

Motivation to Change in Eating Disorders: Clinical and Therapeutic Implications

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Objectives: The aim of this study was to understand the clinical impact of the motivational stage of change on the psychopathology and symptomatology of anorexia nervosa (AN), bulimia nervosa (BN) and eating disorders not otherwise specified (EDNOS).

Method: The participants were 218 eating disorder (ED) patients (58 AN, 95 BN and 65 EDNOS), consecutively admitted to our hospital. All patients fulfilled DSM-IV criteria for these disorders.

Assessment: Assessment measures included the Eating Disorders Inventory (EDI), Bulimic Investigation Test Edinburgh (BITE), Beck Depression Inventory (BDI), four analogue scales of motivational stage, as well as a number of other clinical and psychopathological indices.

Results: Our results indicated higher motivation for change in BN than in AN and EDNOS patients ($p < 0.05$). For all groups, motivation to change was predicted by chronological age ($p < 0.05$). However, a longer duration of illness was only predictive of the motivational levels in EDNOS ($p < 0.05$) patients.

Conclusions: Compared to BN, AN and EDNOS patients are most resistant to change and the younger these patients are, the less likely they are to be motivated to change their disturbed eating behaviour. Copyright © 2007 John Wiley & Sons, Ltd and Eating Disorders Association.

Keywords: anorexia nervosa; bulimia nervosa; eating disorders; motivation; assessment; therapy

INTRODUCTION

Anorexia nervosa (AN) and bulimia nervosa (BN) are two complex disorders, which are generally

characterised by an interaction of behavioural, cognitive and emotional problems. Besides specific eating symptomatology, common clinical features of these disorders also include low motivation to change and denial of illness (Blake, Turnbull, & Treasure, 1997; Vandereycken, 2006a, 2006b; Ward, Troop, Todd, et al., 1996).

The relation between motivation to change and psychiatric disorders has received considerable research attention in recent years. In this sense, several studies have assessed motivation to change

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in individuals with specific disorders or non-adaptive behaviours such as smoking (Prochaska, DiClemente, & Norcross, 1992; Prochaska, Velicer, DiClemente, et al., 1988), cocaine dependence (Levin, Brooks, Bisaga, et al., 2006; Rohsenow, Monti, Martin, et al., 2004), anxiety disorders (Nickel, Tritt, Kettler, et al., 2005; Westra, 2004), obesity (Dalle Grave, Melchionda, Calugi, et al., 2005; Doyle, Siegel, & Supe, 2006; Waldrop, 2006) and alcohol problems (Figlie, Dunn, Gomes, et al., 2005; Shields & Hufford, 2005).

Recently, motivation to change in eating disorder (ED) has received increased attention given the less than optimal treatment outcomes for AN in particular (Feld, Woodside, Kaplan, et al., 2001; Geller, Drab-Hudson, Whisenhunt, et al., 2004; Hasler, Delsignore, Milos, et al., 2004). However, due to the considerable heterogeneity in assessment procedures (ranging from self-report questionnaires to semi-structured interviews), findings have been inconsistent (Vandereycken, 2006a; Wilson & Schlam, 2004).

From a clinical perspective, ED patients are notoriously ambivalent about treatment and frequently exhibit a lack of motivation to change (Vandereycken, 2006b; Vitousek, Watson, & Wilson, 1998). This has been explained by some authors as an instrumental attempt to preserve their egosyntonic symptomatology (Szmukler & Tantam, 1984) and may also reflect their ambivalence about recovery (Treasure & Ward, 1997; Vitousek et al., 1998) and fear of relinquishing symptoms that may serve an anxiolytic function for them (Strober, 2004).

For these reasons, although commonly addressed clinically, readiness to change in ED patients has received minimal attention in the literature. The few extant studies indicate that higher motivation is associated with marital status (Bussolotti, Fernandez-Aranda, Solano, et al., 2002), better outcome (Blake et al., 1997; Feld et al., 2001; Geller et al., 2004; Rodriguez-Cano & Beato-Fernandez, 2005), lower dropout rates (Serpell, Treasure, Teasdale, et al., 1999) and greater adherence to treatment (Ametller, Castro, Serrano, Martinez, & Toro, 2005). Readiness to change has generally been found to be independent of gender (Fernández-Aranda, Aitken, Badia, et al., 2004). Few studies focusing on the association between motivational variables and clinical and symptomatological characteristics of ED patients have been conducted (Rodriguez-Cano & Beato-Fernandez, 2005).

