

Eating Disorders With and Without Substance Use Disorders: A Comparative Study of Inpatients

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We assessed the co-occurrence of DSM-III-R axis I and II disorders and self-reported psychologic distress in inpatients with eating disorders with and without substance use disorders (ED-SUD and ED groups, respectively) and in a matched comparison sample with substance use disorders but no eating disorder (SUD group). The three groups showed similar distributions of axis I disorders but differed in the distribution of axis II disorders. Cluster B personality disorders were diagnosed more frequently in SUD and ED-SUD

groups than in the ED group. In contrast, cluster C personality disorders were diagnosed more frequently in the ED group than in SUD and ED-SUD groups. The SUD group reported greater psychologic distress than ED and ED-SUD groups. Possible implications of the observed group differences for psychologic models of why these disorders may be associated are considered.

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THE ASSOCIATION between eating disorders and substance abuse has received considerable attention.¹⁻⁴ Many studies have found a high rate of substance abuse in clinical samples of eating-disordered patients.⁵⁻¹³ Other studies have found a high prevalence of eating disorders in female patients who abuse drugs or alcohol.¹⁴⁻¹⁹

Despite the large number of studies that have investigated the relationship between substance use disorders and eating disorders, the implications of this research remain uncertain.²⁰⁻²³ Relatively few studies have examined these issues using structured diagnostic interviews with demonstrated reliability. Moreover, only a few studies have used DSM-III-R criteria²⁴ to examine eating disorder co-occurrence with regard to axis I,²⁵ axis II,²⁶ or both axis I and axis II.¹⁹ To our knowledge, the study reported by Suzuki et al.¹⁹ represents the only published report of comorbidity in eating-disordered inpatients that has also considered co-occurring alcohol abuse. They found that Japanese female alcoholics with eating disorders differed from female alcoholics without eating disorders in having higher rates of depression and borderline personality disorder. The lack of a potential

third comparison group (i.e., eating disorders without alcoholics) ascertained by the same recruitment and characterized by similar base rates of disorders^{22,27} limits interpretation of these findings.

We examined the frequency of co-occurrence of DSM-III-R axis I and axis II diagnoses and the nature of psychologic distress in three inpatient groups: those with eating disorders and substance use disorders (ED-SUD group), those with eating disorders but without substance use disorders (ED group), and a comparison group consisting of individuals with substance use disorders but without eating disorders (SUD group). We aimed to answer the following questions about these three groups: (1) Do certain axis I and axis II disorders occur with different distributions across groups?, and (2) Do the groups differ in subjective measures of psychologic distress? Thus, this study represents a descriptive taxonomic investigation of multiple domains of psychopathology and their association with these two axis I disorders, both individually and together. Groups are compared for differences in additional symptom constellations, since such differential associations may represent leads to the nature of and relationships between these disorders.

METHOD

Subjects

Subjects were drawn from a series of 307 systematically assessed inpatients admitted to the Yale Psychiatric Institute (a 66-bed, not-for-profit, tertiary-care teaching hospital). Patients who were admitted were acutely ill and required an inpatient level of treatment. At the time of admission, all patients were given structured clinical inter-

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views for DSM-III-R disorders as part of the diagnostic evaluation. Thirty-six patients were diagnosed as having an eating disorder: nine patients with anorexia nervosa, seven with bulimia nervosa, two with both anorexia and bulimia nervosa, and 18 with eating disorder not otherwise specified (ED NOS). In this study, patients were assigned ED NOS diagnoses if they failed to meet rigorous specific criteria for anorexia or bulimia nervosa. Thus, patients with ED NOS had many eating disorder features but failed to meet at least one of the required criteria (e.g., some patients were <15% below ideal weight or averaged slightly < two binges per week).

Of 36 patients with eating disorders, 25 had a coexisting substance use disorder, and 11 did not. From a larger sample of 127 inpatients with substance use disorders drawn from this series of admissions, we obtained a matched comparison group of 17 patients with a substance use disorder but without an eating disorder. Substance use disorders in our sample consisted of disorders of alcohol use in most cases, and of additional substances in many cases. These 17 subjects were matched to the 36 eating disorder subjects on the following variables: age, sex, race, marital status, occupation, IQ (based on the revised Wechsler scales for adults²⁸ and children²⁹), and parental socioeconomic status ([SES] based on the Two-Factor Index of Social Standing³⁰). Subject characteristics are listed in Table 1.

