

# ***Problem Behaviors, Substance Abuse and Sexual Abuse in Psychiatrically Hospitalized Adolescents with Bulimia Nervosa***

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*ABSTRACT:* Twenty-eight adolescent bulimics were compared to 201 psychiatrically hospitalized non-eating disordered patients. Non-eating disordered patients were found to be reliably more aggressive, delinquent, and under-controlled than patients with bulimia nervosa. Sexual abuse was found to be less prevalent among bulimic adolescents than comparison adolescents. No significant between group differences were achieved on any measure of alcohol/drug abuse. The behavioral profiles of substance abusing bulimics were highly similar to those of non-eating disordered patients. Three months follow-up of bulimic patients found that they were less depressed, had less somatization, and were less overcontrolled; however, they showed no reliable improvements in eating attitudes/behaviors or drug/alcohol use.

## **Introduction**

Bulimia, also known as bulimia nervosa and the bulimia syndrome, is an eating disorder initially distinguished by Russell (1979) as an "ominous" variant of anorexia nervosa. Bulimia is characterized by episodic binge eating accompanied by an awareness that such an eating pattern is abnormal, fear of not being able to stop eating voluntarily, and depressed mood and self-deprecating thoughts following

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eating binges. Regularly engaging in either self-induced vomiting, strict dieting or fasting, use of laxatives or diuretics or vigorous exercise in order to prevent weight gain is also a primary feature of bulimia (American Psychiatric Association, 1987). The onset of the disorder is frequently in adolescence or early adulthood. Bulimia occurs primarily in females, its course is often chronic and intermittent and may last over many years. Until the most recent DSM III-R classification (American Psychiatric Association, 1987), bulimia had been primarily viewed as a chronic disorder on a continuum associated with anorexia nervosa.

Both Russell and the authors of DSM-III-R note that bulimics have a significant propensity to engage in alcohol or drug use. The relationship between substance abuse and eating disorders in adults has been regularly reported in the literature (Krahn, 1991; Butterfield & LeClair, 1988; Jonas, Gold, Sweeney & Pottash, 1987; Jones, Cheshire, & Moorhouse, 1985; Lacey & Moureli, 1986; Mitchell, Pyle, Eckert & Hatsukami, 1990; Scott, 1983; Zweben, 1987). While the research literature investigating adolescent alcohol and drug use is extensive, there is a notable paucity of studies related to adolescents with bulimia (see- Bunnell, Shenker, Nussbaum, Jacobson, & Cooper, 1990; Crowther & Chernyk, 1986; Marchi & Cohen, 1990; Rosen, Tacy, & Howell, 1990) and even fewer reported studies on the concomitance of substance use and bulimia in adolescence (see- Killen, Taylor, Telch, Saylor, Maron & Robinson, 1986; Killen, Taylor, Telch, Robinson, Maron & Saylor, 1987; Killen, Taylor, Telch, Saylor, Maron & Robinson, 1987; Timmerman, Wells & Chen, 1990).

Studies of adult females have addressed similarities in the dynamics and etiologies of alcoholism, drug addiction and eating disorders. These conditions have been conceptualized as sharing a common addictive syndrome, with bulimia and substance abuse often linked theoretically (Levinson & Gerstein, 1983; Bulik, 1987a; Filstead, Parrilla, & Ebbitt, 1989; Jones et al., 1985; Lacey & Moureli, 1986; Yeary & Heck, 1989; Zweben, 1987). Research has demonstrated that binge eating in bulimics and binge (bout) drinking in alcoholics share the following characteristics: 1) an intermittent loss of control and a feeling of compulsion, 2) bingeing to sedation or drinking to intoxication to quash anxiety about interpersonal problems, and 3) feelings of degradation, powerlessness, anger, self-loathing, and/or depression following bingeing or bout drinking behavior (Filstead et al, 1989; Kagan & Albertson, 1986; Lacey & Moureli, 1986). Further, the con-

cepts of craving, abstinence and relapse could apply to both fields (Bemis, 1985; Scott, 1983; Yeary, 1987; Yeary & Heck, 1989).

Both bulimia nervosa and substance abuse have been shown to have etiologic similarities that may, in part, be related to family functioning (Bulik, 1987a; Mitchell, Hatsukami, Pyle, & Eckert, 1988; Ordman & Kirschenbaum, 1986; Striegel-Moore, Silberstein, & Rodin, 1986). Specific family studies have shown that bulimics tend to come from more distressed families than nonbulimics (Hudson, Pope, Jonas, Yurgelin-Todd, & Frankenburg, 1987; Humphrey, 1986; Logue, Crowe, & Bean, 1989; Mitchell, Hatsukami, Pyle & Eckert, 1988) have more first-degree relatives with substance abuse histories than nonbulimics (Bulik, 1987a; Collins, Kotz, Janesz, Messina & Ferguson, 1985; Kassett, Gershon, Maxwell, Guroff, Kazuba, Smith, Brandt & Jimerson, 1989), and have families that are less supportive, more affectively restricted, and more openly conflictual than nonbulimic families (Ordman & Kirschenbaum, 1986).

