

An Examination of Cognitive Versus Behavioral Components of Recovery From Anorexia Nervosa

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Abstract: Definitions of “full recovery” from anorexia nervosa (AN) vary, and rarely include the cognitive criteria of lack of body image distortion and fear of weight gain. We investigated the implications of including or excluding cognitive criteria of AN in the definition of “full recovery”. Current symptomatology and personality characteristics associated with AN were assessed and compared in 42 behaviorally but not cognitively recovered women, 32 both behaviorally and cognitively recovered women, and 253 controls. On all measures included, the scores of the behaviorally recovered women were significantly more anorexic-like than those of the women recovered cognitively as well, who were indistinguishable from controls. Criteria for recovery from AN need to be refined and standardized, and cognitive criteria incorporated, to characterize a minority who recover to the extent that their eating attitudes and personality profiles are indistinguishable from those of women with no history of an eating disorder.

Key Words: Anorexia nervosa, recovery, personality.

(*J Nerv Ment Dis* 2006;194: 697–703)

Anorexia nervosa (AN) is a serious disorder characterized by a refusal to maintain a normal weight, an intense fear of weight gain, a disturbed body image, and amenorrhea (APA, 1994). Whereas attitudes toward food and weight obviously improve with recovery from AN, recovered individuals have generally been found to display residual behavioral and attitudinal disturbances characteristic of the disorder (Clinton and McKinlay, 1986; O'Dwyer et al., 1996; Windauer et al., 1993). Similarly, whereas research has shown that personality features associated with AN such as

perfectionism, obsessiveness, harm avoidance, and low self-esteem tend to regress to the mean with symptomatic improvement (Bloks et al., 2004; Bulik et al., 2000; Kennedy et al., 1990; Pollice et al., 1997; Ward et al., 1998), such characteristics have been found to persist to some extent after remission (Casper, 1990; O'Dwyer et al., 1996; Srinivasagam et al., 1995; Sullivan et al., 1998), which has implicated them in the etiology of the disorder. On the other hand, Ward et al. (1998) found recovered anorexics' levels of harm avoidance to be in the normal range, Sutandar-Pinnock et al. (2003) found their level of perfectionism as measured by the Eating Disorders Inventory (though not by another scale) to be similar to that of controls, and Hulley and Hill (2001) found that six athletes treated in the past for an eating disorder scored similarly to controls on a battery of questionnaires measuring psychological health.

One partial explanation for these inconsistencies is that the lack of consensus on criteria for recovery or outcome limits the comparability of findings. Some studies define recovery using the largely biological criteria of normal weight and regular menstruation (Pollice et al., 1997), others extend them to include the behavioral criteria of a lack of bingeing and purging symptoms (Bulik et al., 2000; Ro et al., 2004), and yet others add the absence of restrictive eating patterns (Brown et al., 2001, 2003; Srinivasagam et al., 1995). Outcome studies have traditionally relied on relatively general classification systems. The most common is a trichotomy between good, fair, and poor outcome, as exemplified by the Morgan and Russell criteria (1975). In all these schemas, “recovery” or “good outcome” is a weak index of overall status, since patients with residual psychological, cognitive, and personality features of AN are included.

More precise classification systems exist. Herzog et al. (1993) developed a Psychiatric Status Rating Scale (PSR) for AN based on DSM-IV criteria that implements a 6-point rating scale with 1 representing full recovery and 6 representing active and severe AN. This scale, however, is not uniformly implemented. Whereas some studies (Lowe et al., 2001) define good outcome as a PSR level of 1 (absence of all symptoms), others (Bloks et al., 2004; Herzog et al., 1993, 1999) include level 2 (presence of residual symptoms), which again includes those with lingering symptoms in the good outcome category.

The most stringent definition of recovery, providing the greatest conceptual clarity, is the absence of all symptoms of AN, as used, for example, in long-term outcome studies by Lowe et al. (2001) and Strober et al. (1997). A lack of all

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This research was partially supported by the Israel Science Foundation founded by the Israel Academy of Sciences and Humanities and the Israel Association of University Women.

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ISSN: 0022-3018/06/19409-0697

DOI: 10.1097/01.nmd.0000235795.51683.99

symptoms requires not only the biological criteria of normal weight maintenance and regular menstruation and the behavioral criteria of a sustained absence of bingeing or purging and normal, regular eating. It requires, in addition, the cognitive criteria of a lack of body image distortion, a lack of fear of weight gain, and the absence of vigilance over eating for weight control purposes.

