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...
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-


**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 (Guimera & 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 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 sociodemographic 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 R² 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...
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 Scheffe 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

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**Table 1.** Sociodemographic and clinical features of the sample

<table>
<thead>
<tr>
<th></th>
<th>AN (N = 58)</th>
<th>BN (N = 95)</th>
<th>EDNOS (N = 65)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>22.5 (5.1)</td>
<td>23.0 (5.6)</td>
<td>22.1 (4.7)</td>
<td>0.563</td>
<td>0.571</td>
</tr>
<tr>
<td>Body max index$^{1,1}$</td>
<td>15.9 (1.4)</td>
<td>21.8 (4.2)</td>
<td>20.4 (3.3)</td>
<td>57.654</td>
<td>0.001</td>
</tr>
<tr>
<td>Bulimic episodes (weekly)$^{1}$</td>
<td>2.93 (6.6)</td>
<td>9.26 (8.4)</td>
<td>2.54 (4.3)</td>
<td>22.570</td>
<td>0.001</td>
</tr>
<tr>
<td>Vomiting episodes (weekly)$^{1}$</td>
<td>5.43 (9.7)</td>
<td>9.71 (10.3)</td>
<td>2.44 (4.9)</td>
<td>12.437</td>
<td>0.001</td>
</tr>
<tr>
<td>Laxative use (weekly)$^{1}$</td>
<td>2.11 (5.4)</td>
<td>5.17 (19.7)</td>
<td>3.41 (14.0)</td>
<td>0.709</td>
<td>0.493</td>
</tr>
<tr>
<td>Diuretic use (weekly)$^{1}$</td>
<td>0.76 (5.7)</td>
<td>1.80 (9.7)</td>
<td>2.00 (7.5)</td>
<td>0.392</td>
<td>0.676</td>
</tr>
<tr>
<td>Number of previous treatments$^{1}$</td>
<td>1.36 (2.7)</td>
<td>1.10 (1.2)</td>
<td>0.70 (0.9)</td>
<td>2.159</td>
<td>0.118</td>
</tr>
</tbody>
</table>

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

$^{1}$ The table contains the mean and standard deviation for every diagnostic group. The statistical comparison was analyses of variance for one factor.

$^{1}$ BMI was obtained with the ratio weight (kg)/height (m)$^2$.

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

<table>
<thead>
<tr>
<th></th>
<th>AN (N = 58)</th>
<th>BN (N = 95)</th>
<th>EDNOS (N = 65)</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating Attitudes Test$^{1}$</td>
<td>55.64 (26.3)</td>
<td>49.96 (19.0)</td>
<td>48.00 (23.8)</td>
<td>1.54</td>
<td>0.22</td>
</tr>
<tr>
<td>EDI: drive for thinness$^{1}$</td>
<td>10.85 (6.2)</td>
<td>14.98 (4.9)</td>
<td>12.10 (6.2)</td>
<td>9.76</td>
<td>0.001</td>
</tr>
<tr>
<td>EDI: bulimia$^{1}$</td>
<td>3.32 (4.9)</td>
<td>11.38 (5.4)</td>
<td>4.10 (5.0)</td>
<td>52.94</td>
<td>0.001</td>
</tr>
<tr>
<td>EDI: body dissatisfaction$^{1}$</td>
<td>13.81 (7.4)</td>
<td>17.84 (7.3)</td>
<td>16.34 (8.1)</td>
<td>4.54</td>
<td>0.012</td>
</tr>
<tr>
<td>EDI: ineffectiveness$^{1}$</td>
<td>12.85 (6.8)</td>
<td>11.73 (6.9)</td>
<td>10.17 (5.9)</td>
<td>1.96</td>
<td>0.14</td>
</tr>
<tr>
<td>EDI: perfectionism$^{1}$</td>
<td>8.11 (4.5)</td>
<td>7.62 (4.3)</td>
<td>6.56 (4.1)</td>
<td>1.65</td>
<td>0.20</td>
</tr>
<tr>
<td>EDI: interpersonal distrust$^{1}$</td>
<td>7.85 (5.0)</td>
<td>6.45 (4.7)</td>
<td>5.17 (4.2)</td>
<td>3.97</td>
<td>0.02</td>
</tr>
<tr>
<td>EDI: interceptive awareness$^{1}$</td>
<td>12.53 (6.0)</td>
<td>12.76 (6.3)</td>
<td>11.63 (7.1)</td>
<td>0.51</td>
<td>0.60</td>
</tr>
<tr>
<td>EDI: maturity fears$^{1}$</td>
<td>8.66 (5.4)</td>
<td>7.93 (5.11)</td>
<td>6.71 (4.2)</td>
<td>1.90</td>
<td>0.15</td>
</tr>
<tr>
<td>EDI: total scale$^{1}$</td>
<td>77.98 (31.5)</td>
<td>90.41 (29.8)</td>
<td>73.07 (30.8)</td>
<td>5.77</td>
<td>0.004</td>
</tr>
<tr>
<td>Depression: BDI$^{1}$</td>
<td>26.51 (13.0)</td>
<td>24.57 (11.2)</td>
<td>23.73 (10.9)</td>
<td>0.74</td>
<td>0.48</td>
</tr>
<tr>
<td>Anxiety: SAD$^{1}$</td>
<td>16.60 (8.1)</td>
<td>14.36 (9.2)</td>
<td>15.91 (8.1)</td>
<td>1.12</td>
<td>0.33</td>
</tr>
<tr>
<td>BSQ$^{1}$</td>
<td>116.1 (51.0)</td>
<td>131.8 (44.6)</td>
<td>123.7 (44.9)</td>
<td>1.82</td>
<td>0.17</td>
</tr>
<tr>
<td>BITE: symptoms scale$^{1}$</td>
<td>15.88 (7.8)</td>
<td>23.7 (4.4)</td>
<td>17.9 (7.6)</td>
<td>28.00</td>
<td>0.001</td>
</tr>
<tr>
<td>BITE: severity scale$^{1}$</td>
<td>9.67 (8.3)</td>
<td>18.03 (7.2)</td>
<td>13.91 (9.4)</td>
<td>16.57</td>
<td>0.001</td>
</tr>
</tbody>
</table>

