REVIEW

Personality profiles in patients with eating disorders

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Abstract : The present review focused on the personality profiles of patients with eating disorders. Studies using the Structured Clinical Interview for DSM-III-R Personality Disorder showed high rates of diagnostic co-occurrence between eating disorders and personality disorders. The most commonly observed were histrionic, obsessive-compulsive, avoidant, dependent and borderline personality disorders. Studies using the Cloninger's personality theory suggested that high Harm Avoidance might be relevant to the pathology of anorexia nervosa and high Novelty Seeking and Harm Avoidance to bulimia nervosa. Moreover, high Self-Directedness was suggested to be associated with favorable outcome in bulimia nervosa. The assessment of personality in a cross-sectional study, however, might be influenced by the various states of the illness. Therefore, a sophisticated longitudinal study will be required to advance this area of research.   J. Med. Invest. 49 : 87-96, 2002

INTRODUCTION

Eating disorders are severe illnesses characterized by uncertain pathogenesis, early onset, long course and therapeutic difficulties. Anorexia nervosa (AN) is characterized by a refusal to maintain a minimally normal body weight. Bulimia nervosa (BN) is characterized by repeated episodes of binge eating followed by inappropriate compensatory behaviors such as self-induced vomiting, misuse of laxatives or diuretics, fasting and excessive exercise. A disturbance in the perception of body shape and weight is an essential feature of both AN and BN. Clinical symptoms of them are various and complex, and the complexity has led many investigators to study the personality characteristics of patients with eating disorders (1-3). Premorbid personality pathology was suggested to play an important role in the etiology of eating disorders (4), and comorbid personality disorders were suggested influence the clinical course and outcome of eating disorders (5-7).

In the present article, we tried to review the existing literature of the personality studies in patients with eating disorders and discussed the methodological problems. To investigate personality profiles, there are two different methods, i.e., categorical and dimensional approaches. A typical example of the former is the Diagnostic and Statistical Manual of Mental Disorders (DSM)(8-10), and one of the latter is the Tridimensional Personality Questionnaire (TPQ) (11) or the Temperament and Character Inventory (TCI)(12).

CATEGORICAL APPROACHES TO PERSONALITY DISORDERS

A categorical approach to personality disorder was proposed in the DSM-III (8). Since the establishment of the criteria for personality disorder on Axis II described in the DSM-III, the comorbidity of eating disorders and personality disorders has been extensively studied (13-16). Many investigators have examined the distribution of DSM personality diagnoses in patients with eating disorders (17-21) and have found that the majority of eating disorder patients meet criteria for one or more DSM personal-

ity disorder diagnosis.

Since it was pointed out that conceptual problems make interpretation of the existing literature ambiguous, in the present article, we only overviewed the studies using the clinical sophisticated assessor of the Structured Clinical Interview for DSM-III-R (9) Personality Disorder (SCID-II) (22). The DSM-III-R personality disorder has three clusters described as odd/eccentric (cluster A), dramatic/emotional (cluster B), and anxious/fearful (cluster C). Cluster A personality disorder consists of paranoid, schizoid and schizotypal personality disorders. Cluster B is composed of antisocial, borderline, histrionic and narcissistic personality disorders. Cluster C consists of avoidant, dependent, obsessive-compulsive, passive-aggressive

and self-defeating personality disorders.

PERSONALITY PROFILES IN EATING DISORDERS STUDIED USING THE CATEGORICAL APPROACHES

The co-occurrences of personality disorders in previous studies are shown in Table 1.

Powers *et al.* (17) studied the co-occurrence of personality disorders in 30 patients with BN and found that 77% of the patients had at least one personality disorder and the commonly observed personality disorders were histrionic (53%), obsessive-compulsive (33%), paranoid (27%) and borderline (23%).