The objectives of the present study were threefold: (a) to determine the motivational stage of patients with ED in general and across ED subtypes (AN vs.

BN vs. eating disorders not otherwise specified (EDNOS) in specific; (b) to assess the relation between motivational stage and clinical and/or symptomatological variables and (c) to determine factors that are correlated with level of motivation to change in ED patients.

METHOD

Sample

The data were collected cross-sectionally. Participants were consecutive admissions to the Eating Disorders Unit of the University Hospital of Bellvitge. All patients in this research were female and fulfilled the DSM-IV (APA, 1994) criteria for AN ($N=58$), BN, ($N=95$) or EDNOS ($N=65$). The mean age for the total sample was 22.6 years ($SD=5.2$). Individuals were excluded from the analyses if they had missing values for any diagnostic items. For the present analysis, from an initial sample of 226 ED, we excluded eight males (three AN, three BN and two EDNOS). The Ethics Committee of the University Hospital of Bellvitge (Barcelona, Spain) approved this study and informed consent was obtained from all participants.

Assessment: Evaluation of Sociodemographic and Clinical Variables

Demographic and clinical information including age, marital status, education, occupation, living arrangements, weekly binge-purge frequency, weekly laxative and diuretic use and number of previous suicide attempts and ideation, were obtained via semi-structured interview by the assessing psychologist-psychiatrist (Fernandez-Aranda & Turon, 1998).

In addition commonly used questionnaires in the field of EDs were used for the assessment. A battery consisting of the following questionnaires was administered to each participant:

The Eating Attitudes Test (EAT-40)

This questionnaire, contains 40 items, including symptoms and behaviours common to ED patients, and provides an index of the severity of the disorder (Garner & Garfinkel, 1979). The higher the scores, the more disturbed the eating behaviour. This questionnaire has been adapted to the Spanish population and has presented high internal con-

sistency (Cronbach's alpha coefficient = 0.93; Castro, Toro, Salamero, & Guimerá, 1991).

The Eating Disorders Inventory (EDI)

This is a self-report questionnaire composed of 64 items designed to assess the cognitive and behavioural features characteristic of ED patients (Garner, Olmsted & Polivy, 1983). There are eight subscales measuring: (a) Drive for Thinness, (b) Bulimia, (c) Body Dissatisfaction, (d) Ineffectiveness, (e) Perfectionism, (f) Interpersonal Distrust, (g) Interoceptive Awareness and (h) Maturity Fears. This questionnaire has been adapted to a Spanish population and has presented high internal consistency between the different subscales (Cronbach's alpha coefficient range 0.74–0.92) and a test–retest reliability ranging from 0.30 to 0.82 (Guimerá & Torrubia, 1987).

The Bulimic Investigatory Test Edinburgh (BITE)

This questionnaire contains 33 items that measure presence and severity of bulimic symptoms (Henderson & Freeman, 1987). There are two subscales: the symptomatology scale (30 items) that determines the seriousness of the symptoms, and the severity scale (3 items) that offers a severity index. In this study only the symptomatology scale scores were used to differentiate between participants with and without a bulimic pathology (cut-off point 20). The higher the scores, the greater the severity. This questionnaire has been found to have a high internal consistency (Cronbach's alpha coefficient range: 0.96). It has recently been validated in a Spanish population (Rivas, Bernabé, & Jiménez, 2004).

Beck Depression Inventory (BDI)

The BDI is a 21 self-report inventory that measures the severity of depression (Beck, Ward, Mendelson, et al., 1961). The inventory differentiates between normal controls and depressed individuals. It has been adapted to the Spanish population (Vazquez & Sanz, 1999).

Motivational stage of change

The motivational stage of change was assessed through a visual analogue scale, including five different types of questions which evaluated the subjective desire for treatment, need of treatment; impairment, the extent to which the patient was worried (Worry [Self]) and the extent of to which the parents were worried (Worry [Family]). The scales range from 0 to 8, and have previously been

described and applied elsewhere in a broader ED sample (Bussolotti et al., 2002).

Statistical Analysis

The statistical analysis was carried out with SPSS (version 12.0 for Windows) and StatXact program (version 5.0 for Windows). Firstly, with the Spearman's R nonparametric correlation coefficient (also called Spearman's Rho) the linear association for the motivational scales was evaluated. These analyses were carried out separately for each diagnostic group and for the total sample. Since the p value (significance) of these coefficients normally depends on the samples sizes, the classical proposal by Fleiss (1986) and Cohen (1988) was employed to determine its practical magnitude. This proposal states that: (a) the association is considered small when R results are lower than 0.30 (in absolute value); (b) the correlation is moderate (or medium) when R results range from 0.30 to 0.50 and (c) associations are large if the R results are superior to 0.50.