Studies of female high school and college students have found prevalence rates for bulimia nervosa ranging from 1.3 to 19 percent (Crowther & Chernyk, 1986; Killen, Taylor, Telch, Robinson et al., 1987; Cooper, Charnock, & Taylor, 1987, Stangler & Printz, 1980; Johnson, Love, Lewis & Stuckey, 1984; Hart & Ollendick, 1985; Timmerman et al., 1990). Other studies have supported the finding that clinical samples of bulimics have very high suicide attempt rates (30 percent or above) and that when bulimia and substance abuse are concomitant the individual's pathology is greater than either disorder by itself (Fairburn & Cooper, 1984; Hatsukami, Mitchell, Eckert & Pyle, 1986; Zweben, 1987).

Studies of persons hospitalized for bulimia document rates of alcohol and/or drug abuse ranging from 23 to 50 percent (Jonas et al., 1987; Lacey & Mourelis, 1986; Marcus & Katz, 1990; Mitchell, Hatsukami, Eckert & Pyle, 1985; Pyle, Mitchell, & Eckert, 1981). These rates appear to increase with age in bulimic subjects (Beary, Lacey, & Merry, 1986), and bulimics who abuse mood altering substances have higher suicide rates, more social problems and require more treatment than bulimics who do not abuse such substances (Hatsukami et al., 1986; Norman & Herzog, 1984). These studies, however, were primarily on adult populations.

The present study seeks to extend our knowledge of bulimia during adolescence by examining the substance abuse and problem behavior statuses of psychiatrically hospitalized bulimic youth. Comparisons

will be made between bulimics and non-eating disordered psychiatrically diagnosed adolescents. Additionally, three month follow-up statuses of bulimic patients will be reported.

### **Setting**

Patients in this study were adolescents admitted to a 24-bed adolescent psychiatric unit at an urban general hospital over a consecutive 30 month period of time. The unit provides general psychiatric services as well as specialized services/programs in dual diagnosis, eating disorders, and victimization. General services include individual, group and family therapy, art therapy, recreation and educational programming. It is possible for a patient to be seen by more than one service component. For example, eating disordered adolescents who abuse alcohol or drugs would receive both eating disorders and dual diagnosis services.

The eating disorders component of the unit serves adolescents with diagnosed eating disorders. This component uses a protocol-based behavioral reinforcement approach to restore and/or maintain a healthy target weight. In addition to receiving the unit's general services, eating disordered adolescents receive a complete nutritional assessment, attend an eating disorders group twice weekly and, post discharge, attend a weekly nutritional support group.

The dual diagnosis component serves teenagers who have a primary psychiatric disorder and a co-existing substance abuse disorder. It uses a modified 12-step model to help patients identify the harmful consequences of their chemical use and to develop abstinence-based recovery skills. Adolescents referred to the dual diagnosis component participate in twice weekly chemical dependency group therapy, weekly drug education groups, weekly chemical dependency art therapy and, post discharge, weekly aftercare group.

The victimization component addresses patients who have been sexually abused. Patients in this component attend art therapy based victimization groups (twice weekly) designed to address ten key impact issues of sexual abuse and work individually with art therapists on keeping a personal art journal.

## Methods and Subjects

The sample for this study includes all DSM III-R diagnosed bulimics (N=28) seen over a consecutive two and a half year period of time (1990-1992) on the adolescent unit described above. The comparison group used for this study consists of all non-eating disordered female patients admitted to the adolescent unit during the same time period (N=201). Thus patients with anorexia nervosa were excluded from the comparison group.

Upon admission, all patients were asked to complete the instruments listed below. Since these instruments were part of the unit's ongoing clinical intake procedure, all potential subjects were included for study with no losses due to refusal to participate or failure to complete the requisite questionnaires. Bulimic patients were followed up three months post discharge through use of a mailed questionnaire.

### *Instrumentation*

*The Youth Self-Report (YSR)*—A standardized measure of social competence and child behavior problems. This instrument contains 119 items and is designed for youth aged 11-18 years. Separate ratings of the profile have been constructed for boys and girls. For boys, seven subscales constitute the behavior problem scale (depressed, unpopular, delinquent, thought disorder, somatic complaints, aggressive and self-destruction/identity problems). For girls, the self-destruction/identity problem subscale is not present. In addition, second order factors of internalization and externalization have been established. The behavior problem scale and its component subscales have demonstrated acceptable validity and reliability (Achenbach & Edelbrock, 1987).

