 50% of all new STI cases each year (Shannon & Klausner, 2018; Weinstock, Berman, & Cates Jr, 2004). Substance use has been associated with increased STI risk (Swartzendruber, Sales, Brown, DiClemente, & Rose, 2013), and has been widely correlated to disinhibiting decision making (Yan, Chiu, Stoesen, & Wang, 2007). Bryan et al. (2007) noted that women were more likely to report using alcohol prior to engaging in RSB and Hayaki

et al. (2018) found the presence of alcohol and marijuana increased a woman's chance of engaging in condomless sex by 3.39 times. Brown et al. (1997) has long understood that co-occurring clinical disorders (i.e., ED) increase a person's chance of substance use related RSB.

RSB: Sexual Exchange for Money. In addition to drugs and alcohol, sex in exchange for money can also be considered an RSB. There is a historical propensity for sex workers to experience physical violence and unwanted pregnancy. While there has been a considerable shift in culture and stigma surrounding sex in exchange for money, the World Health Organization (WHO) defines violence against sex workers (or people who exchange sex for money) as physical, sexual, and emotional violence. Physical violence can result in death or injury; sexual violence can include degradation, rape, gang rape, or sexual harassment; and emotional violence encompasses humiliation, belittlement, or being threatened (World Health Organization, 2013). Sex work has also been linked to unwanted pregnancy, abortion, and increased risk of contracting human immunodeficiency virus (HIV), STIs (Jewkes, Dunkle, Nduna, & Shai, 2010) as well as depression, anxiety, substance abuse, and PTSD (Golding, 1999), all of which are common co-occurring disorders among ED's (Ulfvebrand et al., 2015). Edwards, Irtani, and Hallfors (2006) reported that 3.5% of young women had exchanged sex for money and that 20% of those women had been diagnosed with an STI. Roberts et al. (2010) added that between 3.5% and 11.1% of participants in their mixed methods study reported likelihood of participating in the sex industry to pay for their college education, if needed.

RSB: Inconsistent or Absent Contraception & STIs. In addition to sex work, inconsistent or absent contraception is also considered RSB. Recent estimates in the U.S. indicate that 51% of all pregnancies are unplanned and are highest among women 18–24 years old (Finer & Zolna, 2014). Only 5% of unplanned pregnancies are due to contraceptive failure, while the remaining 95% occur among women who do not, or inconsistently use contraception (Gold, Sonfield, Frost, & Richards, 2009). Research indicates that attitudes, behaviors, and intentions toward STI testing indicate a favorable and positive shift, with more people indicating social acceptance, self-efficacy, and confidence in being tested (Martin-Smith, Okpo, & Bull, 2018). The CDC urges that consistent and correct use of latex condoms and continued testing can reduce the risk of STIs and HIV (CDC, 2013).

RSB: Morning-After Pill and Abortion. The use of medication designed to prevent pregnancy after unprotected sex is an indicator of RSB. Medications, such as the morning-after pill, have been linked to an increased chance of a woman having STIs (Wood, Drazen, & Greene, 2012). The misuse of medication like the morning-after pill has also been linked to relapse among people who struggle with bulimia, anorexia, and depression (Population Research In-

stitute, 2004). Along this same line, abortion is also considered another indicator of RSB. Research indicates that the majority of abortions are linked to unplanned pregnancies that stem from RSB (Alan Guttmacher Institute, 2006) and that high rates of abortion have been correlated with increased drinking and lower socioeconomic status (Abdala et al., 2011); both increase RSB and lower contraceptive use (Dehlendorf, Rodriguez, Levy, Borrero, & Steinauer, 2010). Statistics remain consistent, as the CDC (2018) reported that women in their twenties account for the majority (57.7%) of abortions in the U.S. and most women who receive abortions (83%) are unmarried and 33% of abortions are performed on college-aged women 20 to 24 years old (Jones, Darroch, & Henshaw, 2002).

With the prevalence of DE and RSB among college women, and the negative impact these behaviors can have on women's physical and mental health, it is necessary to investigate the relationship among these variables in order to provide recommendations and inform best practices for clinicians and campus health professionals.