Secondly, with the analysis of variance procedure, the differences in motivational levels of each diagnostic condition were assessed. *Post hoc* comparisons between diagnoses were estimated with the Scheffé test. Thirdly, the association between the motivational levels and the clinical and socio-demographic features was measured. Different analyses were conducted for the total sample and the diagnostic subtypes. Quantitative features were estimated with the Spearman's Rho, while categorical-nominal features were assessed with the Cramer's V coefficient. Finally, linear regression models were conducted in order to determine the contribution of the duration of the disorder (independent variable) on the actual motivational levels (dependent variables). Five different models were adjusted (one for each motivational scale or dependent variable) and independent analyses were conducted for each diagnostic condition and for the total sample. The global predictive capacity of the models was valued with the Adjusted R^2 coefficient.

RESULTS

Sociodemographic Variables

Tables 1 and 2 contain the sociodemographic and clinical features for each diagnostic subgroup. Most of the patients were single (89.4%) and reported

Table 1. Sociodemographic and clinical features of the sample

	AN (N = 58)	BN (N = 95)	EDNOS (N = 65)	F	p
	Mean (SD)	Mean (SD)	Mean (SD)		
Age (years)	22.5 (5.1)	23.0 (5.6)	22.1 (4.7)	0.563	0.571
Body mass index ^{†‡}	15.9 (1.4)	21.8 (4.2)	20.4 (3.3)	57.654	0.001
Bulimic episodes (weekly) [†]	2.93 (6.6)	9.26 (8.4)	2.54 (4.3)	22.570	0.001
Vomiting episodes (weekly) [†]	5.43 (9.7)	9.71 (10.3)	2.44 (4.9)	12.437	0.001
Laxative use (weekly) [†]	2.11 (5.4)	5.17 (19.7)	3.41 (14.0)	0.709	0.493
Diuretic use (weekly) [†]	0.76 (5.7)	1.80 (9.7)	2.00 (7.5)	0.392	0.676
Number of previous treatments [†]	1.36 (2.7)	1.10 (1.2)	0.70 (0.9)	2.159	0.118

AN, anorexia nervosa; BN, bulimia nervosa; EDNOS, eating disorder not otherwise specified.

[†] The table contains the mean and standard deviation for every diagnostic group. The statistical comparison was analyses of variance for one factor.

[‡] BMI was obtained with the ratio weight (kg)/height (m)².

secondary or university study (55.5% and 33.9%, respectively). Approximately, one third of the patients were employed (33.2%). The mean age was 22.6 years ($SD = 5.2$).

Motivation Stage by ED Subtype

Table 3 contains the results of the analyses of variance, which evaluated the differences in motivational levels (dependent variables) for each diagnostic subtype (independent variable). The contrasts estimated with the Scheffé procedure suggest that BN patients showed higher mean values on several motivational scales than EDNOS patients, but similar results to AN patients. However, AN

patients reported higher mean scores on worry by family members. These values differed significantly from both BN and EDNOS participants.

Motivational and Psychometric Variables

Considering all the motivational scales, severity of ED (measured by total EDI scores) was positively associated to impairment ($r = 0.43$; $p < 0.05$), need of treatment ($r = 0.27$; $p < 0.05$) and worry (Self; $r = 0.25$; $p < 0.05$), whereas desire for treatment ($r = 0.12$; $p = ns$) and worry by family members ($r = -0.01$; $p = ns$) were not significant. Similar results ($p < 0.0001$) were observed comparing motivational scales and BDI depression scores. In