In the study of Wonderlich *et al.* (23), 46 eating disorder patients were interviewed to assess the

Table 1. Co-occurrence of personality disorders studied using the Structured Clinical Interview for DSM-III-R Personality Disorder (SCID-II) in patients with eating disorders

Authors	Subjects (n)	Personality disorder present (%)	Most common personality disorders (%)
Powers et al. (1988)	BN : 30	77	Histrionic (53), Obsessive-compulsive (33), Paranoid (27), Borderline (23)
Wonderlich et al. (1990)	ANR : 10 ANB : 10 BN : 16 BN+hAN : 10	72	ANR : Obsessive-compulsive (60), Dependent (40) ANB : Avoidant (60), Dependent (40) BN : Histrionic (31), Borderline (19), Avoidant (19), Dependent (19) BN+hAN : Borderline (40), Histrionic (40)
Braun et al. (1994)	ANR : 34 BN : 31 AN+BN : 22 BN+ hAN : 18	69	Borderline (17), Avoidant (14), Dependent (11)
Gillberg et al. (1995)	AN : 51	41	Obsessive-compulsive (30), Avoidant (14)
Kennedy et al. (1995)	AN : 22 AN+BN : 5 BN : 16	74	Avoidant (51), Paranoid (28), Self-defeating (26), Borderline (23), Dependent (23)
Bulik et al. (1995)	BN : 76	63	Borderline (37), Avoidant (36), Paranoid (28)
Matsunaga et al. (1998)	ANR : 36 AN+BN : 30 BN : 42	51	ANR : Avoidant (25), Obsessive-compulsive (19) AN+BN : Borderline (37), Avoidant (27) BN : Borderline (19), Avoidant (19)
Matsunaga et al. (2000)	rAN : 10 rAN+BN : 16 rBN : 28	26	Self-defeating (11), Obsessive-compulsive (9)

AN : anorexia nervosa, ANR : anorexia nervosa, restricting type, ANB : anorexia nervosa, bulimic type, BN : bulimia nervosa, BN+ hAN : bulimia nervosa with a history of anorexia nervosa, AN+BN : anorexia nervosa and bulimia nervosa, rAN : recovered from anorexia nervosa, rAN+BN : recovered from anorexia and bulimia nervosa, rBN : recovered from bulimia nervosa.

prevalence of personality disorders in four eating disorder subtypes (10 women with restricting anorexia nervosa (ANR), 10 with anorexia nervosa, binge and purge type (ANB), 16 with BN, 10 with BN with a history of anorexia nervosa (BN+hAN)), and it was shown that eating disorder subtypes varied in prevalence of concurrent personality disorder diagnosis. Overall, 33 patients (72%) were found to meet criteria for at least one personality disorder and 21 (46%) for more than one disorder. ANRs were characterized by high rates of obsessive-compulsive personality disorders (60%). Histrionic personality disorder (31%) was the most common diagnosis in the BNs, and the BN+hANs showed the highest rate of borderline (40%) and histrionic (40%) personality disorders. Dependent personality disorder appeared in all subtypes, particularly ANRs (40%), ANBs (40%), and BN+hANs (30%).

Braun *et al*. (18) investigated 105 eating disorder in-patients and found that 69% of the patients met criteria for at least one personality disorder diagnosis and the commonly observed were borderline (17%), avoidant (14%) and dependent (11%) personality disorders.

The study by Gillberg *et al*. (24) showed that 41% of 51 patients with AN had at least one personality disorder and the commonly observed personality disorders were obsessive-compulsive (30%) and avoidant (14%).

Kennedy *et al*. (19) investigated 43 in-patients with a diagnosis of AN or BN and reported that the prevalence of axis II diagnoses in this sample varied widely, with avoidant personality disorder occurring most frequently (51%). Approximately one quarter of the patients obtained a diagnosis of paranoid (28%), borderline (23%), dependent (23%), obsessive-compulsive (21%), and/or self-defeating (26%) disorders. Schizoid, schizotypal, histrionic, narcissistic, antisocial, and passive-aggressive were uncommon and were each observed in less than 7% Criteria for at least one personality disorder diagnosis were met by 74%

Bulik *et al*. (20) studied 76 patients with BN and found that 63% had at least one personality disorder diagnosis, and 51% of personality disorders were in cluster C, 41% were in cluster B and 33% were in cluster A. In their study, the most common personality disorders were borderline (37%), avoidant (36%) and paranoid (28%).

Matsunaga *et al*. (21) assessed the prevalence of personality disorders in 36 patients with ANR, 30 with AN and BN, and 42 with BN, and found that of the 108 patients, 51% met the criteria for at least one personality disorder and 34% met the criteria for two or more personality disorders. The most common personality disorders were avoidant (25%) and obsessive-compulsive (19%) in ANRs, and borderline (37%) and avoidant (27%) in AN and BNs, and borderline (19%) and avoidant (19%) in BNs.