Purpose and Hypothesis

Disordered eating behaviors (i.e., using diet pills, liquid diets, purging, excessive physical activity, fasting) and risky sexual behaviors (i.e., participating in sex under the influence of drugs or alcohol, exchanging sex for money, inconsistent or absent contraception, use of the morning-after pill or abortion) have the potential to induce unwanted consequences, yet are common behaviors among college women. Such behaviors can impact students' academic success, physical health, and mental well-being. While several studies have independently examined DE and RSB among college students, there are no known studies assessing whether DE behaviors increase co-occurring RSB among college women. To add to the literature and build awareness of the co-occurring issues clinicians may encounter when working with college women, this study investigated whether DE behaviors increase college women's probability of engaging in RSB. Based on the literature, we hypothesized that DE and RSB will be statistically significantly positively correlated among single college women.

Methods

Instrument

Data was used from a comprehensive health behavior survey—Our Campus, Our Health (OCOH)—delivered at a mid-sized university in the Southeast. OCOH is a 92-item instrument modified for the college population from the CDC's Youth Risk Behavioral Surveillance System (YRBSS) for high school students. Given the change in population, efforts were made to ensure validity and reliability by conducting cognitive interviews with college students, pilot testing the

instrument, and having a panel of content experts annually review the respective health sections. OCOH measures health behaviors related to mental and emotional health; sexual health; alcohol, drug, and tobacco use; access to healthcare; nutrition and food security; and skin and sun safety.

Procedures

A random sample of undergraduate and graduate students at the institution received an email invitation to participate in the voluntary self-administered survey online over a four-week period during the fall semester. The survey was delivered through Qualtrics Survey Software (Qualtrics, Provo, UT) by the Institutional Research Office as directed by the IRB to protect participant privacy. All responses were de-identified prior to analysis.

Participants

The current study used OCOH data collected in 2014; a total of 770 responses were collected. A total of 79 participants were excluded from the analysis due to missing data. A total of 176 male participants and a total of 275 female participants who were married or in a committed relationship were excluded from the analysis, resulting in a final sample size of 240. The sample size can detect at least a 1% difference in proportions with a power of at least 0.8 using a 2-sided test and a 5% type I error (Hsieh, Bloch, & Larsen, 1998; Katz, 2011).

Measures

The primary independent variable was disordered eating behavior. A total of six items that were previously identified in the literature as being associated with DE were used to develop a composite score. The six items were assessed using the following question: "which of the following methods have you used to lose weight?" Options included: laxatives, diet pills, increased physical activity, vomiting after meals, liquid diets, and fasting. Answer options included "No" and "Yes." Any "Yes" response indicated participants' engagement in DE behavior and all "No" responses indicated a lack of engagement.

The primary outcome variable was risky sexual behavior. A total of nine items that were previously identified in the literature as being associated with RSB were used to develop a composite score where any "Yes" response indicated participants' engagement in RSB and all "No" responses indicated a lack of engagement. One item was reverse scored to be consistent with the negative direction of all other questions. The nine items were assessed using the following questions: "Have you used a preventive method when engaging in any type of sexual behavior?"; "The last time you had sexual intercourse, you or your partner did not use a condom?";

“The last time you had sexual intercourse, were you under the influence of any drugs/alcohol?”; “In the past 3 months, have you had sexual intercourse while under the influence of drugs/alcohol?”; “Have you ever engaged in sexual acts in exchange for money, drugs, alcohol, or other goods?”; “The last time you had sexual intercourse, what type of preventative method did you or your partner use to prevent pregnancy?”; “Have you ever been diagnosed with a sexually transmitted disease/infection?”; “Have you ever taken the morning-after pill?”; and “My pregnancies resulted in?”.

Analysis

The findings are summarized using frequencies and percentages. This study examined 240 single female college students who attended a U.S. university in 2014. The data cleaning, merging, and analyses were performed in Stata 14SE. To examine the relationship between DE behavior and RSB, a multivariable logistic regression analysis was used to calculate odds ratios (OR) for the binary risky sexual behaviors variable. The odd is the ratio of the likelihood that an event of interest occurs and the likelihood of that event not occurring (Bland, 2000). Participant age, ethnicity/race, and sexuality were controlled and all variables were tested for multicollinearity. Akaike’s and Schwarz’s Bayesian information criteria were used to determine model fit. A sensitivity analysis was also conducted on 275 female college students who were either married or in a committed relationship, to examine the relationship between DE behavior and RSB. The sensitivity analysis ensures the impact of the relationship and operationalization of the selected risky behaviors.