Table 2. Psychometric features of the sample by ED diagnostic group

	AN (N = 58)	BN (N = 95)	EDNOS (N = 65)	F	p
	Mean (SD)	Mean (SD)	Mean (SD)		
Eating Attitudes Test [†]	55.64 (26.3)	49.96 (19.0)	48.00 (23.8)	1.54	0.22
EDI: drive for thinness [†]	10.85 (6.2)	14.98 (4.9)	12.10 (6.2)	9.76	0.001
EDI: bulimia [†]	3.32 (4.9)	11.38 (5.4)	4.10 (5.0)	52.94	0.001
EDI: body dissatisfaction [†]	13.81 (7.4)	17.84 (7.3)	16.34 (8.1)	4.54	0.012
EDI: ineffectiveness [†]	12.85 (6.8)	11.73 (6.9)	10.17 (5.9)	1.96	0.14
EDI: perfectionism [†]	8.11 (4.5)	7.62 (4.3)	6.56 (4.1)	1.65	0.20
EDI: interpersonal distrust [†]	7.85 (5.0)	6.45 (4.7)	5.17 (4.2)	3.97	0.02
EDI: interceptive awareness [†]	12.53 (6.0)	12.76 (6.3)	11.63 (7.1)	0.51	0.60
EDI: maturity fears [†]	8.66 (5.4)	7.93 (5.11)	6.71 (4.2)	1.90	0.15
EDI: total scale [†]	77.98 (31.5)	90.41 (29.8)	73.07 (30.8)	5.77	0.004
Depression: BDI [†]	26.51 (13.0)	24.57 (11.2)	23.73 (10.9)	0.74	0.48
Anxiety: SAD [†]	16.60 (8.1)	14.36 (9.2)	15.91 (8.1)	1.12	0.33
BSQ [†]	116.1 (51.0)	131.8 (44.6)	123.7 (44.9)	1.82	0.17
BITE: symptoms scale [†]	15.88 (7.8)	23.7 (4.4)	17.9 (7.6)	28.00	0.001
BITE: severity scale [†]	9.67 (8.3)	18.03 (7.2)	13.91 (9.4)	16.57	0.001

AN, anorexia nervosa; BN, bulimia nervosa; EDNOS, eating disorder not otherwise specified; EAT, Eating Attitudes Test; EDI, Eating Disorders Inventory; BDI, Beck Depression Inventory; SAD, Social Avoidance and Distress Scale; BSQ, Body Shape Questionnaire; BITE, The Bulimic Investigatory Test Edinburgh; ED, eating disorder.

[†] The table contains the mean and standard deviation for every diagnostic group. The statistical comparison was due with the analyses of variance for one factor.

Table 3. Analyses of variance for evaluating the relation between the diagnostic group and the motivational level

	AN (N = 58)	BN (N = 95)	EDNOS (N = 65)	<i>p</i> value*	<i>Post hoc</i> comparison [†]
	Mean (SD)	Mean (SD)	Mean (SD)		
Desire for treatment	6.60 (2.1)	7.04 (1.5)	6.26 (2.0)	0.025	$\phi_1 = -0.44$ (-1.18 to 0.30) $\phi_2 = 0.34$ (-0.46 to 1.14) $\phi_3 = 0.78$ (0.07 to 1.49) [‡]
Need of treatment	6.16 (2.1)	6.60 (1.8)	5.61 (2.0)	0.008	$\phi_1 = -0.44$ (-1.24 to 0.35) $\phi_2 = 0.55$ (-0.32 to 1.41) $\phi_3 = 0.99$ (0.22 to 1.77) [‡]
Impairment	4.42 (2.6)	5.06 (2.5)	4.37 (2.6)	0.159	$\phi_1 = -0.64$ (-1.69 to 0.41) $\phi_2 = 0.05$ (-1.08 to 1.19) $\phi_3 = 0.69$ (-0.31 to 1.70)
Worry (Self)	6.18 (2.1)	6.83 (1.7)	6.11 (1.9)	0.031	$\phi_1 = -0.65$ (-1.44 to 0.13) $\phi_2 = 0.07$ (-0.79 to 0.92) $\phi_3 = 0.72$ (0.03 to 1.48) [‡]
Worry (Family)	7.56 (1.1)	7.03 (1.8)	6.78 (2.0)	0.037	$\phi_1 = 0.53$ (-0.17 to 1.23) $\phi_2 = 0.78$ (0.02 to 1.54) [‡] $\phi_3 = 0.25$ (-0.43 to 0.93)

AN, anorexia nervosa; BN, bulimia nervosa; EDNOS, eating disorder not otherwise specified.

*The table contains the mean and standard deviation for every diagnostic group. The statistical comparison was analyses of variance for one factor.

[†]Scheffé test: ϕ_1 , contrast 'AN versus BN' (95% Confidence Interval); ϕ_2 , contrast 'AN versus EDNOS' (95% Confidence Interval); ϕ_3 , contrast 'BN versus EDNOS' (95% Confidence Interval).