Overall, from these findings, the co-occurrence rates of personality disorders in chronically ill patients were found to range widely from 41% to 77% On the other hand, Matsunaga *et al*. (25) studied patients who had recovered from eating disorders for at least 1 year to see if personality disorder symptoms persisted in the well state. The results were that 14 (26%) of 54 patients, including 2 patients recovered from AN (20%), 6 from AN and BN (38%), and 6 from BN (21%), met the threshold diagnoses for at least one personality disorder. When all of the patients were considered together, self-defeating personality disorder was most commonly found (11%), followed by obsessive-compulsive (9%), borderline and dependent (7%, each), histrionic (6%), and then avoidant (4%) personality disorders.

The fact that the rates of co-occurrence were much lower in recovered patients than in chronically ill patients suggests that the clinical state of the illness might influence the assessment of personality disorder.

DIMENSIONAL APPROACHES TO PERSONALITY CHARACTERISTICS

A dimensional approach to assess personality was recently developed as an alternative to traditional categorical assessment techniques. The dimensional approach differs from the categorical method in that it attempts to measure personality features as continuous rather than discrete entities. Investigators have long sought a tool that would not only characterize behavioral aspects of personality but also lead to the neurobiological system involved. One such tool is the TPQ or the TCI.

Cloninger (11) proposed tridimensional personality theory based on the hypothesis that stimulus-response characteristics are determined by neurochemical transmitters and thus constructed the TPQ. The three temperament dimensions of Novelty Seeking, Harm Avoidance and Reward Dependence are hypothesized to be determined genetically and to correlate with dopaminergic, serotoninergic and noradrenergic activity, respectively. Novelty Seeking traits were suggested to reflect variation in the brain's 'incentive,' or behavioral activation system. Dopaminergic

cell bodies in the midbrain receive inputs from several sources and then project impulses to the forebrain, thereby acting as the final common pathway for the behavioral activation system. Harm Avoidance traits were suggested to reflect variation in the brain's 'punishment', or behavioral inhibition system, which appears to be related to the serotoninergic system. Reward Dependence traits were suggested to reflect variation in a third major brain system that was postulated to facilitate acquisition of conditioned signals of reward or relief from punishment, and thereby also to increase resistance to extinction of previously rewarded behavior. Noradrenarine appears to be the major neuromodulator for this system.

Later, this model was extended to four dimensions of temperament and three dimensions of character, and the TCI was constructed (12). The four temperament dimensions are Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence, which theoretically are independently heritable and manifested early in life. As above, Novelty Seeking suggests a heritable bias in the activation or initiation of behavior, and individuals high in Novelty Seeking tend to be enthusiastic and engage quickly with whatever is new and unfamiliar. Harm Avoidance suggests a heritable bias in the inhibition of behavior, and high Harm Avoidance individuals tend to be inhibited and shy in most social situations. Reward Dependence suggests a heritable bias in the maintenance or continuation of ongoing behavior, and individuals high in this dimension tend to be warm, sensitive, dedicated, dependent, and sociable. Persistence was previously suggested to be a component of Reward Dependence, but was later regarded as discrete. This dimension measures perseverance maintained despite frustration and fatigue, and individuals high in Persistence tend to be industrious, persistent, and stable. The three dimensions of character consist of Self-Directedness, Cooperativeness and Self-Transcendence, which mature in adulthood and influence personal and social effectiveness by insight learning about self-concepts. Self-concepts vary according to the extent to which a person identifies the self as an autonomous individual, an integral part of humanity and an integral part of the universe as a whole. Each aspect of self-concept corresponds to Self-Directedness, Cooperativeness and Self-Transcendence, respectively. Sample questions from the TCI are as follows ; "I often feel that I am the victim of circumstances (Self-Directedness)", "I can usually accept other people as they are, even when they are very different from me (Cooperativeness)",

"I often become so fascinated with what I'm doing that I get lost in the moment, like I'm detached from time and place (Self-Transcendence)". In the past decade, the TPQ and the TCI were frequently used in many clinical studies (26-31). For example, Ebstein *et al.* (26) reported that individuals with long alleles of polymorphic exon III, which has a repeat sequence of the D4 dopamine receptor gene, are more likely to be novelty seeking individuals than those with short alleles, and Mazzanti *et al.* (27) revealed a positive linkage between a functional polymorphism in the promoter of the human serotonin transporter gene and the dimension of Harm Avoidance.