Results

Results from both descriptive statistics and multivariable logistic regression analysis are provided. For all single, female college students ($n=240$), 66.25% (159) reported engaging in DE behaviors. Over 63% used increased physical activity as a way to lose weight. Of the 240 college students, 35.42% (85) reported engaging in RSB; the most common types of RSB reported were not using a condom and taking the morning-after pill. Only one student reported engaging in sexual acts in exchange for money, drugs, alcohol, or other goods and less than 3% reported that their pregnancy resulted in an abortion. Descriptive statistics also indicated that 44.65% of single female college students engaged in both DE behavior and RSB ($p \leq 0.001$). The majority of students who engaged in RSB were students between the age of 18 and 20 (38.10%), non-Hispanic White (78.82%), and heterosexual (90.59%) (See Table 1).

Multivariate Analysis

Table 2 summarizes the findings from the multilevel logistic regression model regarding the influence of DE behaviors

on RSB, adjusting for student characteristics. Compared to students who did not engage in DE behaviors, those who did engage in DE behaviors had 3.42 (95% CI:1.68,6.95) times higher odds of reporting engagement in RSB. Additionally, compared to 18-20-year-olds, 21-23-year-olds and 24-26-year-olds had 2.32- and 2.76-times higher odds to also report engagement in RSB, respectively. Lastly, when compared to non-Hispanic Whites, Asians had 73% decreased odds of engagement in RSB.

Results from a sensitivity analysis (see Table 3) highlight the lack of relationship between DE behaviors and RSB among female college students who were either married or in a committed relationship. The sensitivity analysis indicates that our study’s logistic regression and two composite measures for risky behaviors are accurately constructed.

Discussion

The purpose of this study was to investigate whether disordered eating behaviors (i.e., using diet pills, liquid diets, purging, excessive physical activity, fasting) increase single college women’s probability of engaging in risky sexual behaviors (i.e., participating in sex under the influence of drugs or alcohol, exchanging sex for money, inconsistent or absent contraception, use of the morning-after pill or abortion). Results indicated that DE behavior involvement is significantly correlated with RSB. Initiatives for college counseling centers and student health services are outlined to assist universities in better recognizing, preventing, and addressing DE and RSB concerns.

Implications for College Campuses

A critical component of prevention and tertiary intervention on college campuses is the incorporation of screenings for DE and RSB at student health facilities (SHF). Along with providing critical health services for students who might otherwise lack access, SHF also interface with students struggling with mental and emotional concerns. As such, SHF can screen students and provide appropriate referrals for students struggling with DE or RSB. SHF can implement checklist assessments for all students seeking services that screen for DE and RSB. For example, a brief and inclusive assessment for ED is the Eating Attitudes Test-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982); for RSB, the Sexual Risk Survey is a good option (Turchik & Garske, 2008). It is also important for professionals to look beyond obvious symptoms (e.g., appearing underweight) and be attuned to student’s disclosures that might indicate a need for further assessment. For example, tracking student comments about the need to “work-off” or “earn” meals or discussing excessive calorie counting can aid SHF in better assessing and treating the complexities of DE.

These preliminary assessments could indicate if additional DE or RSB assessments and referrals are warranted. Ul-

Table 1
Descriptive Statistics of Single Female College Students Across Disordered Eating Behaviors

	Risky Sexual Behavior		Total %(n)	Missing %(n)
	No %(n)	Yes %(n)		
Disordered eating behaviors				0(0)
No	82.72(67)	55.35(88)	64.58(155)	
Yes	17.28(14)	44.65(71)	35.42(85)	
Age				1.88(10)
18-20 years old	58.82(90)	38.10(32)	51.48(122)	
21-23 years old	23.53(36)	36.90(31)	28.27(67)	
24-26 years old	9.8(15)	15.48(13)	11.81(28)	
27-29 years old	2.61(4)	1.19(1)	2.11(5)	
30-32 years old	3.92(6)	2.38(2)	3.38(8)	
33-25 years old	0.65(1)	2.38(2)	1.27(3)	
36+ years old	0.65(1)	3.57(3)	1.69(4)	
Race/Ethnicity				0.19(1)
Non-Hispanic White	65.81(102)	78.82(67)	70.42(169)	
African American	8.39(13)	9.41(8)	8.75(21)	
Hispanic	7.1(11)	3.53(3)	5.83(14)	
Asian	12.26(19)	4.71(4)	9.58(23)	
Other	6.45(10)	3.53(3)	5.42(13)	
Sexual Orientation				1.32(7)
Heterosexual	98.68(149)	90.59(77)	95.76(226)	
Homosexual	0.66(1)	4.71(4)	2.12(5)	
Other	0.66(1)	4.71(4)	2.12(5)	

timately, integration of health and counseling services on college campuses arguably results in better detection of a wide variety of disorders (Alschuler, Hoodin, & Byrd, 2008); however, students may feel more comfortable or familiar utilizing SHF than counseling centers. Therefore, incorporating mental health screenings in SHF can create a prime opportunity to screen for DE and RSB symptoms that indicate the need for referrals to appropriate services.