Procedure

Structured diagnostic interviews were performed by master's- and doctoral-level interviewers trained to high levels of reliability. To assess current axis I disorders, subjects were administered the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Epidemiologic Version³¹ if under 18 years of age and the Structured Clinical Interview for DSM-III-R—Patient Version³² if over 18 years of age. To assess current axis II personality disorders, all subjects were administered the Personality Disorder Examination.³³ In adolescent subjects, diagnostic criteria for personality disorders were considered present if they had been pervasive and had persisted for ≥ 3 years.³³

Interrater reliability was adequate: κ ³⁴ coefficients for axis I ranged from .65 to 1.0 (average κ , .77), and κ values for eating disorder and substance use disorder diagnoses were both 1.0 (i.e., 100% agreement). For axis II diagnoses, κ coefficients ranged from .65 to 1.0 (average κ , .84). Final research diagnoses were established by the "best-estimate method," based on the structured interviews plus any pertinent data from the medical record in accordance with the LEAD standard.

The assessment also included the Symptom Checklist-90-Revised (SCL-90-R),³⁵ a 90-item self-report measure of psychological distress experienced during the 7 days before completing the questionnaire. Scores are generated for nine domains (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism). Subjects rate items on a five-point scale of distress ranging from 0 (not at all) to 4 (extremely). In addition to the nine symptom domains, the SCL-90-R yields three global indices of distress: Global Severity Index ([GSI] total score divided by 90); Positive Symptom Total ([PST] number of symptoms rated ≥ 1); and

Table 1. Demographic, Cognitive, and Severity Characteristics

	SUD (n = 17)	ED-SUD (n = 25)	ED (n = 11)	F/ χ^2
Age, years (mean \pm SD)	19.3 \pm 3.9	20.6 \pm 4.9	17.5 \pm 1.7	2.30
Gender (no.)				2.52
Male	2	2	3	
Female	15	23	8	
Ethnicity (no.)				2.68
White	17	23	10	
Black	0	1	1	
Other	0	1	0	
Single marital status (no.)	17	24	11	1.14
Patient occu- pation (no.)				7.60
Clerical/ technical	0	0	1	
Semiskilled	1	2	1	
Unskilled	1	0	0	
Unemployed	5	7	1	
Student	10	16	8	
Father's SES (no.)				6.20
I	6	5	2	
II	2	4	4	
III	1	4	3	
IV	5	6	1	
V	0	0	0	
Mother's SES (no.)				9.32
I	0	1	0	
II	5	3	5	
III	2	7	1	
IV	2	2	3	
V	2	6	1	
IQ (mean \pm SD)				
Full-scale	93.6 \pm 20.0	103.3 \pm 15.8	102.3 \pm 22.2	1.18
Verbal	93.5 \pm 19.2	102.1 \pm 17.5	99.0 \pm 19.8	0.86
Performance	94.1 \pm 19.0	105.1 \pm 16.0	103.0 \pm 21.2	1.53
GAF (mean \pm SD)	36.1 \pm 6.9	36.6 \pm 14.9	34.6 \pm 8.0	0.10

NOTE. SES numbers do not total due to missing data. Groups do not differ significantly on any of these measures.

Abbreviation: GAF, Global Assessment of Functioning.

Positive Symptom Distress Index ([PSDI] total score divided by the PST). The GSI is the best single indicator of current level of depth of distress. The PSDI is a pure intensity measure corrected for the number of symptoms.

RESULTS

Distribution of Axis I Disorders

Table 2 lists the distribution of major axis I disorder categories across the three groups. χ^2

Table 2. Comparisons of Groups With Respect to Co-occurring Axis I Disorders

Axis I Diagnosis	SUD (n = 17)		ED-SUD (n = 25)		ED (n = 11)		χ^2	P
	No.	%	No.	%	No.	%		
Psychotic disorders	4	23.5	3	12.0	1	9.1	—	NS
Mood disorders	12	70.6	20	80.0	9	81.8	0.67	NS
Anxiety disorders	3	17.6	3	12.0	3	27.3	1.27	NS
Disruptive behavior disorders*	5	29.4	7	28.0	2	18.2	—	NS

NOTE. χ^2 analyses are reported where expected values are sufficient.