Longitudinal studies to clarify whether or not personality traits associated with AN occur premorbidly are generally prohibitive in terms of scope and costs. Therefore, the observation that certain traits persist after recovery from AN, combined with the moderately heritable nature of personality traits (Tellegen et al., 1988), has led to the widespread conclusion that these traits may constitute a genetic endophenotype associated with a vulnerability to AN. The definition of recovery therefore has significant implications both for prognosis (outcome studies) and for etiological theory.

Our objective in this study was to explore to what extent the presence versus absence of cognitive recovery affects the symptomatic and personality profile of recovered individuals. We compared a group of women behaviorally but not cognitively recovered from AN with a group of women who had recovered both behaviorally and cognitively, hypothesizing that the symptomatic and personality profile of the former group would reveal residual features of AN, whereas that of the latter would not.

METHODS

Participants

Three hundred twenty-seven women aged 16 to 35, a subset of the participants in a genetic study of AN, participated in the study. They were recruited from the community via announcements on college campuses, in newspapers, and on the internet and comprised three groups:

1. Forty-two women fully recovered behaviorally but not cognitively from AN. Their BMI was 19 or more, men-

struation had been regular for at least 3 months, and they had been free from bingeing and purging symptoms for at least 8 consecutive weeks. However, body image distortion and/or fear of fatness, determined as described below, was still evident.

2. Thirty-two women fully recovered both behaviorally and cognitively from AN. In addition to a BMI of over 19, at least 3 months of regular menstruation, and a lack of bingeing and purging symptoms for a minimum of 8 consecutive weeks, they were free of body image distortion and fear of fatness (determined as described below).
3. Two hundred fifty-three women with no history of an eating disorder (screening procedure described below).

Participants and parents of participants under 18 years of age signed consent forms and returned them in person or by mail after receiving a full explanation about the project. There were no significant differences in demographic variables between the groups (Table 1) and no significant differences in the clinical characteristics of AN between the two groups of recovered anorexic women (Table 2).

AN Diagnosis

Initially, 322 women were screened by telephone to undertake a preliminary verification of a lifetime AN diagnosis and thus determine provisional study suitability. For the original genetic study, ascertainment rules were age 13 to 36 and an unequivocal lifetime diagnosis of AN by strict DSM-IV criteria. Exclusion criteria, determined upon screening, were organic brain syndrome, mental retardation, insufficient Hebrew language proficiency to complete questionnaires, unwillingness to provide informed consent or DNA samples, and a history of a medical condition rendering diagnosis uncertain. Two hundred twenty-five women originally satisfied all inclusion and exclusion criteria. Of these, 13 still fulfilled all DSM criteria for AN, and the remaining 212 were in various stages of recovery. AN diagnoses were made using an expanded version of the Structured Clinical

TABLE 1. Comparison of Demographic Variables Across Groups

	BR (N = 32) M (SD)	BCR (N = 42) M (SD)	FC (N = 253) M (SD)	Group Differences ^a F (p)
Age	24.13 (3.03)	23.40 (3.68)	23.91 (2.58)	0.74 (0.48) BR=BCR=FC
BMI	21.34 (1.79)	21.60 (2.10)	21.94 (3.09)	0.70 (0.50) BR=BCR=FC
Father's education ^b	3.00 (1.11)	2.76 (1.01)	3.01 (1.09)	0.97 (0.38) BR=BCR=FC
Mother's education ^b	2.84 (1.05)	2.81 (0.97)	2.92 (0.99)	0.28 (0.76) BR=BCR=FC
Number of siblings in family	3.53 (1.14)	3.24 (1.25)	3.65 (1.37)	1.72 (0.18) BR=BCR=FC
Birth order (from oldest)	2.31 (1.53)	1.98 (0.90)	1.87 (1.08)	2.30 (0.10) BR=BCR=FC
Age of menarche	13.50 (1.74)	13.11 (1.47)	13.31 (1.56)	0.55 (0.58) BR=BCR=FC

BCR, Behaviorally and cognitively recovered; BR, behaviorally recovered; FC, female controls.

^aThe group comparisons are a summary of a series of post hoc bigroup tests with Bonferroni correction. Group means are described as equal if $p \geq 0.05$.

^bParental education scale: 1 = primary school, 2 = high school, 3 = BA, 4 = MA, 5 = PhD.