In addition to being referred to the counseling center, students who indicate engagement in DE might also benefit from services rendered from a multiple-disciplinary team. Specifically, the American Counseling Association, American Psychological Association, and the Accreditation Council for Education in Nutrition and Dietetics all suggest that treatment for DE should include the integration of a nutritionist during the physical and mental health counseling processes. Given the prevalence of DE developing into a diagnosable ED, incorporating nutritionists in health and counseling centers will engender best-practice interdisciplinary staff teams wherein more robust and evidence-based treatment plans can be executed. In turn, this integration will aid health services and counseling centers in preventing the development of more severe and life-threatening clinical diagnoses among their students.

Lastly, there are several creative interventions that college counseling centers can deploy on campus when treating DE

and RSB. Results of this study indicated that college women aged 21-23-year-olds were more likely to demonstrate DE behaviors than any other age group in this study. Traditionally, this age group encompasses third- and fourth-year students who have already established their friend groups, enrolled in extracurricular club activities, or joined Greek organizations. Having these established social networks, coupled with peer pressure and body self-esteem, might increase a young single woman's engagement in RSB (Henry, Schoeny, Deptula, & Slavick, 2007; Lieberman, Gauvin, Bukowski, & White, 2001). Additionally, the increased stress associated with third- and fourth-year academics might also increase DE behavior. Costarelli and Patsai (2012) found that DE behaviors among sorority members were highest during academic examination periods. It is critical that university counselors are mindful of the factors that might precipitate DE and RSB and intervene during critical periods. For example, university counselors can attend sorority and extracurricular meetings and provide specific information about self-esteem, body image, body shame, social comparison, reframing, adaptive coping strategies, help seeking behaviors, and prompt important conversation about DE and RSB.

For clinicians working one-on-one with students struggling with DE and RSB, art therapy techniques (e.g., collages, expressive drawing, painting) are proven creative interventions that can address self-esteem and self-worth (Rust,

Table 2
Multivariable Logistic Regression of Single Female College Students

	Risky Sexual Behaviors	
	OR	95% CI
DE behaviors (Ref:No)	3.42***	[1.68, 6.95]
Age (Ref:18-20)		
21-23	2.32*	[1.16, 4.66]
24-26	2.76*	[1.07, 7.16]
27-29	0.81	[0.08, 8.20]
30-32	0.92	[0.17, 5.08]
33-25	4.26	[0.29, 62.61]
36+	9.48	[0.81, 110.51]
Race/Ethnicity (Ref: NHW)		
African American	0.66	[0.23, 1.92]
Hispanic	0.36	[0.09, 1.42]
Asian	0.27*	[0.08, 0.93]
Other	0.63	[0.14, 2.72]
Sexual orientation (Ref: HET)		
Homosexual	3.14	[0.27, 36.15]
Other	2.63	[0.27, 25.26]
Observations (n)	234	
Akaike Information Criterion	293.76	
Bayesian Information Criterion	342.13	

Note: n=240, DE = Disordered eating, HET = Heterosexual, NHW = Non-Hispanic White, OR = Odds ratio, * p<0.05, ** p<0.01, *** p<0.001

Table 3
Multivariable Logistic Regression of Married/Committed Relationship Female College Students

	Risky Sexual Behaviors	
	OR	95% CI
DE behaviors (Ref:No)	1.33	[0.72, 2.43]
Age (Ref:18-20)		
21-23	2.53*	[1.19, 5.35]
24-26	1.98	[0.86, 4.56]
27-29	6.09*	[1.29, 28.73]
30-32	3.57	[0.73, 17.56]
33-25	–	–
36+	6.72*	[1.44, 31.32]
Race/Ethnicity (Ref: NHW)		
African American	3.85	[0.85, 17.41]
Hispanic	1.55	[0.48, 5.02]
Asian	0.94	[0.24, 3.72]
Other	0.89	[0.21, 3.74]
Sexual orientation (Ref: HET)		
Homosexual	1.04	[0.10, 10.55]
Other	1.03	[0.27, 3.93]
Observations (n)	275	
Akaike Information Criterion	294.04	
Bayesian Information Criterion	341.05	