*Adolescent subsample only (n = 23).

analyses (performed only when expected cell values were appropriate) showed no significant differences between the three groups in the distribution of coexisting axis I disorder categories (Table 1) or in the distribution of specific axis I disorders (not shown).

Distribution of Axis II Disorders

Table 3 lists the distribution of personality disorders across the three groups. χ^2 analyses (performed only if expected cell frequencies were appropriate) showed that cluster B and C personality disorders differed in distribution across the three groups. Cluster B diagnoses were assigned significantly more frequently in

Table 3. Comparisons of Groups With Respect to Axis II Personality Disorders

Personality Disorder	SUD (n = 17)		ED-SUD (n = 25)		ED (n = 11)		χ^2	P
	No.	%	No.	%	No.	%		
Cluster A	2	11.8	2	8.0	1	9.1	—	
Paranoid	2	11.8	1	4.0	0	0.0	—	
Schizoid	0	0.0	0	0.0	1	9.1	—	
Schizotypal	1	5.9	1	4.0	0	0.0	—	
Cluster B	14	82.4	20	80.0	5	45.5	5.68	.06
Antisocial	3	17.6	1	4.0	1	9.1	—	
Borderline	13	76.5	19	76.0	5	45.5	3.91	NS
Histrionic	1	5.9	5	20.0	0	0.0	—	
Narcissistic	0	0.0	1	4.0	0	0.0	—	
Cluster C	5	29.4	6	24.0	7	63.6	5.58	.06
Avoidant	1	5.9	4	16.0	3	27.3	—	
Dependent	1	5.9	2	8.0	2	18.2	—	
Passive-aggressive	3	17.6	2	8.0	3	27.3	—	
Obsessive-compulsive	1	5.9	1	4.0	0	0.0	—	
NOS	2	11.8	5	20.0	0	0.0	—	

NOTE. χ^2 analyses are reported when expected values are sufficient.

SUD and ED-SUD groups than in the ED group; there was a trend ($P < .10$) for borderline personality disorder to be diagnosed more in the SUD and ED-SUD groups than in the ED group. In contrast, cluster C diagnoses were assigned more frequently in the ED group than in ED-SUD and SUD groups.

Subjective Measures of Psychologic Distress

Table 4 lists scores on the SCL-90-R reflecting current subjective psychologic distress. Analysis of variance (ANOVA) showed significant differences between the three groups on five (somatization, depression, anxiety, hostility, and paranoid ideation) of nine SCL-90-R subscales. ANOVAs also showed significant differences between groups on the GSI, PSDI, and PST. Post hoc *t*-tests (Tukey-B) showed no significant differences between ED-SUD and ED groups. In contrast, these *t*-tests showed that the SUD group had significantly higher scores than ED-SUD and ED groups on SCL-90-R subscales and total indices.

DISCUSSION

This study represents an incremental addition to the literature in terms of the nonselective ascertainment of inpatients assessed by reliably administered structured diagnostic interviews for both axis I and axis II. An important contribution involves comparing the frequency of co-occurring disorders in eating disorder patients with and without substance use disorders and the use of a third comparison group of

Table 4. Comparisons of Groups on the SCL-90-R

Parameter	SUD (n = 17)	ED-SUD (n = 21)	ED (n = 9)	F
SCL-90-R subscale				
Somatization	1.70 ^a	0.92 ^b	0.63 ^b	6.52
Obsessive-compulsive	1.81	1.38	1.27	1.31
Interpersonal sensitivity	2.17	1.33	1.72	2.83
Depression	2.57 ^a	1.65 ^b	1.42 ^b	5.36
Anxiety	2.28 ^a	1.24 ^b	0.89 ^b	7.97
Hostility	2.28 ^a	0.99 ^b	0.94 ^b	6.35
Phobic anxiety	1.48	1.07	0.98	0.96
Paranoid ideation	2.08 ^a	1.05 ^b	1.00 ^b	6.57
Psychoticism	1.75	1.05	0.83	3.36
GSI	2.01 ^a	1.22 ^b	1.09 ^b	5.32
PSDI	2.59 ^a	1.95 ^b	2.13	4.38
PST	69.0 ^a	48.6 ^b	38.9 ^b	7.12