[‡]Contrast is significant at least at the 0.05 level.

contrast, the number of previous treatments was positively associated with desire for treatment ($r = 0.17$; $p < 0.05$), need of treatment ($r = 0.17$; $p < 0.05$) and impairment ($r = 0.23$; $p < 0.05$), but not with worry (Self; $r = 0.11$; $p > 0.05$) or worry (Family; $r = 0.06$; $p > 0.05$).

Motivation and Clinical Variables

Table 4 contains the results of the assessed relationship between the motivational scales and age, duration of the ED and age of onset by ED subtype. As shown in the table, results suggest a lack of association between age of ED onset and motivational scores. Considering entire ED sample, results suggest that an older age was positively associated with desire for treatment ($r = 0.25$; $p < 0.05$), need of treatment ($r = 0.36$; $p < 0.05$), impairment ($r = 0.26$; $p < 0.05$) and own worry ($r = 0.27$; $p < 0.05$), whereas familial worry ($r = -0.007$; $p = \text{ns}$) was not significantly associated with age. On the other hand a longer duration of the disorder was positively associated with desire for treatment ($r = 0.24$; $p < 0.05$), need of treatment ($r = 0.32$; $p < 0.05$), impairment ($r = 0.28$; $p < 0.05$) and own worry ($r = 0.29$; $p < 0.05$), but not with worry by the family ($r = -0.007$; $p = \text{ns}$).

Predictors of Motivation

By considering the ED subtypes individually, duration of illness was not predictive of motivational levels in either AN or BN participants. However in EDNOS, longer duration of the illness was associated with higher scores on: desire for treatment ($p < 0.006$), need of treatment ($p < 0.002$) and own worry ($p < 0.024$). For each additional year an EDNOS patient suffered from the disorder, the score in the desire for treatment scale is increased by 0.18 points (95% CI: 0.06–0.31).

As shown in Table 5, in the total sample, longer duration of illness was predictive of higher scores on all the motivational scales except for the family worry scale. However, duration of illness explains only a small part of the variability of motivation in all models, since the R^2 coefficients are very small. For this reason the results of the linear equations should be interpreted with caution.

DISCUSSION

This study examined factors associated with motivation to change in a clinical sample of individuals with AN, BN and EDNOS.

Not surprisingly and consistent with prior literature (Hasler et al., 2004; Treasure & Ward,

Table 4. Spearman's correlation coefficient (and 95% confidence interval) for evaluating the linear association between the motivational scales and chronological age, duration of the disorder and age of onset by ED diagnostic group

		Desire for treatment	Need of treatment	Impairment	Worry (Self)	Worry (Family)
Age	AN N = 58	R = 0.127 (-0.14 to 0.37)	R = 0.270 [†] (0.01 to 0.50)	R = 0.372 [†] (0.12 to 0.58)	R = 0.306 [†] (0.05 to 0.53)	R = 0.197 (-0.07 to 0.44)
	BN N = 95	R = 0.240 [†] (0.04 to 0.42)	R = 0.350 [†] (0.16 to 0.52)	R = 0.253 [†] (0.05 to 0.43)	R = 0.176 (-0.03 to 0.36)	R = -0.228 [†] (-0.41 to -0.03)
Duration of ED	EDNOS N = 65	R = 0.354 [†] (0.12 to 0.55)	R = 0.483 [†] (0.27 to 0.65)	R = 0.175 (-0.07 to 0.40)	R = 0.336 [†] (0.10 to 0.54)	R = 0.043 (-0.20 to 0.29)
	AN N = 58	R = 0.100 (-0.18 to 0.36)	R = 0.214 (-0.06 to 0.46)	R = 0.223 (-0.06 to 0.47)	R = 0.212 (-0.07 to 0.46)	R = -0.228 (-0.30 to -0.25)
Age of ED onset	BN N = 95	R = 0.066 (-0.15 to 0.28)	R = 0.202 (-0.013 to 0.40)	R = 0.313 [†] (0.10 to 0.50)	R = 0.238 [†] (0.02 to 0.43)	R = -0.017 (-0.23 to 0.20)
	EDNOS N = 65	R = 0.460 [†] (0.22 to 0.65)	R = 0.497 [†] (0.26 to 0.68)	R = 0.273 [†] (0.01 to 0.50)	R = 0.377 [†] (0.12 to 0.59)	R = 0.017 (-0.25 to 0.28)
AN N = 58	AN N = 58	R = -0.074 (-0.34 to 0.21)	R = -0.064 (-0.33 to 0.22)	R = 0.058 (-0.22 to 0.33)	R = 0.037 (-0.24 to 0.31)	R = 0.072 (-0.21 to 0.34)
	BN N = 95	R = 0.142 (-0.07 to 0.34)	R = 0.188 (0.03 to 0.39)	R = 0.030 (-0.19 to 0.24)	R = -0.042 (-0.25 to 0.17)	R = -0.313 (-0.49 to -0.11)
EDNOS N = 65	AN N = 58	R = -0.078 (-0.33 to 0.19)	R = 0.114 (-0.16 to 0.37)	R = -0.061 (-0.32 to 0.21)	R = 0.001 (-0.26 to 0.26)	R = 0.083 (-0.18 to 0.34)