*The Rosenberg Self-Esteem Scale*—A ten statement questionnaire designed to measure self-acceptance. This scale has been shown to have acceptable reliability and has been used extensively with adolescent populations (Corcoran & Fischer, 1987).

*The Beck Depression Inventory (BDI)*—A 21-item multiple choice questionnaire that provides an objectively derived score indicating the severity of depression symptomatology. The scale has been normed on several large samples and has acceptable validity and reliability (Beck & Steer, 1984).

*The Adolescent Drinking Index (ADI)*—A 24-item, Likert type scale designed to identify alcohol abuse problems among adolescents referred for psychological, emotional or behavioral problems. Data from three independent samples were used to assess the instrument's validity and reliability. Alpha coefficients exceeding .90 were achieved for all three samples and convergent validity was established by comparing ADI scores to scores on the Michigan Alcoholism Screening Test (Harrell & Wirtz, 1989).

*The Perceived Benefit of Alcohol and Drug Scales*—Two five-item scales that measure adolescents' perceived benefits of alcohol and drug use. These scales have demonstrated acceptable reliability. Validity has been established by correlating scale scores with self-reported drinking/drug use as well as behavioral consequences of drinking and drug use (Petchers & Singer, 1990).

*Self-Reported Alcohol and Drug Use*—Patients were asked to report the number of times in the previous two months that they had: 1) been drunk, 2) been high on drugs, 3) been high on drugs/alcohol while in school.

*The Eating Attitude Test (EAT)*—A 40-item self administered questionnaire designed to measure dieting behaviors, food preoccupation, bulimia, anorexia and concerns about being overweight. The EAT has been demonstrated to discriminate between normal dieters and individuals with bulimia, obesity and anorexia (Garner, Olmsted, Bohr & Garfinkle, 1982).

## Results

Both bulimics and comparison subjects were females. Mean age of bulimics was 16.5 years, mean age of comparisons was 15.0 yrs. (age range for both groups was 14-18 years). Age differences between groups were statistically significant ( $t = -4.94$ ,  $df = 227$ ,  $p < .01$ ). Both samples were almost entirely comprised of individuals from the middle and upper-middle class socioeconomic statuses. Table 1 displays the diagnostic categories of comparison subjects.

### *Bulimic Patients*

Mean age of first drink among bulimic adolescents was 12.7 years ( $SD = 3.3$ ). Slightly over 29 percent of these adolescents scored above

**TABLE 1**  
**Diagnostic Categories: Non-Eating Disorders (N = 201)**

Diagnostic Category	N	(%)
Adjustment Disorders	140	(69.7)
Affective Disorders	42	(20.9)
Conduct Disorders	5	(2.5)
Thought Disorders	6	(3.0)
Other	8	(4.0)

the "high likelihood of alcohol abuse" range on the Adolescent Drinking Index. About 25 percent of the patients in this group reported being drunk two times or more in the past two months. The most commonly reported benefit of drinking was relaxation (44%), followed by drinking to "be friendly" (39%) and drinking to forget problems (32%).

Mean age of first drug use was 14.0 years (SD=2.7). Almost 19 percent of bulimic adolescents reported being very high on drugs at least two times over the past two months. Of those who reported current drug use (9/28), all nine reported marijuana as the drug they "usually" used. Two of these patients reported usual use of marijuana and stimulants, and one reported usual use of marijuana and cocaine. Six of the 28 bulimic adolescents (21%) reported being high on drugs and alcohol while in school at least once over the past two months.

Based on the above information as well as a formal substance abuse assessment conducted by a licensed chemical dependency counselor, 8 of the 28 (29%) bulimic patients were identified as "substance abusers." When substance abusing bulimics were compared to their non-substance abusing counterparts, substance abusing bulimics were found to be reliably more delinquent ( $t = -2.92$ ,  $df = 25$ ,  $p < .05$ ), more aggressive ( $t = -2.98$ ,  $df = 25$ ,  $p < .05$ ) and more externalizing ( $t = -4.22$ ,  $df = 25$ ,  $p < .01$ ) based on Youth Self Report scores. There were also significant differences in Eating Attitude Test scores, with non-substance abusing bulimics displaying higher scores ( $m = 41$ ) than substance abusing bulimics ( $m = 22$ ) ( $t = 2.16$ ,  $df = 23$ ,  $p < .05$ ).

Seventy-five percent of bulimic adolescents scored in the depressed range on the Beck Depression Inventory (BDI): 11 percent in mild to

moderate range, 43 percent in the moderate to severe range and 21 percent in the extremely severe range. The suicide item (question 9) of the BDI yielded 57 percent of bulimic patients (16/28) endorsing that they had thoughts of killing themselves (but wouldn't), and an additional 11 percent (3/28) indicating that they would kill themselves if they had a chance.