TABLE 2. Comparison of Clinical Variables Between Group Recovered Behaviorally and Group Recovered Both Behaviorally and Cognitively

	BR (N = 32) M (SD)	BCR (N = 42) M (SD)	Significance T or χ^2 (p)
Age of onset of AN	15.38 (2.25)	15.25 (2.05)	T = 0.26 (0.80)
Duration of AN (strictly all four DSM-IV criteria)	1.99 (1.36)	2.08 (1.49)	T = 0.28 (0.78)
Time since onset (in years)	8.88 (2.80)	8.02 (3.54)	T = 1.12 (0.27)
Lowest BMI	15.38 (1.19)	15.37 (1.28)	T = 0.02 (0.99)
Severity of worst ever restricting symptoms ^a	12.69 (2.04)	12.34 (2.67)	T = 0.63 (0.53)
Severity of worst ever bingeing and purging symptoms ^a	5.24 (5.81)	4.85 (4.44)	T = 0.30 (0.77)
Severity of worst ever depression	2.07 (1.83)	1.47 (1.50)	T = 1.52 (0.13)
Number of other lifetime psychiatric diagnoses	3.05 (2.52)	2.19 (2.13)	T = 1.56 (0.13)
% Of restrictive subtype	62.5% (N = 20)	71.4% (N = 30)	χ^2 = 0.66 (0.42)
% Never treated	34.4% (N = 11)	21.4% (N = 9)	χ^2 = 1.46 (0.23)

BCR, Behaviorally and cognitively recovered; BR, behaviorally recovered.

^aScales constructed from answers to questions in diagnostic interview about weight-control methods used.

Interview for DSM-IV (First et al., 1996). Worst ever and current levels of AN symptomatology and lifetime diagnoses of additional Axis I pathology were also determined in the interviews. Best-estimate diagnosis was reached by a psychologist (R. B. M.) in consultation with a senior clinical psychologist (A. H. Z.), who read exact minutes of the interviews. Even though we relied on self-reported clinical information, SCID-based current and lifetime diagnoses of AN have been shown to be highly reliable (Williams, 1992).

Screening Procedure for Female Controls

Female controls were screened for history of an eating disorder using the following criteria: a BMI of 17.5 or less or over 30 currently or since reaching current height, an ideal BMI of 17.5 or less, amenorrhea, an EAT-26 score of above 20 (Garner et al., 1982), or body dissatisfaction scores in the highest percentile of all female participants in the genetic study ($N = 1126$; EDI body dissatisfaction score >38). Respondents were also asked whether “eating has ever been problematic or a source of distress for you,” and the responses of those replying in the positive were examined. Women who described symptoms compatible with eating disorders, or who fulfilled at least one of the other criteria above, were contacted and interviewed with the SCID-IV. Those for whom a lifetime diagnosis of the full clinical syndrome of AN was confirmed were transferred to the AN group. Those with a lifetime diagnosis of bulimia nervosa or eating disorder not otherwise specified, including subthreshold AN (all criteria except amenorrhea or body weight under 85% of ideal weight) and subthreshold BN (frequency of bingeing and purging under twice a week for 3 months), and those who refused to be interviewed were excluded.

Assessment of Level of Recovery

Seventy-four of the original 212 recovering or recovered anorexics interviewed were found to have recovered fully behaviorally, with a BMI of 19 or more, regular menstruation for 3 months at least, and absence of bingeing or purging symptoms for at least 8 consecutive weeks. Of these

74 women, 32 had fully recovered cognitively as well, demonstrating an absence of both fear of weight gain and body image distortion, determined as follows:

Fear of Weight Gain

Lack of fear as assessed during the in-person interview and by a response of “not at all true,” “not true,” “generally not true,” or “a little” (as opposed to “true” or “very true”) to the written self-report statement, “I am afraid of gaining weight.”

Body Image Distortion

“Feeling fat” despite a normal BMI, or claiming that a specific body part “feels fat” in the in-person interview, as well as overestimation of body size on the Figure Rating Scale (FRS; see Instruments section below), determined as follows:

All female participants in the original study rated themselves on the FRS. The distribution of their BMIs and that of their self-rating on the FRS were normalized to have a mean of 0 and a SD of 1. Body image distortion was calculated as the difference between the two standardized measures, which also has a mean of 0 and a SD of 1. A high score indicated a large difference (in SD units) between self-rating and BMI, thus indicating a high level of body image distortion. A score of 0 indicated no distortion—actual BMI and self-rating are at the same distance from the mean of their respective distributions, and a negative score indicated that the woman saw herself as thinner than she actually was. A score of over two thirds of a SD unit was taken as an indication of body image distortion.

