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RESEARCH ARTICLE

Motivation to recover for adolescent and adult eating disorder patients in residential treatment

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Abstract

Objective: This study aimed to assess how baseline motivation to recover impacts eating disorder (ED) and comorbid symptoms at end-of-treatment (EOT) for adolescents and adults in inpatient/residential treatment.

Method: Two hundred and three adolescent (M = 15.90) and 395 adult (M = 25.45) patients with a Diagnostic Statistical Manual, 5th edition ED diagnosis completed the Decisional Balance Scale (DBS) at baseline, and psychosocial measures (ED symptoms, anxiety, depression, obsessive–compulsive disorder symptoms), and %body mass index (kg/m^2; BMI) or median %BMI (for adolescents) at baseline and EOT.

Results: The DBS Avoidance Coping and Burdens subscales at baseline were significantly lower for adolescents than adults ($p < 0.001$), whereas the DBS Benefits subscale at baseline did not significantly differ between subsamples ($p = 0.06$). Motivation to recover via DBS subscales was a more reliable predictor of EOT outcomes for both ED and comorbid psychopathology in adults (significant predictor in 19 of 54 total analyses, and 4 significant associations post-Bonferroni correction) than adolescents (significant predictor in 5 of 54 total analyses, and 1 significant association post-Bonferroni correction).

Conclusions: Baseline motivation to recover may be an important predictor of outcome for adult patients in inpatient/residential treatment but does not appear associated with outcomes for adolescent patients.

KEYWORDS

adolescent, adult, motivation, predict, treatment

Abbreviations: ACT, acceptance and commitment therapy; AN, anorexia nervosa; AN-R, anorexia nervosa, restricting; AN-BP, anorexia nervosa, binge-purge; ARFID, avoidant/restrictive food intake disorder; BDI-II, Beck Depression Inventory, 2nd edition; BED, binge eating disorder; BMI, body mass index; BN, bulimia nervosa; CDI-2, Children's Depression Inventory, 2nd edition; DBS, Decisional Balance Scale; DSM-5, Diagnostic Statistical Manual, 5th edition; EDQOL, Eating Disorder Quality of Life Scale; ED, eating disorder; EPSI, Eating Pathology Symptom Inventory; EFFT, emotion-focused family therapy; ERC, Eating Recovery Center; EOT, end-of-treatment; FBT, family-based treatment; IP, inpatient; OCD, obsessive–compulsive disorder; OCI-CV, Obsessive–Compulsive Inventory-Child Version; OCI-R, Obsessive–Compulsive Inventory-Revised; OSFED, other specified feeding or eating disorder; PHP, partial hospitalisation program; RES, residential; STAI, State Trait Anxiety Inventory.

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Highlights

- The Decisional Balance Scale (DBS) Avoidance Coping and Burdens subscales at baseline to inpatient/residential treatment were significantly lower for adolescents than adults ($p < 0.001$), whereas the DBS Benefits subscale at baseline did not significantly differ between samples ($p = 0.06$).
- DBS Burdens subscale did not significantly predict outcome in the adult sample.
- Motivation to recover was a more reliable predictor of both eating disorder and comorbid psychopathology in adults than adolescents.

1 | INTRODUCTION AND AIMS

Motivation to change has often been examined as it pertains to eating disorder (ED) outcome. In a review of predictors of treatment outcome mostly among adult samples, lower motivation to change was a strong predictor of poorer outcome at discharge and follow-up, as well as a strong predictor of dropout (Vall & Wade, 2015). Another recent review of studies with mostly adults across all ED diagnoses, other than avoidant/restrictive food intake disorder (ARFID), found that pretreatment level of motivation to change was associated with changes in degree of restriction, the severity of bingeing and also in cognitive measures of ED pathology. There was little support for change in the severity of purging behaviour (Clausen et al., 2013). A recent meta-analysis with mostly adults found pretreatment motivation to be positively correlated with ED improvement, but had no effect on anxiety or depression (Sansfaçon et al., 2020). The majority of studies included in these reviews were conducted in outpatient settings. Younger patients and those with anorexia nervosa (AN) have been found to be less likely to be motivated for recovery than older patients, perhaps not surprising, given the ego-syntonic nature of AN and the fact that adolescents are often brought to treatment against their wishes by their parents (Casasnovas et al., 2015).