We reviewed all complete hospital charts available (25/28) for the purpose of providing additional information on suicidal thoughts or actions. A history of suicidal ideation was noted in 76 percent (19/25) of the records. The age of onset of ideation ranged from 10-18 years, with a mean of 14.7 years. Forty-four percent of the adolescents (11/25) had attempted suicide in the past: 6 had one attempt, 3 had two attempts and 2 had three or more attempts. The age of first attempt ranged from 11-18 years ( $m = 14.6$  years).

#### *Comparisons with Non-Eating Disordered Patients*

When the 28 bulimic patients were compared with the 201 non-eating disordered patients, several differences emerged. Table 2 reveals that, based on Youth Self Report scores, comparison group adolescents were significantly more aggressive, delinquent and undercontrolled (higher externalizers) than bulimic youth. Bulimic adolescents, however, were significantly more likely to be inhibited and overcontrolled (higher internalizers), and as expected, also scored significantly higher than comparison group youth on the Eating Attitude Test. As displayed in Table 2, no reliable between group differences were achieved on any of the measures of drug/alcohol abuse.

Bulimic and comparison group youth were also compared on histories of sexual abuse. Sexual abuse was determined through official records, reports of family members, and self-disclosures facilitated by a structured sexual abuse interview protocol (see- Hussey and Singer, 1989). Reliably fewer bulimics 6/28 (21%) than non-bulimics 79/192 (41%) had been sexually abused ( $\text{Chi. Sq.} = 4.0, \text{df} = 1, p < .05$ ). Significant differences were also noted when substance abusing bulimics were compared to non-substance abusing bulimics: 4/8 (50%) substance abusing bulimics compared to 2/20 (10%) non-substance abusing bulimics had been sexually abused ( $\text{Chi Sq.} = 5.4, \text{df} = 1, p < .05$ ).

The significant differences achieved in Table 2 on EAT scores and the problem behavior scales of delinquency, aggressiveness, externalizing and internalizing were subjected to one way analysis of variance (ANOVA) to test for possible differences among the following



**TABLE 2**  
**Bulimic Patients vs. Comparison Patients**

	(D of F)	t Value	Sig.
Eating Attitude Test	(211)	-6.12	.00*
Delinquent (YSR)	(226)	3.11	.00*
Aggressive (YSR)	(226)	2.97	.00*
Thought Disorder (YSR)	(226)	-.03	.98
Internal (YSR)	(226)	-3.41	.00*
External (YSR)	(226)	3.75	.00*
Depressed (YSR)	(226)	-1.72	.09
Unpopular	(226)	.97	.33
Somatic (YSR)	(226)	-1.80	.07
Total Behavior Problem Score (YSR)	(226)	-.89	.37
Beck Depression Inventory	(212)	-1.06	.29
Rosenberg Self-Esteem	(227)	.10	.92
Age First Drink	(165)	-.82	.41
Age First Drug Use	(92)	-1.18	.24
Times Drunk (2 mos.)	(227)	-.10	.92
Times Very High on Drugs (2 mos.)	(227)	.07	.94
Times High in School (2 mos.)	(226)	-.87	.38
Perceived Benefit Alcohol	(196)	-.75	.45
Perceived Benefit Drugs	(188)	-1.11	.27
Adolescent Drinking Inventory	(215)	.94	.35

three groups: substance abusing bulimic adolescents ( $N=20$ ), non-substance abusing bulimic adolescents ( $N=8$ ), and comparison group adolescents ( $N=201$ ). Means for these comparisons are contained in Table 3. While a significant group effect was achieved for internalizing scores ( $F=3.16$ ;  $df=2/225$ ;  $p=.04$ ), post hoc Sheffe tests failed to reveal reliable between group differences. Overall, a significant group effect was also noted for externalizing scores ( $F=6.34$ ;  $df=2/225$ ;  $p=.00$ ). Post hoc multiple comparisons employing the Scheffe test revealed that the mean of the comparison group ( $m=59.19$ ) was significantly higher ( $p<.05$ ) than that of the non-substance abusing bulimic group ( $m=50.32$ ). No significant difference was observed between the comparison group and the substance abusing bulimic group.