The denial of the seriousness of emaciation designated in the DSM-IV as fulfilling this criterion was no longer relevant, since BMI was at least 19.

Instruments

Participants completed the following self-report measures of current symptomatology:

1. The Brief Symptom Inventory ($\alpha = 0.96$) is a 53-item scale measuring general symptomatology, scored on a

5-point Likert-like scale from “not at all” to “very much” (Derogatis, 1975). A Hebrew version (Bachar et al., 1997) has been widely used.

2. The Eating Attitudes Test-26 (EAT-26; $\alpha = 0.93$) is a reliable and valid measure of disordered eating attitudes and behaviors (Garner et al., 1982). For screening purposes, the three least frequent categories (“never,” “rarely,” and “sometimes”) are scored 0, “often” 1, “usually” 2, and “always” 3. For analyses, we scored responses from never (0) to always (5) to maximize variance. The Hebrew version (Koslowsky et al., 1992) has been used widely for research and clinical purposes.
3. The Eating Disorder Inventory (EDI-2) is a self-report measure of symptoms related to eating disorders (Garner et al., 1983). We used a validated Hebrew translation (Niv et al., 1998) of two of its 11 standardized subscales to assess the following. Drive for Thinness (EDIdt; $\alpha = 0.93$) is a 7-item scale assessing preoccupation with body weight, fear of gaining weight, desire to be thin, and food intake restriction. Body Dissatisfaction (EDIdb; $\alpha = 0.92$) is a 9-item subscale measuring overall (dis)satisfaction with the shape and size of various body parts. Respondents state how often, from never (0) to always (5), they think that their hips or thighs, for example, are too large.
4. The FRS consists of a pictorial scale depicting seven female figures increasing steadily in size from underweight to obese (Collins, 1991). Respondents entered a number corresponding to their current body size. The reliability of figure drawings in assessing current and ideal body size has been shown to be satisfactory (Ben-Tovim and Walker, 1991; Gardner et al., 1999; Thompson et al., 1995).

The self-report personality inventories completed are listed in Table 3.

Procedure

Participants were given or mailed a booklet of self-rating assessments, which they completed and mailed or delivered to an office. Interviews were scheduled for all participants who reported having had AN and were conducted in person or, for interviewees unable to attend an in-person interview, by telephone. No significant differences in eating disorder assessments have been found between telephone and personal interviews (Keel et al., 1999), and we observed no differences in this study.

The study was approved by the Ethics Committee of the Hebrew University of Jerusalem.

Data Analysis

A MANOVA was run entering group status (behaviorally recovered from AN, behaviorally and cognitively recovered from AN, female controls) as the fixed factor, and the self-report measures (body dissatisfaction, disordered eating, drive for thinness, general symptomatology, endorsement of the thin ideal, concern for appropriateness, drive for success, fear of failure, harm avoidance, obsessiveness, perfectionism, and self-esteem) as dependent variables.

TABLE 3. Self-Report Personality Questionnaires Administered

Name	Construct	Source	α	Items
Achievement	Fear of failure	(Nygard and Gjesme, 1973)	0.91	15
Motivation Scale	Drive for success		0.90	15
Child and Adolescent Perfectionism Scale	Perfectionism	(Hewitt and Flett, 1989)	0.91	22
Concern for Appropriateness Scale	Concern for appropriateness	(Lennox and Wolfe, 1984)	0.87	20
Maudsley Obsessive-Compulsive Inventory	Obsessiveness	(Hodgeson and Rachman, 1977)	0.79	30
Rosenberg Self-Esteem Scale	Self-esteem	(Rosenberg, 1965)	0.90	10
Sociocultural Attitudes to Appearance Questionnaire	Endorsement of the thin ideal	(Heinberg et al., 1995)	0.90	13
Tridimensional Personality Questionnaire	Harm avoidance	(Cloninger, 1987)	0.86	34

RESULTS

For the MANOVA overall, the Wilks λ significance test for multiple dependents was significant ($F = 5.47$, $df = 24$, $p < 0.001$). Women who had recovered both behaviorally and cognitively from AN scored similarly to female controls on all measures of symptomatology and personality characteristics measured. Women who had recovered behaviorally but not cognitively scored significantly higher than both other groups on body dissatisfaction, disordered eating, drive for thinness, general symptomatology, endorsement of the thin ideal, concern for appropriateness, fear of failure, harm avoidance, obsessiveness, and perfectionism and significantly lower on drive for success and self-esteem (Table 4).