Specific studies with adolescent individuals with EDs in residential (RES) treatment have previously demonstrated that individuals with higher baseline motivation to change exhibited a higher weekly weight gain during treatment, but did not show better end-of-treatment (EOT) outcome in ED-specific psychopathology and depression (Hillen et al., 2015). Another study found the odds of being discharged as 'improved' (a composite variable) was greater for adolescents with AN who were more motivated to change (McHugh, 2007). While the impact of motivation to change on adolescent ED recovery is generally seen as less significant, due to parental influence which often determines recovery (Byrne et al., 2015), research nevertheless shows a role for motivation to change for adolescents in predicting weight gain during treatment (Gowers & Smyth, 2004), and maintaining weight after treatment (Castro-Fornieles et al., 2006). Among adolescents with AN, greater motivation to change has also been associated with fewer future hospitalisations (Ametller et al., 2005), and higher rates of remission after nine months of treatment (Pauli et al., 2017).

The few studies that have examined how motivation to change impacts ED recovery in RES adult patients have found similar results to the aforementioned ones in adolescents, with higher motivation for change predicting better treatment outcome in individuals with AN (Bewell & Carter, 2008; Wade et al., 2009), and other ED diagnoses (Fitzpatrick & Weltzin, 2014; Geller et al., 2004; Mansour et al, 2012). Clinically, the authors have noted a seemingly greater role in motivation for adults in impacting their recovery in inpatient (IP)/ RES care as compared to adolescents. Further, as we previously saw acceptance as a predictor of outcomes in adults with EDs at a higher level of care, it followed that we should examine the converse side of motivation to change (Walden et al., 2018).

Several assessment tools have been developed to measure motivation to change in EDs. The Decisional Balance Scale (DBS; Cockell et al., 2002) was originally created to assess motivation in individuals with AN and has three subscales: Functional Avoidance, Burdens, and Benefits. A study of older adolescent patients in RES ED treatment found that change in the DBS subscale Benefits, from admission to discharge, was significantly associated with posttreatment ED psychopathology, whereas the Burdens and Functional Avoidance subscales showed no relationship to posttreatment ED psychopathology (Delinsky et al., 2011).

However, while baseline motivation in adolescents and adults has been shown to positively impact treatment

outcome at EOT, it is unclear how motivation to change in a RES population may impact weight or ED-related factors such as anxiety, depression or quality of life. It was anticipated that motivation to change may play a lesser role in outcome at EOT in an IP/ RES population than in an outpatient population given the self-selecting bias of those patients whose course of recovery includes IP/ RES treatment. Therefore, the aims of the current study are to separately examine in a large sample of adolescents and adults how scores on the DBS at baseline predict EOT changes in (1) ED and comorbid symptoms, (2) weight recovery (for AN patients only) and (3) changes in quality of life (for adults only).

2 | METHODS

2.1 | Participants

Study participants ($N = 676$) were adolescent and adult patients diagnosed with AN (either restricting type, anorexia nervosa, restricting [AN-R] or binge-purge type, anorexia nervosa, binge-purge [AN-BP]), bulimia nervosa (BN) or other specified feeding or eating disorder (OSFED; American Psychiatric Association, 2013) admitted to Eating Recovery Center (ERC), an ED treatment center located in Denver, CO that has several levels of care, including IP, RES and partial hospitalisation programs (PHPs) between January 2017 and April 2020. IP and RES patients participate in the same programming, but IP designation typically results in more frequent psychiatric physician contacts (dependent upon US private healthcare insurance requirements). Patients in PHP are typically deemed medically and/or psychiatrically stable enough to be outside medical supervision during the evenings. No participants admitted during this interval were systematically excluded, though participation was contingent upon informed consent. Relevant Institutional Review Board approval was obtained for the administration of the questionnaires to both adolescent and adult participants.

2.2 | Adolescents

Adolescent participants ($n = 203$) were 172 females, 27 males and 4 participants who preferred not to report gender, ages 15–18 years, meeting Diagnostic Statistical Manual, 5th edition (DSM-5) criteria for AN, BN or OSFED. Patients with a diagnosis of ARFID or binge eating disorder (BED) were excluded from analyses due to concerns about the DBS adequately assessing their symptom profiles. Informed consent was obtained from the parent or legal guardian of each adolescent participant, and assent was obtained from each adolescent patient. Participants then completed online self-report assessments within three days of admission and again within seven days of discharge. This RES program for adolescents is informed primarily by family-basedtreatment (FBT; J. Lock & Le Grange, 2013) and emotion-focused family therapy (EFFT; Robinson et al., 2015), both of which rely on caregivers for emotional support and limit-setting around eating (Easton et al., 2016).

2.3 | Adults

Adult participants ($n = 395$) were 340 female, 29 male, 1 trans female-to-male and 15 participants who preferred not to report gender, ages 18–61 years admitted to this RES facility meeting DSM-5 criteria for AN, BN or OSFED. As with the adolescent sample, patients with a diagnosis of ARFID or BED were excluded from analyses due to concerns about the DBS adequately assessing their symptom profiles. Informed consent was obtained from each participant, who then completed online self-report assessments within three days of admission and again within 7 days of discharge. This program uses acceptance and commitment therapy (ACT) as its primary therapeutic modality, which aims to increase psychological flexibility (Hayes et al., 1999).