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.

$^{1}$ 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.
Motivation to Change

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

<table>
<thead>
<tr>
<th></th>
<th>AN (N = 58)</th>
<th>BN (N = 95)</th>
<th>EDNOS (N = 65)</th>
<th>p value *</th>
<th>Post hoc comparison†</th>
</tr>
</thead>
</table>
| 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: \( \phi_1 \) contrast ‘AN versus BN’ (95% Confidence Interval); \( \phi_2 \) contrast ‘AN versus EDNOS’ (95% Confidence Interval); \( \phi_3 \) 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

<table>
<thead>
<tr>
<th></th>
<th>Desire for treatment</th>
<th>Need of treatment</th>
<th>Impairment</th>
<th>Worry (Self)</th>
<th>Worry (Family)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>AN N = 58</td>
<td>R = -0.127 (−0.14 to 0.37)</td>
<td>R = 0.230 (0.01 to 0.50)</td>
<td>R = -0.372 (0.12 to 0.58)</td>
<td>R = 0.306 (0.05 to 0.53)</td>
<td>R = 0.197 (−0.07 to 0.44)</td>
</tr>
<tr>
<td>BN N = 95</td>
<td>R = 0.240 (0.04 to 0.42)</td>
<td>R = 0.330 (0.16 to 0.52)</td>
<td>R = -0.253 (−0.05 to 0.43)</td>
<td>R = 0.176 (−0.03 to 0.36)</td>
<td>R = -0.226 (−0.41 to 0.03)</td>
</tr>
<tr>
<td>EDNOS N = 65</td>
<td>R = 0.354 (0.12 to 0.59)</td>
<td>R = 0.483 (0.07 to 0.65)</td>
<td>R = -0.175 (−0.07 to 0.40)</td>
<td>R = 0.336 (0.10 to 0.54)</td>
<td>R = 0.043 (0.20 to 0.29)</td>
</tr>
<tr>
<td><strong>Duration of ED</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AN N = 58</td>
<td>R = 0.100 (−0.18 to 0.36)</td>
<td>R = 0.214 (−0.06 to 0.46)</td>
<td>R = -0.223 (−0.07 to 0.46)</td>
<td>R = 0.212 (−0.07 to 0.46)</td>
<td>R = -0.228 (−0.30 to 0.25)</td>
</tr>
<tr>
<td>BN N = 95</td>
<td>R = 0.066 (−0.15 to 0.28)</td>
<td>R = 0.202 (−0.03 to 0.40)</td>
<td>R = -0.313 (0.10 to 0.50)</td>
<td>R = 0.238 (0.02 to 0.43)</td>
<td>R = -0.017 (−0.23 to 0.20)</td>
</tr>
<tr>
<td>EDNOS N = 65</td>
<td>R = 0.460 (0.22 to 0.69)</td>
<td>R = 0.497 (0.26 to 0.68)</td>
<td>R = -0.274 (0.01 to 0.50)</td>
<td>R = 0.377 (0.12 to 0.59)</td>
<td>R = 0.017 (−0.25 to 0.28)</td>
</tr>
<tr>
<td><strong>Age of ED onset</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AN N = 58</td>
<td>R = -0.074 (−0.34 to 0.21)</td>
<td>R = -0.064 (−0.33 to 0.22)</td>
<td>R = 0.058 (−0.22 to 0.33)</td>
<td>R = 0.037 (−0.24 to 0.31)</td>
<td>R = 0.072 (−0.21 to 0.34)</td>
</tr>
<tr>
<td>BN N = 95</td>
<td>R = -0.142 (−0.07 to 0.34)</td>
<td>R = 0.188 (0.03 to 0.39)</td>
<td>R = 0.030 (−0.19 to 0.24)</td>
<td>R = 0.042 (−0.25 to 0.17)</td>
<td>R = 0.001 (−0.26 to 0.26)</td>
</tr>
<tr>
<td>EDNOS N = 65</td>
<td>R = -0.078 (−0.33 to 0.19)</td>
<td>R = 0.114 (−0.16 to 0.37)</td>
<td>R = 0.061 (−0.32 to 0.21)</td>
<td>R = 0.003 (−0.26 to 0.26)</td>
<td>R = 0.083 (−0.18 to 0.34)</td>
</tr>
</tbody>
</table>

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

*Correlation is significant at least at the 0.05 level.
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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