NOTE. Results are mean scores for SCL-90-R subscales and three global indices of distress. Different superscripts indicate that the groups differ significantly ($P < .05$) based on post hoc (Tukey-B) *t* tests.

patients with substance use disorders without eating disorders. The three comparison groups were recruited from the same overall sample, eliminating potential selection confounds^{20-22,27} that make interpretation of previous studies uncertain. Moreover, our comparison groups did not differ in potential confounding demographic or cognitive variables.

Before discussing our findings, we note several limitations. The generalizability of our findings may be limited to inpatient populations. We examined diagnostic co-occurrence and psychologic distress in a heterogeneous sample of patients admitted to a private psychiatric hospital for a variety of problems. Thus, our findings need to be considered in this context and may differ from those observed in outpatient or community populations and from those reported in specialty research clinics for either eating disorders or substance use disorders.^{21,27} Moreover, our limited sample size did not allow for statistical comparison of eating disorder subtypes. For instance, it has generally been believed that patients with anorexia nervosa are more constricted and conforming, whereas patients with bulimia nervosa are characterized by greater instability and impulsivity. However, recent studies have suggested that this simple dichotomy is insufficient and that both patterns of constriction/conformity and instability/impulsivity are found in bulimia.^{23,36}

We found high rates of overlap with other DSM-III-R axis I disorders, especially mood disorders, among heterogeneous groups of inpatients with eating disorders, consistent with previous reports.^{19,25,37} Our findings of high overlap with axis II disorders are also generally consistent with previous studies of eating-disordered patients^{26,38,39} and substance abusers.^{19,40-43}

Although diagnostic overlap was high across all three groups, our group comparisons allowed for a finer distinction regarding potential comorbidity.²² No significant differences in the distribution of overlap with axis I disorders were observed. By contrast, the distribution of cluster B personality disorders differed significantly across the three groups—being assigned more frequently in SUD and ED-SUD groups than in the ED group. Cluster C diagnoses were assigned more frequently in the ED group. We observed significant differences between the three groups on self-reported psychologic dis-

tress, with the SUD group consistently reporting greater distress than ED-SUD and ED groups.

Eating disorders, especially anorexia nervosa, are regarded as being associated with an excessively stringent inhibitory style (high superego).^{44,45} Substance abuse, on the other hand, involves frequent and larger lacunae in impulse control (poorly integrated superego). The differential association of cluster C personality disorders with noncomorbid eating disorders and cluster B personality disorders with the two substance use disorder comparison groups is consistent with this distinction in self-control structures. All the disorders in question are disorders insofar as they involve an eruption of impulse.⁴⁶ However, in noncomorbid eating disorders, this appears to involve a narrower range (i.e., impulsive eating) in a more rigidly driven, inhibition-dominated character.

Our findings regarding group differences in SCL-90-R measures of symptomatic frequency and psychologic distress might be understood in terms of affect regulation models.^{23,47,48} These models posit that the eating disorder and substance use symptomatology represent attempts to cope with or to regulate negative affect. We speculate that the SUD group reported higher psychologic distress than both the ED-SUD and ED groups because hospitalization, in effect, removed the possibility of coping via drug use. In contrast, the ED-SUD group was able to rely on the eating symptomatology to manage distress. Whereas hospital staff are generally able to prevent access to drugs, they are less able to eliminate maladaptive eating behaviors. Although we offer these speculations, we acknowledge that our data cannot rule out alternative mechanisms,²³ such as reciprocal reinforcement (i.e., increased drug use and binge eating both follow food deprivation),⁴⁹ linking eating and substance use disorders.

Our findings suggest the delineation of meaningful subgroups of patients relevant for both treatment and theory. Clinically, identification of subgroups of patients who may require particular treatments (e.g., dual-diagnosis patients with coexisting substance use and eating disorders²⁰) or who might respond differentially to treatment (e.g., personality disorder patients^{50,51}) may inform treatment formulation and matching.

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