**TABLE 3**  
**Means and Standard Deviations of the Outcome Variables**  
**by Groups**

Groups:	Non-Sub- stance Abusing Bu- limics		Substance Abusing Bulimics		Non-Eating Disorders	
	Mean	SD	Mean	SD	Mean	SD
Externalizing	50.32	4.82	60.25	7.21	59.19	10.95
Internalizing	64.26	9.88	65.88	7.51	57.90	13.78
Aggressive	55.11	.46	57.38	2.13	60.24	7.76
Delinquent	56.53	3.04	62.88	5.82	63.39	8.11
EAT	40.67	19.90	22.14	17.42	9.77	9.52

ANOVAs employed for aggressiveness and delinquency scores yielded results similar to those above. Group effects for aggressiveness ( $F = 4.68$ ;  $df = 2/225$ ;  $p = .01$ ) and delinquency ( $F = 6.79$ ;  $df = 2/225$ ;  $p = .00$ ) were significant. Post hoc Scheffe tests revealed that the mean scores of the comparison group for both aggressiveness ( $m = 60.24$ ) and delinquency ( $m = 63.39$ ) were significantly higher than the mean scores for aggressiveness ( $m = 55.11$ ) and delinquency ( $m = 56.53$ ) of the non-substance abusing bulimic group. Again, no significant differences were observed between the comparison group and the substance abusing bulimic group.

ANOVA group effect was also significant for EAT scores ( $F = 67.17$ ;  $df = 2/210$ ;  $p = .00$ ). Results of the Sheffe test established that there were significant differences ( $p < .05$ ) between each pair of the three groups. Mean EAT score for the non-substance abusing bulimic group was highest ( $m = 40.67$ ), followed by the substance abusing bulimic group mean score ( $m = 22.14$ ), and lastly, the comparison group mean score ( $m = 9.77$ ).

#### *Follow-up of Bulimic Patients*

Three months post-discharge, all bulimic patients were mailed a follow-up questionnaire to complete. The questionnaire included the

TABLE 4

**Bulimic Patients: Comparisons of Hospitalization and  
Three-Month Follow-up Scores (N = 25)**

	(D of F)	t Value	Sig.
Beck Depression Inventory	23	3.55	.00*
Depression (YSR)	24	1.38	.18
Thought Disorder (YSR)	24	.32	.75
Unpopular (YSR)	24	.38	.71
Somatic (YSR)	24	3.32	.00*
Aggression (YSR)	24	.61	.55
Delinquent (YSR)	24	.04	.97
Internal (YSR)	24	2.70	.01*
External (YSR)	24	1.26	.22
Total Behavior Problems Score (YSR)	24	2.77	.01*
Eating Attitude Test	21	1.18	.25
Times Drunk	24	1.70	.10
Times Very High on Drugs	24	.72	.48
Times High in School	24	.94	.36
Perceived Benefit of Alcohol	18	2.22	.04*
Perceived Benefit of Drugs	18	1.46	.16

Eating Attitude Test, the Youth Self Report, the Beck Depression Inventory and several measures of drug/alcohol abuse. For their efforts in completing and returning the questionnaire, respondents selected one of several "gifts" to be mailed to them. Of the 28 initial patients, 25 (89%) returned completed follow-up questionnaires.

Comparisons between scores obtained during hospitalization (T1) and at three months follow-up (T2) are displayed in Table 4. At follow-up, bulimic patients reported reliably less depression (based on the Beck Depression Inventory), less somatization, less of a tendency to be inhibited and overcontrolled (internalization), and lower total behavior problem scores. Significant changes in self-reported drug/alcohol abuse were not noted, with the exception of lower scores on the Perceived Benefit of Alcohol Scale. Finally, it should be noted that there were no reliable changes in EAT scores between hospitalization and follow-up.

## Discussion

In this sample, 29% of patients with bulimia nervosa were identified as substance abusers. Comparisons of substance abusing bulimics with non-substance abusing bulimics found substance abusing bulimics to be reliably more delinquent, more aggressive and more externalizing. Further, substance abusing bulimics had significantly lower Eating Attitude Test scores than their non-substance abusing counterparts. Thus, the characteristics of adolescent substance abusing bulimics suggest that they were at higher risk for exhibiting acting out behaviors. However, based on EAT scores, these adolescents displayed less severe dieting behaviors, food preoccupation and concerns about being overweight than non-substance bulimic adolescents. The possibility exists that the use of mood altering substances helps mitigate the food-related feelings and behaviors of adolescents with bulimia nervosa, but generates or exacerbates other negative behaviors.

Depression was present in 75 percent of patients with bulimia nervosa. Two-thirds of bulimic adolescents displayed current suicidal ideation or intent. When hospital charts were reviewed ( $N=25$ ), history of suicidal ideation was noted in 76 percent of the charts and attempted suicide in 44 percent of the charts. It is not surprising to find high levels of suicidal ideation, intent or acts among adolescents hospitalized for bulimia nervosa. Indeed, in many cases, suicide status rather than eating disorder status may have compelled hospitalization.