3 | MEASURES

3.1 | Adolescent and adult

The DBS (Cockell et al., 2002) is a 30-item self-report measure originally designed to assess the pros and cons of AN. It consists of three subscales: the Burdens subscale (15 items) assesses the negative consequences of AN such as loss of energy; the Benefits subscale (8 items) assesses the perceived positive consequences of AN such as self-control; and the Functional Avoidance subscale (7 items) assesses the use of AN to avoid aversive emotional states or responsibilities. The measure has adequate convergent and discriminant validity (Cockell et al., 2003). As in Delinsky et al. (2011), the wording of each item in this study was modified to read 'my eating disorder' instead of 'my anorexia' to account for the different ED diagnoses in the sample.

The Eating Pathology Symptom Inventory (EPSI; Forbush et al., 2013) is a 45-item self-report measure with eight subscales assessing ED pathology, four of which

were used for this study: Binge Eating, Purging, Restricting and Body Dissatisfaction. The three behavioural subscales were utilised to assess individuals' engagement in ED behaviours, while Body Dissatisfaction was used as a proxy for ED psychopathology, given that this subscale 'emerged as a broad scale...most highly correlated with the Eating Disorder Inventory-3 Body Dissatisfaction scale and the Eating Disorder Examination Questionnaire Shape and Weight Concern scales and demonstrated significant correlations with all other established measures of ED symptoms' (Forbush et al., 2013, p. 874). Items on the EPSI are measured on a scale of 0 (never) to 4 (very often). The measure has good psychometric properties (Forbush et al., 2014).

3.2 | Adolescent

The State Trait Anxiety Inventory (STAI)-Child (Spielberger et al., 1973) is a 40-item self-report measure with good reliability (Barnes et al., 2002) based on the same theory as the STAI, with 20 statements that ask participants how they feel at a particular moment in time and 20 statements that ask how they generally feel; the 20-question 'state' portion of the questionnaire was utilised in this study.

The Child Depression Inventory-2nd edition (CDI-2; Kovacs, 2011) is a 28-item self-report measure of depression for children with good psychometric properties (Allgaier et al., 2012). Items are scored from 0 to 2 and *T*-scores are derived that are dependent upon gender; the total score only was used in this study.

The Obsessive–Compulsive Inventory-Child Version (OCI-CV; Foa et al., 2010) is a 21-item self-report inventory with adequate psychometric properties to assess obsessive–compulsive symptoms in children (Jones et al., 2013). Items are scored from 0 to 2; the total score only was used for this study.

3.3 | Adult

The Eating Disorder Quality of Life Scale (EDQOL; Engel et al., 2006) is a 25-item self-report measure with good convergent and discriminant validity assessing the degree to which one's ED impacts their health-related quality of life, with lower scores representing less ED impairment in quality of life. This study used the total score only.

The STAI (Spielberger, 1983) is a 40-item self-report measure, with 20 items allocated to the assessment of state anxiety (how respondents feel 'right now') and 20 items to the assessment of trait anxiety (how respondents feel 'generally'). Items are measured on a scale of 1 (not at all) to 4 (very much so). The 20-question 'state' portion of the questionnaire was utilised in this study.

The Beck Depression Inventory-2nd edition (BDI-II; Beck et al., 1996) is a widely used 21-item self-report measure of depression. Items are measured on a scale of 0–3 with higher scores indicating more severe depression.

The Obsessive–Compulsive Inventory-Revised (OCI-R; Foa et al., 2002) is an 18-item self-report measure with good internal consistency, test–retest reliability and convergent validity assessing symptoms of obsessive–compulsive disorder (OCD); this study used the total score only.

3.4 | Statistical analyses

Multivariate regressions were performed to assess how each of the three DBS subscales scores at baseline predicted EOT scores across outcomes. Each analysis controlled for covariates of baseline scores on outcome, the outcome-by-DBS baseline score interaction, ED diagnosis and gender. Adult patient outcomes included scores on four subscales of the EPSI, %body mass index (%BMI) (for AN only), EDQOL, State Trait Anxiety Inventory-State, BDI-II and OCI-R, and adolescent patient outcomes included scores on four subscales of the EPSI, %median BMI (for AN only), State Trait Anxiety Inventory, Child version-State, CDI-II and OCI-CV. Raw *p*-values are reported; however, we also performed a Bonferroni correction to account for the multiple tests performed with each DBS subscale predictor on each outcome in the same sample (nine tests each), making the functional *p*-value threshold $p = 0.00555$. While trends in significant predictions are discussed broadly, single test results are only discussed if they meet the Bonferroni correction threshold. All regression weights are reported as standardised beta weights. Chi-square test of independence was used to compare the proportion of tests with DBS score as a significant predictor between adult patients and adolescent patients. A phi coefficient was calculated to represent the effect size of this Chi-square test.