DISCUSSION

Women who had recovered from AN behaviorally but not cognitively scored in the direction expected from subjects with AN on all 12 measures of symptomatology and personality characteristics underlying AN included in this study. In contrast, women who had, in addition to behavioral recovery, also made full cognitive recovery from the disorder were indistinguishable from female controls on self-report measures of body dissatisfaction, disordered eating, drive for thinness, general symptomatology, endorsement of the thin ideal, concern for appropriateness, drive for success, fear of failure, harm avoidance, obsessiveness, perfectionism, and self-esteem.

These results have two major implications. Firstly, the personality profile of recovered anorexics appears to be highly sensitive to the presence versus absence of cognitive criteria, which should therefore be incorporated into a stan-

TABLE 4. Comparison of Symptomatology and Personality Variables Underlying AN Across Groups Using MANOVA

Construct	BR (N = 32) M (SD)	BCR (N = 42) M (SD)	FC (N = 253) M (SD)	Group Differences F (p)
Symptomatology				
Body dissatisfaction	29.38 (11.31)	19.06 (7.91)	21.28 (10.10)	12.65 (<0.001) BR>(BCR=FC)
Disordered eating attitudes and behaviors	61.35 (24.03)	32.65 (16.10)	32.88 (16.44)	46.47 (<0.001) BR>(BCR=FC)
Drive for thinness	24.88 (9.09)	15.06 (7.19)	14.19 (8.02)	30.02 (<0.001) BR>(BCR=FC)
General symptomatology	81.83 (34.25)	53.26 (27.21)	50.40 (24.59)	24.65 (<0.001) BR>(BCR=FC)
Personality variables underlying AN				
Endorsement of the thin ideal	58.68 (14.79)	49.94 (15.13)	46.57 (13.24)	13.72 (<0.001) BR>(BCR=FC)
Concern for appropriateness	58.10 (16.81)	50.94 (13.32)	51.71 (11.84)	6.08 (<0.01) BR>(BCR=FC)
Drive for success	22.58 (8.08)	26.81 (6.22)	26.72 (6.50)	6.74 (<0.01) BR<(BCR=FC)
Fear of failure	27.33 (7.34)	21.06 (7.10)	21.68 (5.81)	15.71 (<0.001) BR>(BCR=FC)
Harm avoidance	18.95 (8.31)	13.42 (6.58)	13.79 (5.95)	11.72 (<0.001) BR>(BCR=FC)
Obsessiveness	10.60 (5.88)	6.42 (4.18)	7.51 (4.50)	9.01 (<0.001) BR>(BCR=FC)
Perfectionism	49.50 (18.27)	40.39 (12.37)	38.72 (13.88)	9.66 (<0.001) BR>(BCR=FC)
Self-esteem	15.42 (5.92)	20.45 (4.70)	21.19 (5.06)	21.56 (<0.001) BR<(BCR=FC)

BCR, Behaviorally and cognitively recovered; BR, behaviorally recovered; FC, female controls.

*The group comparisons are a summary of a series of post hoc bigroup tests with Bonferroni correction. Group means are described as equal if $p \geq 0.05$.

dardized schema of levels of recovery. Our study underscores the need for a refined concept of recovery, as exemplified in the PSR, and for internationally standardized criteria. The use of widely accepted and applied definitions and criteria would enhance comparability between studies and promote a fuller understanding of the relationship between AN symptomatology, recovery from the disorder, and underlying personality characteristics. The incorporation of a distinction between behavioral and cognitive recovery into standardized definitions of recovery levels could also be of relevance to other disorders, such as obsessive-compulsive disorder.

Secondly, our results challenge the generalization that individuals recovered from AN continue to display both certain cognitive features of the disorder and personality features like perfectionism and obsessiveness. This may be the case only when recovery from AN is operationalized, as it often is, using behavioral criteria. Albeit rare, full recovery from the disorder, including full regression to the population mean of underlying symptoms and personality features, appears in fact to be possible, when full behavioral as well as cognitive recovery is achieved. We screened 212 recovered women to find 32 (15%) who fit our stringent definition of full behavioral and cognitive recovery.