Significantly fewer patients with bulimia nervosa (21%) than non-eating disordered comparisons (41%) had histories of sexual abuse, with two-thirds (4/6) of the sexually abused bulimic patients being substance abusers. This finding suggests that sexual abuse may be less prevalent among psychiatrically hospitalized bulimic adolescents than their non-eating disordered counterparts; however, among hospitalized bulimics, patients with histories of alcohol/drug abuse may be more likely to have histories of sexual abuse. The relationship between sexual abuse and substance abuse in a general inpatient adolescent psychiatric population has been previously documented (Singer, Petchers and Hussey, 1989).

Comparisons between bulimic patients and non-eating disordered patients revealed the latter group of patients to be reliably more aggressive, more delinquent and more undercontrolled. Bulimic patients were more overcontrolled. No between group differences were

evidenced on any measure of drug/alcohol abuse. It should be noted that although significant between group differences in substance abuse did not emerge, the use of mood altering substances by both groups was substantial. Thus, bulimic adolescents' abuse of drug/alcohol was as high as the levels achieved by psychiatrically hospitalized non-eating disordered adolescents.

When substances abusing bulimics, non-substance abusing bulimics and non-eating disordered patients were compared, interesting findings emerged. Behaviors that had differentiated patients with bulimia from non-eating disordered patients (i.e., delinquent and aggressive behaviors, and being undercontrolled or overcontrolled) did not differentiate substance abusing bulimic patients from non-eating disordered patients. Stated differently, the behavioral profile of substance abusing bulimic patients was more similar to hospitalized patients without eating disorders than it was to non-substance abusing bulimic patients. It is intriguing that the three groups also displayed reliably different eating attitudes and behaviors (based on EAT scores), with the non-substance abusing bulimics being most impaired, patients without eating disorders being least impaired and substance abusing bulimics being in between.

The above findings emphasize that, in this study, the problem behavior profiles of psychiatrically hospitalized substance abusing patients with bulimia nervosa more closely paralleled the profiles of non-eating disordered patients than bulimic patients who did not abuse mood altering substances. Such problem behaviors as being undercontrolled, aggressive and delinquent have considerable implications for treatment.

Our data suggest that adolescents with bulimia nervosa and a co-existing substance abuse problem may best be served in a setting designed to address both the eating disorder and undercontrolled, acting-out behavior. On an outpatient basis, such settings would emphasize clear limit setting and behavioral contingencies. Inpatient treatment for these patients should include settings that are used to dealing with the acting out behaviors of psychiatrically disturbed adolescents, such as adolescent psychiatric units. Inpatient and outpatient settings should of course have a familiarity with the treatment of eating disorders, but also a familiarity in both the recognition and treatment of substance abuse and sexual abuse.

At three months follow-up, patients with bulimia nervosa showed improvement in several domains including less depression, less somatization and less of a tendency to be overcontrolled. Further, total

behavior problem scores were reliably lower at follow-up. These findings point to the possible short-term benefits of inpatient treatment. However, there were no reliable reductions in self-reported alcohol and drug use and no significant reductions in scores on the Eating Attitude Test. One possible explanation is that both substance abuse and bulimia nervosa are more resistant to change than other behaviors. Thus, we would be most likely to see improvement in other problem areas such as depression and least likely to see significant changes in substance use or eating attitudes/behaviors.

Another explanation is that there is a "lag effect" for improvement in both bulimia nervosa and substance abuse. Other behavior problems may need to achieve improvement for a sustained period of time before improvement is manifested in eating or substance use attitudes/behaviors. As we currently do not have sufficient follow-up data past three months, we are unable to address empirically the possibility of such an effect.

This study's sample was comprised of psychiatrically hospitalized youth whose mental health and behaviors were extremely compromised; therefore, the findings do not necessarily apply to non-psychiatrically hospitalized adolescents with bulimia nervosa. Due to the small sample size and the sample being drawn from a single site, further studies are needed.

## Acknowledgments

This research was supported by a grant from the Woodruff Foundation and by a NIAAA/NIDA/OSAP Faculty Development Grant.

## References

- Achenbach, T.M. & Edelbrock, C. (1987). *Manual for the Youth Self-Report*. Burlington, VT, University of Vermont, Department of Psychiatry.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd Ed.-Revised). Washington, DC: Author
- Beary, M.D., Lacey, J.H., & Merry, J. (1986). Alcoholism and eating disorders in women of fertile age. *British Journal of Addiction*, 81, 685-689.
- Beck, A.T. & Steer, R.A. (1984) Internal consistencies of the original and revised Beck Depression Inventory. *Journal of Clinical Psychology*, 40, 1365-1367.
- Bemis, K. (1985). "Abstinence" and "nonabstinence" models for the treatment of bulimia. *International Journal of Eating Disorders*, 4 (4), 407-437.
- Bukstein, O.G., Brent, D.A., & Kamner, Y. (1989). Comorbidity of substance abuse