4 | RESULTS

4.1 | Clinical and demographic characteristics

Table 1 reports the demographic and clinical characteristics for both adolescent and adult samples. The mean age of the adolescent sample ($N = 203$) was 15.90

TABLE 1 Sample characteristics and scores

	Adolescent sample (N = 203)		Adult sample (N = 395)	
Demographic and clinical characteristics				
Age (SD)	15.90 (0.88)		25.45 (8.31)	
Gender (%)				
Female	172 (84.7%)		340 (88.3%)	
Male	27 (13.3%)		29 (7.5%)	
Trans (female to male)	0 (0.0%)		1 (0.3%)	
Prefer not to report	4 (2.0%)		15 (3.9%)	
ED diagnosis (%)				
AN-R	111 (54.7%)		147 (37.2%)	
AN-BP	57 (28.1%)		121 (30.6%)	
BN	17 (8.4%)		64 (16.2%)	
OSFED	18 (8.9%)		53 (13.4%)	
Length of stay (weeks, SD)	10.98 (5.56)		9.27 (5.31)	
Primary predictor variables				
DBS at baseline (SD)				
Functional avoidance	14.74 (6.41)		19.20 (7.28)	
Benefits	25.73 (9.87)		27.29 (8.88)	
Burdens	49.58 (13.24)		53.04 (11.10)	
Criterion variables at baseline (covariate) and EOT (outcome)				
	Baseline	**EOT**	**Baseline**	**EOT**
% BMI (SD)	16.40[a] (1.90)	20.48[a] (1.24)	17.36 (1.97)	20.00 (1.89)
EPSI (SD)				
Bingeing	8.47 (7.25)	6.86 (6.31)	9.66 (7.93)	7.05 (6.05)
Purging	5.72 (5.64)	4.61 (5.09)	7.08 (6.20)	4.60 (5.43)
Restricting	14.27 (5.87)	10.21 (6.77)	14.34 (6.51)	8.48 (5.95)
Body dissatisfaction	15.98 (8.05)	15.79 (8.67)	16.79 (8.12)	15.07 (8.60)
ED quality of life (SD)	n.a.	n.a.	13.04 (4.14)	10.25 (5.01)
Anxiety (SD)	45.50 (8.56)	40.53 (9.38)	60.72 (11.97)	50.13 (14.08)
Depression (SD)	20.79 (11.14)	19.40 (11.16)	31.79 (12.96)	17.18 (12.91)
OCD Symptom Inventory (SD)	15.04 (8.56)	13.62 (7.67)	18.25 (14.00)	14.83 (12.88)

Note: Anxiety measured with the State-Trait Anxiety Inventory State Version (Child Version for Adolescents). Depression measured with the Beck Depression Inventory-II (Child Depression Inventory-II for Adolescents). OCD symptoms measured with the OCD Symptom Inventory-Revised (OCD Symptom Inventory-Child Version for Adolescents).

Abbreviations: AN-R, anorexia nervosa, restricting; AN-BP, anorexia nervosa, binge-purge; BMI, body mass index; BN, bulimia nervosa; DBS, Decisional Balance Scale; ED, eating disorder; EOT, end-of-treatment; EPSI, Eating Pathology Symptom Inventory; n.a., not available; OCD, obsessive–compulsive disorder; OSFED, other specified feeding or eating disorder.

[a]Median %BMI reported for adolescent patients.

(SD = 0.88), mean length of stay was 10.98 weeks (SD = 5.56) and median %BMI at baseline was 16.40 (SD = 1.90). The adolescent sample was 84.7% female, 13.3% male, 0.0% transgender and 2.0% preferred not to report. The ED diagnoses in the adolescent sample were 54.7% AN-R, 28.1% AN-BP, 8.4% BN and 8.9% OSFED. The mean age of the adult sample (N = 395) was 25.45 (SD = 8.31), mean length of stay was 9.27 weeks

(SD = 5.31), and %BMI at baseline was 17.36 (SD = 1.97). The adult sample was 88.3% female, 7.5% male, 0.3% transgender (female to male) and 3.9% preferred not to report. The ED diagnoses in the adult sample were 37.2% AN-R, 30.6% AN-BP, 16.2% BN and 13.4% OSFED.