PERSONALITY CHARACTERISTICS IN EATING DISORDERS STUDIED USING THE DIMENSIONAL APPROACHES

The personality characteristics obtained from the TPQ and the TCI in the previous studies are shown in Table 2.

Waller *et al.* (32) administered the TPQ to 27 patients who met DSM-III-R criteria for BN and 128 control women, and found that scores for the Novelty Seeking and Harm Avoidance scales were significantly higher, while scores for the Reward Dependence scale were significantly lower for the bulimics than the controls.

Brewerton *et al.* (33) administered the TPQ to 147 patients with DSM-III-R defined eating disorders (110 patients with BN, 27 with AN, and 10 with BN and AN) and compared their scores to those of 350 control women. In addition, they reported that all subtypes of eating disorder patients scored significantly higher on the Harm Avoidance scale than the controls, and patients with BN had significantly higher degrees of the Novelty Seeking scale.

Using the TPQ, Kleifield *et al.* (34) also investigated four subgroups of DSM-III-R defined eating disorder patients (29 patients with ANR, 21 with AN and BN, 27 with BN, and 20 with BN+hAN). The results were as follows ; on the Novelty Seeking scale, ANRs had the lowest mean score which was significantly lower than the mean score for the control group (n=51) and was significantly lower than the mean score for the AN and BNs, BNs and BN+hANs. BNs and BN+hANs scored significantly higher than the controls. On the Harm Avoidance scale, the control women had the lowest mean score and were significantly lower than the other patient groups. Among the patient groups, the ANRs showed the lowest mean score which was significantly lower

Table 2. Personality characteristics studied using the Tridimensional Personality Questionnaire (TPQ) and the Temperament and Character Inventory (TCI) in patients with eating disorders

Authors	Subjects (n)	Instrument	Outcome
Waller et al. (1993)	BN : 27 CW: 128	TPQ	NS : CW< BN HA : CW< BN RD : BN < CW
Brewerton et al. (1993)	BN : 110 AN : 27 AN+BN : 10 CW: 350	TPQ	NS : CW< BN, AN+BN HA : CW< BN, AN, AN+BN
Kleifield et al. (1994)	ANR : 29 AN+BN : 21 BN : 27 BN+hAN : 20 CW: 51	TPQ	NS : AN < AN+BN, BN, BN+hAN, CW 　　; CW< BN, BN+hAN HA : CW< ANR, AN+BN, BN, BN+hAN RD : AN+BN, BN, BN+hAN < CW
Ward et al. (1998)	rAN : 18 CW: 18	TPQ	NS : rAN < CW
Mizushima et al. (1998)	BN : 23 ndCW: 19 dCW: 27	TCI	NS : ndCW< BN, dCW
Klump et al. (2000)	ANR : 146 ANP : 117 ANB : 60 CW: 827	TCI	NS : ANR, ANP < CW; ANR,ANP < ANB HA : CW< ANR, ANP, ANB RD : ANR, ANP < CW P : CW< ANR SD : ANR, ANP, ANB < CW C : ANR, ANP, ANB < CW ST : ANR < CW
Bulik et al. (2000)	frED : 21 prED : 34 ciED : 15 CW: 98	TCI	HA : frED, CW< ciED SD : prED, ciED < frED ; prED, ciED < CW C : prED, ciED < frED ; prED, ciED < CW
Fassino et al. (2001)	ANR : 50 ANB : 40 BN : 45 CW: 50	TCI	NS : ANR < BN HA : CW< ANR, ANB, BN SD : ANR, ANB, BN < CW C : ANR, BN < CW; BN < ANB

AN : anorexia nervosa, ANR : anorexia nervosa, restricting type, ANP : anorexia nervosa, purging type, ANB : anorexia nervosa, binge/purging type, BN : bulimia nervosa, BN+hAN : bulimia nervosa with a history of anorexia nervosa, AN+BN : anorexia nervosa and bulimia nervosa, rAN : recovered from anorexia nervosa, frED : fully recovered from eating disorder, prED : partially recovered from eating disorder, ciED : chronically ill eating disorder, CW: control women, dCW: control women with diet experiences, ndCW: control women without diet experiences, NS : Novelty Seeking, HA : Harm Avoidance, RD : Reward Dependence, P : Persistence, SD : Self-Directedness, C : Cooperativeness, ST : Self-Transcendence.

than that of the two combined diagnostic groups. On the Reward Dependence scale, AN and BNs, BNs and BN+hANs scored the lowest and were significantly lower than the control group.