- and other psychiatric disorders in adolescence. *American Journal of Psychiatry*, 146, 1131-1141.
- Bulik, C.M. (1987). Drug and alcohol abuse by bulimic women and their families. *The American Journal of Psychiatry*, 144 (12), 1604-1606.
- Bunnell, D.W., Shenker, I.R., Nussbaum, M.P., Jacobson, M.S., & Cooper, P. (1990). Subclinical versus formal eating disorders: differentiating psychological features. *International Journal of Eating Disorders*, 9 (3), 357-362.
- Butterfield, P.S. & Leclair, S. (1988). Cognitive characteristics of bulimic and drug-abusing women. *Addictive Behaviors*, 13, 131-138.
- Collins, G.B., Kotz, M., Janesz, J.W., Messina, M., & Ferguson, T. (1985). Alcoholism in the families of bulimic anorexics. *Cleveland Clinic Quarterly*, 52, 65-67.
- Cooper, P.J., Charnock, D.J. & Taylor, M.J. (1987). The prevalence of bulimia nervosa. *Addictive Behaviors*, 11, 415-424.
- Corcoran K. & Fischer, J. (1987). *Measures for clinical practice*. New York: The Free Press.
- Crowther, J.H. & Chernyk, B. (1986). Bulimia and binge eating in adolescent females: a comparison. *Addictive Behaviors*, 11, 415-424.
- Fairburn, C.G. & Cooper, P.J. (1984). The clinical features of bulimia nervosa. *British Journal of Psychiatry*, 144, 238-246.
- Filstead, W.J., Parrella, D.P., & Ebbitt, J. (1989). High-risk situations for engaging in substance abuse and binge-eating behaviors. *Journal of Studies on Alcohol*, 49(2), 136-141.
- Garner, D.M., Olmsted, M.P., Bohr, Y. & Garfinkle, P.E. (1982). The Eating Attitude Test: Psychometric features and clinical correlates. *Psychological Medicine*, 12, 871-878.
- Harrell, A.V. & Wirtz, P.W. (1989). *The Adolescent Drinking Index*. Odessa, Florida: Psychological Assessment Resources.
- Hart, K.J. & Ollendick, T.H. (1985). Prevalence of bulimia in working and university women. *American Journal of Psychiatry*, 142, 851-854.
- Hatsukami, D., Mitchell, J.E., Eckert, E.D., & Pyle, R. (1986). Characteristics of patients with bulimia only, bulimia with affective disorder, and bulimia with substance abuse problems. *Addictive Behaviors*, 11, 399-406.
- Hudson, J.I., Pope, H.G., Jonas, J.M., Yurgelun-Todd, D., & Frankenburg, F.R. (1987). A controlled family history study of bulimia. *Psychological Medicine*, 17, 883-890.
- Humphrey, L.L. (1986). Family relations in bulimic-anorexic and nondistressed families. *International Journal of Eating Disorders*, 5 (2), 223-232.
- Hussey, D. & Singer, M.I. (1989). Innovations in the assessment and treatment of sexually abused adolescents: An inpatient model. In (S.M. Sgroi, Editor), *Vulnerable Populations: Volume 2*. Lexington, Mass.: Lexington Books, 43-64.
- Johnson, C., Love, S., Lewis, L. & Stuckey, M. (1984). Incidence and correlates of bulimic behavior in a female high school population. *Journal of Youth and Adolescence*, 13, 15-26.
- Johnston, L.D., O'Malley, M.M. & Bachman, J.G. (1991). *Drug Use Among American High School Students, College Students and Other Young Adults*. Rockville, MD., U.S. Department of Health and Human Services, NIDA.
- Jonas, J.M., Gold, M.S., Sweeney, D. & Pottash, A.L.C. (1987). Eating disorders and cocaine abuse: a survey of 259 cocaine abusers. *Journal of Clinical Psychiatry*, 48 (2), 47-50.
- Jones, D.A., Chesire, N., & Moorhouse, H. (1985). Anorexia nervosa, bulimia and alcoholism-association of eating disorder and alcohol. *Journal of Psychiatric Research*, 19 (2/3), 377-380.
- Kagan, D.M. & Albertson, L.M. (1986). Scores on MacAndrew factors: bulimics and other addictive populations. *International Journal of Eating Disorders*, 5 (6), 1095-1101.