DBS Functional Avoidance at baseline was significantly lower for adolescents ($M = 14.74$, SD = 6.41) than adults ($M = 19.20$, SD = 7.28; $t = 7.69$, $p < 0.001$). Likewise, the Burdens subscale at baseline was significantly lower for adolescents ($M = 49.58$, SD = 13.24) than adults ($M = 53.04$, SD = 11.10; $t = 3.19$, $p < 0.001$). However, the Benefits subscale at baseline was not significantly different between adolescents ($M = 25.73$, SD = 9.87) and adults ($M = 27.29$, SD = 8.88; $t = 1.86$, $p = 0.06$).

4.2 | Trends in DBS associations between adult patients and adolescent patients

Multiple regression results, including standardised coefficients and statistical tests for DBS predictors across all outcomes are in Table 2.

Across all subscales, DBS at baseline was a significant predictor of various outcomes (either as a main effect or its interaction with the outcome of interest at baseline) in 19 of 54 possible cases (35.2%) for adult patients. DBS at baseline was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in only 5 of 54 possible cases (9.3%) for adolescent patients.

The DBS Functional Avoidance subscale was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in 7 of 18 possible cases (38.9%) for adult patients. In contrast, the DBS Functional Avoidance subscale at baseline was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in only 2 of 18 possible cases (11.1%) for adolescent patients.

The DBS Benefits subscale at baseline was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in 12 of 18 possible cases (66.6%) for adult patients. The DBS Benefits subscale at baseline was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in 2 of 18 possible cases (11.1%) for adolescent patients.

The DBS Burdens subscale was not a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in adult patients. The DBS Benefits subscale at baseline was a significant predictor (either as a main effect or its interaction with the outcome of interest at baseline) in 1 of 18 possible cases (5.6%) for adolescent patients. Frequencies were too low to calculate statistical significance via Chi-square test of Independence.

4.3 | Individual Bonferroni-corrected DBS associations

Five associations were significant after Bonferroni correction (four in adult patients, one in adolescent patients). For adult patients, DBS Functional Avoidance at baseline significantly predicted state anxiety at EOT, after controlling for state anxiety at baseline, the DBS Functional Avoidance-by-state anxiety interaction at baseline, ED diagnosis, and gender ($\beta = 0.26$, $t = 2.98$, $p = 0.003$). DBS Functional Avoidance at baseline significantly predicted OCD symptoms at EOT, after controlling for OCD symptoms at baseline, the DBS Functional Avoidance-by-OCD symptoms interaction at baseline, ED diagnosis, and gender ($\beta = 0.18$, $t = 4.43$, $p < 0.001$). DBS Benefits at baseline significantly predicted restricting symptoms at EOT, after controlling for restricting symptoms at baseline, the DBS Benefits-by-restricting symptoms interaction at baseline, ED diagnosis, and gender ($\beta = 0.14$, $t = 2.81$, $p = 0.004$). DBS Benefits at baseline significantly predicted OCD symptoms at EOT, after controlling for OCD symptoms at baseline, the DBS Benefits-by-OCD symptoms interaction at baseline, ED diagnosis, and gender ($\beta = 0.12$, $t = 4.14$, $p < 0.001$). For adolescent patients, DBS Functional Avoidance at baseline significantly predicted restricting symptoms at EOT, after controlling for restricting symptoms at baseline, the Functional Avoidance-by-restricting symptoms interaction at baseline, ED diagnosis, and gender ($\beta = 0.17$, $t = 3.38$, $p < 0.001$).

5 | DISCUSSION

This study set out to separately examine in adolescents and adults how scores on the DBS at baseline predict EOT changes in (1) ED and comorbid symptoms, (2) weight recovery (for AN patients only) and (3) quality of life (for adults only). In the adolescent sample, after Bonferroni correction, only the DBS Functional Avoidance subscale was a significant predictor of restricting behaviour at EOT. No DBS subscales predicted weight recovery for adolescents with AN at EOT, and no other DBS subscales predicted depression, anxiety, obsessive–compulsive or ED symptoms other than restricting behaviour at EOT. In the adult sample, the DBS Benefits subscale was predictive of 66.6% of outcomes, while post-