Ward *et al.* (35) studied 18 women with a history of DSM-III-R AN and 18 controls, and reported that recovered subjects scored significantly lower on the Novelty Seeking scale than the controls.

To distinguish the trigger and the factors maintaining BN, Mizushima *et al.* (36) administered the TCI to 23 patients with a diagnosis of BN according to DSM-IV criteria, 19 normal controls who had never been on a diet and 27 normal controls who had dieted at least once in the past. The results were that on the Novelty Seeking scale, BNs and controls with diet experiences scored significantly

higher than the controls without diet experiences, but there was no significant difference between the BNs and the controls without diet experiences.

Klump *et al* . (30) examined temperament differences among AN subtypes according to DSM-IV criteria and controls. In their study, the TCI scores were compared among 146 women with ANR, 117 with purging-type AN (ANP), 60 with ANB, and 827 controls. The results were as follows ; on the Novelty Seeking scale, ANRs and ANPs were found to have significantly lower scores relative to controls or ANBs. All AN groups were found to have significantly higher Harm Avoidance and lower Cooperativeness and Self-Directedness scores relative to the controls. ANRs and ANPs scored significantly lower on the Reward Dependence than the controls, and ANRs scored significantly higher on the Persistence scale and lower on the Self-Transcendence scale than the controls.

Using the TCI, Fassino *et al.* (37) studied 135 out-patients with a diagnosis of AN or BN diagnosed according to DSM-IV criteria and 50 controls. Of 135 patients, 50 suffered from ANR, 40 from ANB and 45 from BN. On the Novelty Seeking scale, BNs scored significantly higher than ANRs, and on the Harm Avoidance scale, all eating disorder groups showed significantly higher than controls. On the Self-Directedness scale, all eating disorder groups showed significantly lower scores than controls. On the Cooperativeness scale, ANRs and BNs scored significantly lower than controls, and ANBs scored significantly higher than BNs.

These findings show that for the most part, anorexics might have high Harm Avoidance and bulimics have high Novelty Seeking and Harm Avoidance. However, the findings from the study of Bulik *et al* . (38) showed the possibility that some of the significant findings might be a consequence of the chronically ill state. They investigated the distinguishing characteristics between 70 DSM-III-R defined AN patients (21 fully recovered, 34 partially recovered, 15 chronically ill) and 98 controls, and found that the chronically ill patients reported significantly higher Harm Avoidance than either fully recovered patients or controls, and the fully recovered patients and the controls had significantly higher Self-Directedness and Cooperativeness than either the partially recovered or the chronically ill patients.

PERSONALITY CHARACTERISTICS AND BIOLOGICAL FINDINGS

Twin and family studies suggest that there may be a genetic vulnerability to AN (39), and it has been suggested that the vulnerability may be related to the central serotoninergic system (40-43). Considering Cloninger's theory (11, 12) in which Harm Avoidance is hypothesized to correlate with serotoninergic activity, the finding of Harm Avoidance elevation would appear to be compatible with the neurobiological findings showing significant serotoninergic dysfunction.

However, Battaglia *et al* . (44) studied 164 patients (50 with mood disorder, 53 with anxiety disorder, 7 with alcohol/substance abuse, 16 with eating disorder, 14 with other axis I disorders and 24 with personality disorder) and found that the high levels of Harm Avoidance were seen in all groups of patients except for the abuse group, suggesting that high Harm Avoidance might be a predisposing factor for, as well as a consequence of, a clinical or subclinical state of anxiety/depression that would influence the magnitude of measured inhibition. The findings of the study by Kleifield *et al.* (45) showed that Harm Avoidance was affected by levels of depression.

At the present time, the finding of high Harm Avoidance would not be regarded as a specific trait marker of AN. On the other hand, high Novelty Seeking in bulimics would be suggested to be a powerful predictor (44). Since Novelty Seeking is hypothesized to reflect the activity of the dopaminergic system (11), the suggestion would be very interesting in association with the findings displaying the serotoninergic or dopaminergic dysfunction in bulimics (46, 47).

PERSONALITY STUDIES IN TERMS OF TREATMENT RESPONSE

Some studies showed that co-occurrence of personality disorders in eating disorder patients might predict poor outcome. Wonderlich *et al* . (48) followed up 30 patients with DSM-III-R defined eating disorder for 4-5 years to assess the relations of personality disorder and eating disorder outcome. In their study, although SCID-II personality disorder diagnoses were not significantly associated with outcome ratings, borderline personality disorder assessed by the Wisconsin Personality Inventory (49) was found to be particularly predictive of poor outcome.