- Kassett, J.A., Gershon, E.S., Maxwell, M.E., Guroff, J.J., Kazuba, D.M., Smith, A.L., Brandt, H.A., & Jimerson, D.C. (1989). Psychiatric disorders in the first-degree relatives of probands with bulimia nervosa. *The American Journal of Psychiatry*, 146 (11), 1468-1471.
- Killen, J.D., Taylor, C.B., Telch, M.J., Saylor, K.E., Maron, D.J. & Robinson, T.N. (1986). Self-induced vomiting and laxative and diuretic use among teen-agers: Precursors of the binge-purge syndrome. *Journal of the American Medical Association*, 255, 1447-1449.
- Killen, J.D., Taylor, C.B., Telch, M.J., Robinson, T.N., Maron, D.J., & Saylor, K.E. (1987). Depressive symptoms and substance use among adolescent binge eaters and purgers: A defined population study. *American Journal of Public Health*, 77(12), 1539-1541.
- Killen, J.D., Taylor, C.B., Telch, M.J., Saylor, K.E., Maron, D.J., & Robinson, T.N. (1987). Evidence for an alcohol-stress link among normal weight adolescents reporting purging behavior. *International Journal of Eating Disorders*, 6 (3), 349-356.
- Krahn, D.D. (1991). The relationship of eating disorders and substance abuse. *Journal of Substance Abuse*, 3(2), 239-253.
- Lacey, J.H., & Moureli, E. (1986). Bulimic alcoholics: some features of a clinical subgroup. *British Journal of Addiction*, 81, 389-393.
- Levinson, P.K. & Gerstein, D.R. (Eds.). (1983). *Commonalities in substance abuse and habitual behaviors*. Lexington, Mass.: Lexington Books.
- Logue, C.M., Crowe, R.R., & Bean, J.A. (1989). A family study of anorexia nervosa and bulimia. *Comprehensive Psychiatry*, 30 (2), 179-188.
- Marchi, M. & Cohen, P. (1990). Early childhood eating behaviors and adolescent eating disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29(1), 112-117.
- Marcus, R.N. & Katz, J.L. (1990). Inpatient care of the substance-abusing patient with a concomitant eating disorder. *Hospital and Community Psychiatry*, 41(1), 59-63.
- Mitchell, J.E., Hatsukami, D., Pyle, R., & Eckert, E. (1988). Bulimia with and without a family history of drug abuse. *Addictive Behaviors*, 13, 245-251.
- Mitchell, J.E., Hatsukami, D., Pyle, R.L., Eckert, E.D., & Boutacoff, L.I. (1987). Metabolic acidosis as a marker for laxative abuse in patients with bulimia. *International Journal of Eating Disorders*, 6 (4), 557-560.
- Norman, D.K. & Herzog, D.B. (1984). Persistent social maladjustment in bulimia: A 1 year follow-up. *The American Journal of Psychiatry*, 141, 444-446.
- Ordman, A.M. & Kirschenbaum, D.S. (1986). Bulimia: assessment of eating, psychological adjustment, and familial characteristics. *International Journal of Eating Disorders*, 5 (5), 865-878.
- Petchers, M.K. & Singer, M.I. (1990). The clinical applicability of a substance abuse screening instrument. *Journal of Adolescent Chemical Dependency*, 1(2), 47-56.
- Pyle, R.L., Mitchell, J.E., & Eckert, E.D. (1981). Bulimia: a report of 34 cases. *Journal of Clinical Psychiatry*, 42 (2), 60-64.
- Rosen, J.C., Tacy, B., & Howell, D. (1990). Life stress, psychological symptoms and weight reducing behavior in adolescent girls: a prospective analysis. *International Journal of Eating Disorders*, 9 (1), 17-26.
- Russell, G. (1979). Bulimia nervosa: An ominous variant of anorexia nervosa. *Psychological Medicine*, 9, 429-448.
- Scott, D.W. (1983). Alcohol and food abuse: some comparisons. *British Journal of Addiction*, 78, 339-349.
- Singer, M.I., Petchers, M. and Hussey, D. (1989). The relationship between sexual abuse and substance abuse among psychiatrically hospitalized adolescents. *Child Abuse and Neglect*, 13, 319-325.



- Stangler, R.S. & Prinz, A.M. (1980). DSM-III: Psychiatric diagnosis in a university population. *American Journal of Psychiatry*, 137, 937-940.
- Striegel-Moore, R.H., Silberstein, L.R., & Rodin, J. (1986). Toward an understanding of risk factors for bulimia. *American Psychologist*, 41 (3), 246-263.
- Timmerman, M.G., Wells, L.A. & Chen, S. (1990). Bulimia nervosa and associated alcohol abuse among secondary students. *Journal of the American Academy of Child & Adolescent Psychiatry*, 29(1), 118-122.
- Yeary, J. (1987). The use of Overeaters Anonymous in the treatment of eating disorders. *Journal of Psychoactive Drugs*, 19 (3), 303-309.
- Yeary, J.R. & Heck, L.H. (1989). Dual diagnosis: Eating disorders and psychoactive substance dependence. *Journal of Psychoactive Drugs*, 21(2), 239-249.
- Zweben, J.E. (1987). Eating disorders and substance abuse. *Journal of Psychoactive Drugs*, 19 (2), 181-192.