It is currently impossible to predict which individuals eventually recover from AN to this extent. Despite consider-

able attention devoted in research to the identification of prognostic factors, clear predictors of recovery from AN have proven elusive. In this study, no demographic features or clinical characteristics of illness differentiated between those who, after an average of 8 to 9 years from onset, had recovered behaviorally only versus both behaviorally and cognitively. There was a nonsignificant trend ($p = 0.13$) for those who had recovered behaviorally only to have had a history of more severe depression and more other Axis I psychiatric diagnoses than the more fully recovered group. It is possible that with greater numbers, comorbid conditions would emerge as a significant predictor of a lower level of recovery, as was found in Lowe et al. (2001).

Narrative studies of recovery have reported that retrospectively, recovered anorexics feel that factors such as personality strength, self-confidence, being ready, being understood (Hsu et al., 1992), feeling that life has meaning, and a connection within oneself and connection with others (Garrett, 1998) were important ingredients of recovery. A closer look at recovery in narrative terms and attempts to build bridges between qualitative and quantitative approaches may contribute to a better understanding of the recovery process and its predictors, promoters, and catalysts.

It is customary in eating disorders research to recruit clinical samples via treatment services, yet not all individuals

with AN seek treatment. Hoek (1993) estimated that community studies of AN will produce a 10-fold increase in estimated cases compared with studies based on psychiatric inpatients. Of the AN participants in this community study, 27% ($N = 20$) had never been treated for their disorder. In addition, it is our observation that those who responded to our recruitment announcements seeking women who had suffered from AN were mainly recovered individuals whose desire to promote a greater understanding of AN and its treatment was a major motivating factor in their participation. So whereas community samples are more representative of women with AN than treatment-based samples, the proportion of both behaviorally and cognitively recovered women may be greater than that in a follow-up study of severely ill inpatients.

We relied to a large extent on subjective self-report measures, which are vulnerable to social desirability. Parameter estimates may therefore be inflated by common method variance. Height and weight were also self-reported in this study. Whereas research has shown that anorexic and underweight women report their weights remarkably reliably (Doll and Fairburn, 1998; Keel et al., 1999; McCabe et al., 2001; Rowland, 1990), healthy control participants tend to slightly underreport weight, especially as BMI rises (Fortenberry, 1992; McCabe et al., 2001). So while the correlation between actual weight and reported weight is typically above 0.95 (Cash et al., 1989), the accuracy of self-reported weight may well vary slightly between the AN groups and controls.

It has been observed that individuals recovered from AN continue to display abnormal serotonin function (Kaye et al., 1991) and personality characteristics typical of AN, such as perfectionism (Bastiani et al., 1995; Srinivasagam et al., 1995), obsessiveness (Ward et al., 1998), and harm avoidance (Casper, 1990). Uniform definitions of recovery would enhance our understanding of such issues. Several prospective studies have shown that psychosocial functioning (Lowe et al., 2001; Strober et al., 1997) and personality features (Blok et al., 2004; Kennedy et al., 1990) are correlated with the disorder, changing with an improvement in symptomatology.

The median time to full recovery from AN is over 7 years from onset (Strober et al., 1997), and recovery may not be seen until 10 years or more (Strober et al., 1997; Theander, 1992). Studies investigating hypothesized trait features underlying AN in fully recovered individuals should therefore be conducted only after an extended recovery period. Several long-term outcome studies of AN have been conducted after 7 and a half (Herzog et al., 1999), 10 (Eckert et al., 1995), and even 20 years or more (Lowe et al., 2001; Ratnasuryia et al., 1991). However, these studies focus on outcome and not personality measures that would help elucidate the relationship between personality and symptomatology.

Anorexia nervosa-related personality characteristics no doubt constitute a cluster of biologically mediated phenotypic trait variables associated with a genetic diathesis for AN (Szabo and Terre Blanche, 1997). Yet this hypothesis must be reconciled with the finding that personality characteristics underlying AN correlate with symptomatology and fully regress, in a minority of women, to population means. Do these characteristics exist premorbidly? To what extent do characteristics at onset

predict prognosis? Do women who develop AN overcome their genetic predispositions in the process of recovery? Could genetic variance partially explain the outcome of AN? It is to be hoped that these issues will be addressed in future genetic studies and long-term longitudinal research.

ACKNOWLEDGEMENTS

We would like to extend a special thanks to all participants for their time and effort.

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