AN, anorexia nervosa; BN, bulimia nervosa; EDNOS, eating disorder not otherwise specified.

[†]Correlation is significant at least at the 0.05 level.

1997; Vitousek et al., 1998), our results indicated that individuals with EDs report low motivation to change. However, in this sample, degree of motivation differed across ED subtypes with greater motivation to change as reflected in desire for and need for treatment observed in individuals with BN. This result is consistent with some (Kaplan & Garfinkel, 1999; Ward et al., 1996), but not all (Geller & Drab, 1999; Hasler et al., 2004) previous studies which explored the relation between diagnostic subtype and motivation to change.

Various explanations for subtypes differences exist. First, the egosyntonic nature of symptoms of AN, namely food restriction and exercise are fully consonant with their goals of thinness and self-control (Vandereycken, 2006b) and may provide anxiety to individuals who are temperamentally highly anxious (Strober, 2004). Thus motivation to change these behaviours is minimal. Consistent with this hypothesis, motivation to change was not associated with body mass index, as has been reported elsewhere (Geller & Drab, 1999; Gusella, Butler, Nichols, et al., 2003). In contrast, some of the behaviours associated with BN (e.g. binge eating) are in direct opposition to their desire to control weight (Serpell & Treasure, 2002) and therefore, the motivation to change them may be greater. In addition to the functional significance of symptoms (Vansteenkiste, Soenens, & Vandereycken, 2005), the differential resistance to treatment observed across ED subtypes may also be related to low self-efficacy and a passive attitude to their own capacity to change (Blake et al., 1997) and differences in decisional balances (pro-cons) *vis-a-vis* their current situation (Cockell, Geller, & Linden, 2002).

We also found that motivation to change was positively associated with current age and duration of illness in BN and EDNOS, but not in AN. Age of onset of the illness was not associated with any motivation variable. Older individuals with longer duration of illness showed greater desires to change in terms of desire for and need for treatment, acknowledgement of impairment and their own concern about their well-being. Older individuals with AN acknowledged more impairment and concern, but did not show any greater desire for or need for intervention. This finding partially confirms the results from some (Feld et al., 2001; Vansteenkiste et al., 2005; Vitousek et al., 1998), but not all (Hasler et al., 2004; Rodriguez-Cano & Beato-Fernandez, 2005) previous studies. Although patients may express motivation for change, this motivation may be more external (e.g. family, financial, legal) than internal (Vansteenkiste et al.,

Table 5. Linear regression models for evaluating the effect of the duration of the disorder on the motivational scales.

Total sample	<i>B</i>	<i>p</i> value	95% CI for <i>B</i>	Adjusted <i>R</i> ² coefficient
Desire for treatment	0.076	0.007	0.021 to 0.131	0.033
Need of treatment	0.106	0.001	0.051 to 0.162	0.065
Impairment	0.128	0.002	0.049 to 0.206	0.047
Worry (Self)	0.101	0.001	0.044 to 0.158	0.056
Worry (Family)	-0.008	0.767	-0.059 to 0.044	0.022

Analyses for total sample (*N* = 218 ED).

2005). Clinicians should pay careful attention to the degree of internal motivation to change in ED individuals, especially during the initial stages of therapy.

This study has several limitations. First, the methodology for assessing motivation to change consisted of simple visual analogue scales and we did not include any additional motivation to change assessments for validation. Nonetheless, these relatively straightforward scales were able to detect differences across the three diagnostic subgroups. Second, we did not dissect which aspects of treatment patients welcomed. For example, an individual with BN may desire treatment for binge eating, but be less welcoming of treatment that targets their desire for weight loss. Future investigations should be more granular in their assessments of just what aspects of their illness individuals are motivated to change. Third, we did not go so far as to consider factors that may influence motivation to change in patients, such as interpersonal relationships, medical morbidity and failure in work or school. A more comprehensive understanding of motivation to change should also account for these factors.