TABLE 2 Multiple regression results

Discharge outcome / Admission predictors	Adolescent sample ($N = 203$)			Adult sample ($N = 395$)		
	β	*t*-value	*p*-value	β	*t*-value	*p*-value
% BMI						
DBS functional avoidance	−0.04	−0.23	$p = 0.82$	−0.05	−0.33	$p = 0.74$
Functional avoidance—% BMI interaction	−0.10	−0.76	$p = 0.46$	−0.03	0.19	$p = 0.86$
DBS benefits	−0.16	−1.36	$p = 0.19$	−0.14	−0.91	$p = 0.38$
Benefits—% BMI interaction	−0.15	−1.34	$p = 0.20$	0.12	0.58	$p = 0.57$
DBS burdens	−0.11	−0.83	$p = 0.41$	0.12	0.75	$p = 0.46$
Burdens—% BMI interaction	−0.22	−1.61	$p = 0.12$	0.11	0.55	$p = 0.59$
EPSI bingeing						
DBS functional avoidance	0.01	0.05	$p = 0.96$	0.01	0.32	$p = 0.75$
Functional avoidance—bingeing interaction	0.05	0.54	$p = 0.59$	0.14	2.14	$p = 0.03$
DBS benefits	−0.01	−0.10	$p = 0.92$	0.12	2.58	$p = 0.01$
Benefits—bingeing interaction	−0.01	−0.03	$p = 0.98$	0.10	2.17	$p = 0.03$
DBS burdens	−0.10	−1.40	$p = 0.17$	−0.01	−0.27	$p = 0.79$
Burdens—bingeing interaction	0.04	0.78	$p = 0.44$	0.06	1.34	$p = 0.18$
EPSI purging						
DBS functional avoidance	0.13	2.09	$p = 0.04$	0.10	1.39	$p = 0.17$
Functional avoidance—purging interaction	0.06	1.41	$p = 0.16$	0.15	2.34	$p = 0.02$
DBS benefits	−0.07	−1.64	$p = 0.10$	0.08	2.01	$p = 0.04$
Benefits—purging interaction	−0.12	−2.49	$p = 0.01$	0.08	2.17	$p = 0.03$
DBS burdens	−0.07	−2.03	$p = 0.04$	−0.03	−0.93	$p = 0.36$
Burdens—purging interaction	−0.05	−1.36	$p = 0.17$	−0.03	−0.80	$p = 0.43$
EPSI restricting						
DBS functional avoidance	**0.17**	**3.38**	**$p < 0.001$**	0.18	2.19	$p = 0.03$
Functional avoidance—restricting interaction	−0.06	−0.57	$p = 0.57$	0.02	0.19	$p = 0.85$
DBS benefits	−0.10	−1.35	$p = 0.18$	**0.14**	**2.81**	**$p = 0.004$**
Benefits—restricting interaction	−0.13	−1.99	$p = 0.04$	−0.06	−1.32	$p = 0.19$
DBS burdens	−0.10	−1.56	$p = 0.12$	−0.01	−0.23	$p = 0.82$
Burdens—restricting interaction	−0.05	−0.66	$p = 0.51$	−0.01	−0.01	$p = 0.99$
EPSI body dissatisfaction						
DBS functional avoidance	−0.10	−1.76	$p = 0.08$	−0.09	−2.24	$p = 0.03$
Functional avoidance—body dissatisfaction interaction	0.01	0.04	$p = 0.97$	0.06	1.44	$p = 0.15$
DBS benefits	−0.04	−0.59	$p = 0.56$	0.10	2.59	$p = 0.01$
Benefits—body dissatisfaction interaction	0.06	1.20	$p = 0.23$	0.08	2.27	$p = 0.02$
DBS burdens	−0.04	−0.81	$p = 0.42$	−0.04	−1.25	$p = 0.21$
Burdens—body dissatisfaction interaction	−0.05	−0.90	$p = 0.37$	0.01	0.26	$p = 0.79$

(Continues)

TABLE 2 (Continued)