Note: n=240, DE = Disordered eating, HET = Heterosexual, NHW = Non-Hispanic White, OR = Odds ratio, * p<0.05, ** p<0.01, *** p<0.001

2000). Additionally, providing workshops that focus on increasing self-worth, impulse control, assertiveness, and psychoeducation about using substances while participating in sexual activities may prove particularly helpful for students struggling with DE and RSB (Ackard, Henderson, & Wonderlich, 2004; Raykos, McEvoy, Carter, Fursland, & Nathan, 2014; Shea & Pritchard, 2007; Weinhardt, Carey, Carey, & Verdecias, 1998; Winters, Botzet, Fahnhorst, Baumel, & Lee, 2008). Finally, therapeutic referrals including equine-assisted therapy, yoga, and dance therapies have been proven effective when working with DE struggles (Klein & Cook-Cottone, 2013; Krantz, n.d.; Lac, Marble, & Boie, 2013). As such, counseling centers should investigate local referral resources.

Recommendations for Future Research

To address a limitation of the current study, it is recommended that future researchers use specific weight-related and RSB measures in future studies. It would also be worthwhile for future researchers to explore the experiences of young women on campuses and gain insight regarding stressful life events that may contribute to the development of and protection against DE behaviors, this could be done by utilizing qualitative and longitudinal methods. Examining life events can aid practitioners in developing and imple-

menting targeted interventions to increase well-being among vulnerable college populations. It would also be worthwhile to replicate this study and assess and control for impulsivity, as there may be a relationship between impulsivity, DE, and RSB. It would also be helpful for future researchers to collect data about campus culture and practices (e.g., number of counselors on campus, information about mental health programming, implementation of interdisciplinary teams, student health facilities response patterns to students struggling with DE and RSB, community referral practices) that could help identify systemic factors that catalyze or mitigate the risk of DE and RSB among college students. Lastly, exploring the feasibility and effectiveness of implementing specific DE or RSB assessments in student health facilities may expose the realities, benefits, and setbacks of this practice.

Limitations

There are several limitations that exist in this study. Data was gathered from a 2014 survey that collected information about student's global health (i.e., health behaviors related to mental and emotional health; sexual health; alcohol, drug, and tobacco use; access to healthcare; nutrition and food security; and skin and sun safety). The survey was not specifically intended to measure DE or RSB in relation to

one another; as such, the survey did not include all criteria or symptomology related to all ED and RSB. It did, however, include a robust list of DE and RSB that can inform future research and clinical practice. Additionally, the data were collected from people who attended college and therefore might not be representative of all adults. However, the results are generalizable to women on college campuses. Furthermore, although the study was anonymous, self-report bias may impact the results. Also, literature suggests that increased stress during periods of academic testing may increase adverse DE behaviors. The survey was distributed over a four-week period during the fall semester; it is unknown when individual participants completed the survey and what academic stressors they were experiencing at the time of completing the survey. Those stressors may have influenced heightened or lowered DE behaviors. Finally, impulsivity might contribute to DE and RSB; the survey utilized did not assess for or control impulsivity. The results of this study must be interpreted while considering these limitations.

Conclusion

The college years are a critical period for developing and intervening with DE behaviors. To add to the existing literature and build awareness of co-occurring symptomology and challenges faced by college women, this study explored whether or not DE (i.e., using diet pills, liquid diets, purging, excessive physical activity, fasting) is a possible indicator of engagement in RSB (i.e., participating in sex under the influence of drugs or alcohol, exchanging sex for money, inconsistent or absent contraception, use of the morning-after pill or abortion). Results indicated a statistically significant positive correlation between the two. Compared to students who did not engage in DE behaviors, those who did engage in DE behaviors had 3.42 times higher odds of reporting engagement in RSB. Recommendations for student health facilities include implementing screening and assessment tools for DE and RSB and increasing referral practices. For college counseling centers, recommendations include utilizing interdisciplinary teams, outreach programming, and providing creative interventions for students that address self-esteem, body image, body shame, social comparison, adaptive coping strategies, help seeking behaviors, and prompting other important conversation around DE and RSB.

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