In conclusion, longer duration of illness and older age appear to be associated with greater motivation to change in individuals with BN and EDNOS. Regardless of age, duration of illness and BMI, motivation to change remains a significant challenge in individuals with AN. Until we surmount this fundamental obstacle to intervention, we will be unable to take significant strides in enhancing our ability to treat this often devastating illness.

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REFERENCES

- Amettler, L., Castro, J., Serrano, E., Martinez, E., & Toro, J. (2005). Readiness to recover in adolescent anorexia nervosa: Prediction of hospital admission. *Journal of Child Psychology and Psychiatry*, *46*, 394–400.
- APA. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Press.
- Beck, A. T., Ward, C. H., & Mendelson, M., et al. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, *4*, 561–571.
- Blake, W., Turnbull, S., & Treasure, J. (1997). Stages and process of change in eating disorders: Implications for therapy. *Clinical Psychology and Psychotherapy*, *4*, 186–191.
- Bussolotti, D., Fernandez-Aranda, F., & Solano, R., et al. (2002). Marital status and eating disorders: An analysis of its relevance. *Journal of Psychosomatic Research*, *53*, 1139–1145.
- Castro, J., Toro, J., Salamero, M., & Guimerá, E. (1991). The eating attitudes test: Validation of the spanish version. *Evaluacion Psicologica/Psychological Assessment*, *7*, 175–190.
- Cockell, S. J., Geller, J., & Linden, W. (2002). The development of a decisional balance scale for anorexia nervosa. *European Eating Disorder Review*, *10*, 359–375.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. New Jersey: LEA.
- Dalle Grave, R., Melchionda, N., & Calugi, S., et al. (2005). Continuous care in the treatment of obesity: An observational multicentre study. *Journal of Internal Medicine*, *258*, 265–273.
- Doyle, M., Siegel, R., & Supe, K. (2006). Stages of change and transitioning for adolescent patients with obesity and hypertension. *Advances in Chronic Kidney Diseases*, *13*, 386–393.
- Feld, R., Woodside, D. B., & Kaplan, A. S., et al. (2001). Pretreatment motivational enhancement therapy for eating disorders: A pilot study. *International Journal of Eating Disorders*, *29*, 393–400.
- Fernández-Aranda, F., Aitken, A., & Badia, A., et al. (2004). Personality and psychopathological traits of males with an eating disorder. *European Eating Disorders Review*, *12*, 367–374.
- Fernandez-Aranda, F., & Turon, V. (1998). *Trastornos alimentarios. Guía básica de tratamiento en anorexia y bulimia*. Barcelona: Masson.