Discharge outcome Admission predictors	Adolescent sample ($N = 203$)			Adult sample ($N = 395$)		
	β	t-value	p-value	β	t-value	p-value
ED quality of life						
DBS functional avoidance	−0.27	−1.30	$p = 0.21$	−0.05	−1.30	$p = 0.19$
Functional avoidance—ED quality of life interaction	−0.16	−0.86	$p = 0.40$	−0.02	−0.45	$p = 0.65$
DBS benefits	0.09	0.48	$p = 0.64$	0.08	1.98	$p = 0.04$
Benefits—ED quality of life interaction	−0.19	−0.83	$p = 0.42$	0.04	1.10	$p = 0.27$
DBS burdens	0.23	1.36	$p = 0.19$	0.01	0.09	$p = 0.93$
Burdens—ED quality of life interaction	0.10	0.57	$p = 0.58$	−0.03	−0.80	$p = 0.42$
Anxiety						
DBS functional avoidance	−0.02	−0.10	$p = 0.92$	**0.26**	**2.98**	$\mathbf{p = 0.003}$
Functional avoidance—anxiety interaction	0.05	0.25	$p = 0.81$	0.08	1.00	$p = 0.32$
DBS benefits	−0.03	−0.41	$p = 0.68$	0.12	9.63	$p = 0.008$
Benefits—anxiety interaction	0.09	1.25	$p = 0.21$	0.03	0.84	$p = 0.40$
DBS burdens	0.06	0.90	$p = 0.37$	−0.06	−1.30	$p = 0.20$
Burdens—anxiety interaction	0.13	1.83	$p = 0.07$	0.03	0.76	$p = 0.45$
Depression						
DBS functional avoidance	−0.01	−0.11	$p = 0.92$	−0.05	−1.35	$p = 0.18$
Functional avoidance—depression interaction	0.03	0.74	$p = 0.46$	−0.04	−1.07	$p = 0.28$
DBS benefits	0.10	0.22	$p = 0.83$	0.11	2.33	$p = 0.02$
Benefits—depression interaction	0.07	1.63	$p = 0.10$	0.04	0.96	$p = 0.34$
DBS burdens	−0.07	−1.79	$p = 0.07$	−0.06	−1.38	$p = 0.17$
Burdens—depression interaction	0.06	1.44	$p = 0.15$	−0.01	−0.29	$p = 0.77$
OCD Symptom Inventory						
DBS functional avoidance	0.09	1.07	$p = 0.28$	**0.18**	**4.43**	$\mathbf{p < 0.001}$
Functional avoidance—OCD Symptom Inventory interaction	−0.05	−0.69	$p = 0.49$	−0.06	−2.73	$p = 0.007$
DBS benefits	0.03	0.53	$p = 0.60$	**0.12**	**4.14**	$\mathbf{p < 0.001}$
Benefits—OCD Symptom Inventory interaction	−0.05	−1.11	$p = 0.27$	0.08	2.18	$p = 0.03$
DBS burdens	−0.02	−0.39	$p = 0.69$	0.02	0.54	$p = 0.59$
Burdens—OCD Symptom Inventory interaction	−0.09	−1.88	$p = 0.06$	0.04	1.05	$p = 0.29$

Note: Outcome is discharge score. Each model is adjusted for diagnosis, gender, and admission score of outcome. Admission score of outcome always predicted discharge score at $p < 0.001$. DBS predictor is admission score. % BMI reported for AN-R patients only. Median % BMI reported for adolescent patients. Anxiety measured with the State-Trait Anxiety Inventory State Version (Child Version for Adolescents). Depression measured with the Beck Depression Inventory-II (Child Depression Inventory-II for Adolescents). OCD symptoms measured with the OCD Symptom Inventory-Revised (OCD Symptom Inventory-Child Version for Adolescents).

Underlined results failed to retain statistical significance with Bonferroni correction.

Bolded results are significant with Bonferroni correction of $p < 0.00555$.

Abbreviations: BMI, body mass index; DBS, Decisional Balance Scale; ED, eating disorder; EPSI, Eating Pathology Symptom Inventory; OCD, obsessive–compulsive disorder.

Bonferroni, greater perceived benefits of the ED predicted more restricting behaviour and obsessive–compulsive symptoms at EOT. The DBS Functional Avoidance subscale at baseline was predictive of 38.9% of outcomes, and post-Bonferroni, greater avoidance predicted greater state anxiety and OCD symptoms at EOT. Similar to the

adolescent sample, no DBS subscale was predictive of weight recovery in adults with AN. A greater score on the DBS Benefits subscale predicted greater quality of life at EOT for adults, but this result did not remain significant post-Bonferroni.

While our study did not aim to directly compare our adolescent and adult samples, the predictive value of the DBS subscales on depression, anxiety, obsessive–compulsive and ED symptoms at EOT differed between the groups. Across all DBS subscales, while 35.2% of analyses in our adult sample were significant prior to Bonferroni correction, in our adolescent sample, a scant five analyses (9.3%) were significant.

The Burdens subscale of the DBS did not predict any ED or comorbid symptom change at EOT in the adult or adolescent sample after Bonferroni correction, although the Burdens subscale at baseline did predict purging behaviour at EOT for adolescents, prior to the correction. The lack of associations with the Burdens subscale is consistent with Delinsky et al. (2011), who only found the Burdens scale to be predictive of subjective binge eating episodes. This calls into question the utility of this DBS subscale for predicting treatment response.

The finding for adolescents that using avoidance to cope at baseline was predictive of restricting behaviour at EOT is consistent with previous research showing coping through avoidance to be a potential maintaining factor of EDs (Vanzhula et al., 2020). Individuals may avoid exposing themselves to feared situations (e.g., a calorically dense meal for fear of gaining weight), which then may strengthen this fear. The Functional Avoidance subscale may have only been predictive of restricting behaviour due to a majority of the sample not engaging in purging or bingeing behaviour at baseline.