Regarding treatment response to cognitive behav-

ioral therapy, there are several studies as follows. Rossiter et al. (50) administered the Personality Disorders Examination (51) to 71 BN patients at baseline assessment in a study comparing the effectiveness of cognitive behavioral treatment with desipramine or the combination of both treatments, and found that at 1-year follow up there was still a trend toward high cluster B scores predicting poor treatment outcome.

Using the Personality Assessment Schedule (52), Fahy et al. (53) investigated 39 female out-patients with BN. All subjects entered a therapeutic trial, comprising eight weeks of cognitive behavioral therapy with follow-up after eight weeks and at one year. Patients with personality disorders had a significantly poorer response to treatment, but the differences between groups did not reach significance when controlled for mood and Body Mass Index.

Waller (6) explored the characteristics of bulimics who failed to complete cognitive behavior therapy. In his study, 50 women (28 completers ; 7 failures to engage ; 15 drop-outs) were compared on the Borderline Syndrome Index (BSI) (54), a measure to assess borderline personality disorder characteristics, and the result was that the drop-outs were also characterized by high scores on the BSI compared with the completers.

Bulik et al. (55) examined the prospective predictors of outcome 1 year after a clinical trial of cognitive behavioral therapy in 101 women with BN, and revealed that high Self-Directedness on the TCI predicted favorable outcome at 1 year, whereas personality disorder symptoms were not predictive.

Bulik et al. (56) examined characteristics of individuals who show a rapid and sustained response to cognitive behavioral therapy for BN, and reported that lower Harm Avoidance and higher Self-Directedness on the TCI were associated with rapid response. They concluded that the frequency of binging and the character quality of Self-Directedness may be useful predictors of those individuals who are likely to respond positively to a brief course of cognitive behavioral therapy for BN.

In summary, bulimic patients with personality disorders (especially cluster B personality disoreders) or low Self-Directedness characteristics are suggested to be poor responders especially to cognitive behavioral therapy.

METHODOLOGICAL PROBLEMS IN PERSONALITY STUDIES

The categorical approach to personality assessment and diagnosis, represented by the DSM, has generated controversy about whether it adequately models the domain of personality disorders (57, 58). Some criticisms of the categorical approach are as follows (4) ; Cut-off points for determining the threshold for an individual personality disorder criteria and also diagnostic threshold criteria are arbitrary. Often, there is inadequate agreement between different personality measures and significant comorbidity between various personality disorder categories. Personality disorder categories often do not show expected stability over time. There is such a high degree of heterogeneity within polythetic diagnositic categories that scientific generalization and clinical utility may be compromised.

On the other hand, the dimensional approach of personality offers several advantages as follows (4) ; A dimensional model enhances the statistical reliability and validity. Dimensional approaches diminish problems associated with determining diagnostic thresholds and the high degree of comorbidity associated with poor discriminant validity in the current categorical model. A dimensional model provides the most precise fit to the existing empirical data, and it could apply to both clinical and nonclinical samples because it measures personality characteristics as continuous rather than discrete entities. Considering these advantages, the authors usually prefer a dimensional model in clinical or nonclinical studies.

Another problem in personality studies is that the assessment of personality might be influenced by various ill states. Therefore, it is not clear whether the personality characteristics obtained in a cross-sectional study represent the premorbid personality traits or are the consequence of the illness.

CONCLUSIONS

The following conclusions were obtained from the literature. First, the studies using the SCID-II showed high rates of diagnostic co-occurrence between eating disorders and personality disorders and found that the commonly observed personality disorders were histrionic, obsessive-compulsive, avoidant, dependent and borderline. Second, the studies using the TPQ and the TCI suggested that patients with AN might be characterized by high Harm Avoid-

ance, and patients with BN by high Novelty Seeking and Harm Avoidance in the temperament scales. Third, in terms of treatment response, bulimic patients with personality disorders (especially cluster B personality disoreders) or low Self-Directedness characteristic would be suggested to be poor responders.

Since the assessment of personality may be influenced by various ill states, the relations between eating disorder and personality are still unclear. Therefore, the development of well-specified conceptual models of this relation including behavior genetic and prospective longitudinal research methodology will help to advance this area of research.

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