- Figlie, N. B., Dunn, J., & Gomes, L. C., et al. (2005). Motivation to change drinking behavior: The differences between alcohol users from an outpatient gastroenterology clinic and a specialist alcohol treatment service. *Sao Paulo Medical Journal*, *123*, 223–228.
- Fleiss, J. L. (1986). *The design and analysis of clinical experiments*. New York: Wiley.
- Garner, D. M., & Garfinkel, P. E. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. *Psychological Medicine*, *9*, 273–279.
- Garner, D. M., Olmsted, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, *2*, 15–34.
- Geller, J., & Drab, L. (1999). The readiness and motivation interview: A symptom specific measure of readiness for change in the eating disorders. *European Eating Disorders Review*, *7*, 259–278.
- Geller, J., Drab-Hudson, D. L., & Whisenhunt, B. L., et al. (2004). Readiness to change dietary restriction predicts outcomes in the eating disorders. *Eating Disorders*, *12*, 209–224.
- Guimerá, E., & Torrubia, R. (1987). Adaptación española del 'Eating Disorder Inventory' (EDI) en una muestra de pacientes anoréxicas. *Anales de Psiquiatría*, *3*, 185–190.
- Gusella, J., Butler, G., & Nichols, L., et al. (2003). A brief questionnaire to assess readiness to change in adolescents with eating disorders: Its applications to group therapy. *European Eating Disorders Review*, *11*, 58–71.
- Hasler, G., Delsignore, A., & Milos, G., et al. (2004). Application of Prochaska's transtheoretical model of change to patients with eating disorders. *Journal of Psychosomatic Research*, *57*, 67–72.
- Henderson, M., & Freeman, C. P. L. (1987). A self-rating scale for bulimia. The 'BITE'. *British Journal of Psychiatry*, *150*, 18–24.
- Kaplan, A. S., & Garfinkel, P. E. (1999). Difficulties in treating patients with eating disorders: A review of patient and clinician variables. *Canadian Journal of Psychiatry*, *44*, 665–670.
- Levin, F. R., Brooks, D. J., & Bisaga, A., et al. (2006). Severity of dependence and motivation for treatment: Comparison of marijuana- and cocaine-dependent treatment seekers. *Journal of Addictive Diseases*, *25*, 33–41.
- Nickel, C., Tritt, K., & Kettler, C., et al. (2005). Motivation for therapy and the results of inpatient treatment of patients with a generalized anxiety disorder: A prospective study. *Wien Klin Wochenschr*, *117*, 359–363.
- Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change. Applications to addictive behaviors. *The American Psychologist*, *47*, 1102–1114.
- Prochaska, J. O., Velicer, W. F., & DiClemente, C. C., et al. (1988). Measuring processes of change: Applications to the cessation of smoking. *Journal of Consulting and Clinical Psychology*, *56*, 520–528.
- Rivas, T., Bernabé, R., & Jiménez, M. (2004). Fiabilidad y validez del test de investigación bulímica de Edimburgo (BITE) en una muestra de adolescentes españoles. *Psicología Conductual*, *12*, 447–461.
- Rodriguez-Cano, T., & Beato-Fernandez, L. (2005). Attitudes towards change and treatment outcome in eating disorders. *Eating and Weight Disorders*, *10*, 59–65.
- Rohsenow, D. J., Monti, P. M., & Martin, R. A., et al. (2004). Motivational enhancement and coping skills training for cocaine abusers: Effects on substance use outcomes. *Addiction*, *99*, 862–874.
- Serpell, L., & Treasure, J. (2002). Bulimia nervosa: Friend or foe? The pros and cons of bulimia nervosa. *International Journal of Eating Disorders*, *32*, 164–170.
- Serpell, L., Treasure, J., & Teasdale, J., et al. (1999). Anorexia nervosa: Friend or foe? *International Journal of Eating Disorders*, *25*, 177–186.
- Shields, A. L., & Hufford, M. R. (2005). Assessing motivation to change among problem drinkers with and without co-occurring major depression. *Journal of Psychoactive Drugs*, *37*, 401–408.
- Strober, M. (2004). Pathologic fear conditioning and anorexia nervosa: On the search for novel paradigms. *International Journal of Eating Disorders*, *35*, 504–508.
- Szmukler, G. I., & Tantam, D. (1984). Anorexia nervosa: Starvation dependence. *British Journal of Medical Psychology*, *57*, 303–310.
- Treasure, J., & Ward, A. (1997). A practical guide to the use of motivational interviewing in anorexia nervosa. *European Eating Disorder Review*, *5*, 102–114.
- Vandereycken, W. (2006a). Denial of Illness in anorexia nervosa—a conceptual review: Part1—diagnostic significance and assessment. *European Eating Disorder Review*, *14*, 341–351.
- Vandereycken, W. (2006b). Denial of illness in anorexia nervosa—a conceptual review: Part 2—different forms and meanings. *European Eating Disorder Review*, *14*, 352–368.
- Vansteenkiste, M., Soenens, B., & Vandereycken, W. (2005). Motivation to change in eating disorder patients: A conceptual clarification on the basis of self-determination theory. *International Journal of Eating Disorders*, *37*, 207–219.
- Vazquez, C., & Sanz, J. (1999). Fiabilidad y evaluación de la versión española del Inventario para depresión de Beck en pacientes con trastornos psiquiátricos. *Clínica y Salud*, *10*, 59–81.
- Vitousek, K., Watson, S., & Wilson, G. T. (1998). Enhancing motivation for change in treatment-resistant eating disorders. *Clinical Psychology Review*, *18*, 391–420.
- Waldrop, J. (2006). Behavior change in overweight patients. Motivational interviewing as a primary care intervention. *Advance for Nurse Practitioners*, *14*, 23–27; quiz 28.
- Ward, A., Troop, N., & Todd, G., et al. (1996). To change or not to change—'how' is the question? *The British Journal of Medical Psychology*, *69*, 139–146.
- Westra, H. A. (2004). Managing resistance in cognitive behavioural therapy: The application of motivational interviewing in mixed anxiety and depression. *Cognitive Behaviour Therapy*, *33*, 161–175.
- Wilson, G. T., & Schlam, T. R. (2004). The transtheoretical model and motivational interviewing in the treatment of eating and weight disorders. *Clinical Psychology Review*, *24*, 361–378.