For the adult sample, the result that greater perceived benefits of the persistence of the ED predicted more restricting behaviour and obsessive–compulsive symptoms at EOT is consistent with Delinsky et al. (2011). They found that the baseline to EOT change score on the DBS Benefits subscale was the only subscale with a significant relationship with posttreatment ED pathology. It is also consistent with research noting the positive impact of restricting for patients with EDs, including reduced anxiety and guilt (Haynos et al., 2017; Lloyd et al., 2017). Further, although the DBS is designed to measure motivation to recover from an ED, it may also be measuring, in an ancillary way, motivation to recover from other maladaptive coping strategies such as obsessive–compulsive symptoms. Many of these symptoms can be ego-syntonic and thus, like restricting, can be less amenable to treatment (Mancebo et al., 2005). The result that greater avoidance predicted greater state anxiety and OCD symptoms at EOT in the adult sample is consistent with the recognised association between avoidance and worsened anxiety (Berman et al., 2010; Dymond et al., 2015). It is, however, inconsistent with Delinsky et al. (2011), who did not find Functional Avoidance to be correlated with treatment outcome. This could be due to their smaller sample size ($N = 67$) or restricted age range (16–23 years old) compared to the sample size ($n = 395$) and age range (18–61 years old) of the current study's adult sample. Regardless, endorsing the perceived benefits of the ED and using the ED as an avoidance-coping mechanism appear to significantly influence adults' restricting behaviour, anxiety state and OCD symptoms and how they progress over treatment.

The lack of significance between the DBS and outcome in adolescents may not be surprising, given that anecdotally, the vast majority of adolescents entered RES care at the behest of their parents' and, according to Prochaska and DiClemente's transtheoretical model of change (Prochaska & DiClemente, 1984), can probably be best described as in the precontemplation stage of change. The absence of an association may also be an indicator of the lack of insight that some adolescents may have regarding their ED, especially if it is their first time in treatment. Thus, questions on the DBS such as '*My eating disorder is my way of avoiding deeper, more serious problems*' may be asking for a level of psychological awareness that this group has not developmentally achieved, especially at the onset of treatment. It is also possible that, due to the age of the adolescent sample, they are not yet experiencing some of the burdens of their disorder that may be more common among adults. Items such as '*I worry about the effect the eating disorder is having on my health*' may not be perceived as relevant for younger patients. The DBS may not have adequately captured motivation as it is experienced in older adolescents.

Regardless, the lack of association between levels of motivation at baseline and ED and other symptomatology at EOT for adolescents lends support to the notion that parents are well placed to engineer change in adolescent symptomatology rather than a focus on the child's motivation to effect change (Byrne et al., 2015). Indeed, although a study of adolescent outpatients (Zaitsoff & Taylor, 2009) did find an association between motivation for change and less body dissatisfaction, fewer depressive symptoms and more adaptive parent–child relationships, the authors' conclusion was the same: involve families to better enhance motivation for recovery, and focus on symptom reduction for those adolescents who are not motivated to recover, as is the case for most adolescents initially in a higher level of care whose symptoms could not be managed on an outpatient level. Another possibility is that motivation in adolescents may be worth

focussing on, but the FBT-informed care offered at ERC focuses on parental empowerment, especially if the adolescent is not motivated to recover.

For adults, these results highlight the need for clinicians to openly discuss the perceived benefits of the ED, which as noted in the DBS Benefits subscale include benefits such as self-control, confidence, feeling accomplished and a way of being perfect. These perceived benefits predicted worse restricting, anxiety and OCD symptoms at EOT. The results also reinforce the need for clinicians to address avoidance as a coping mechanism, since using the ED to avoid was found to predict worse anxiety and OCD symptoms at EOT. These findings appear to further support the use of therapeutic modalities during ED treatment such as ACT, which focuses patients on finding and engaging in valued life activities that may provide benefits similar to the ED, despite positive thoughts related to their ED. It also encourages patients to distance themselves from painful thoughts instead of avoiding them (Hayes et al., 1999; Vøllestad et al., 2012). Indeed, one study has found that increased experiential acceptance—a focus of ACT—was associated with greater motivation to give up ED behaviours and greater symptom reduction from baseline to EOT (Espel et al., 2016), and another study found increased acceptance as strongly associated with decreased ED risk over the course of treatment (Walden et al., 2018). These findings also support the use of exposure and response prevention for both EDs (Butler & Heimberg, 2020) and behaviours related to anxiety (Foa & McLean, 2016). Exposure and response prevention through feared food exposure and mirror exposure have been shown to be promising, but more randomised controlled trials are needed (Butler & Heimberg, 2020).

Strengths of the current study include its large sample size; its inclusion of men and most ED diagnoses; and its focus on motivation in both adolescents and adults in an IP/RES/PHP treatment setting, the latter of which has not been examined often in adults. Limitations include the lack of follow-up after discharge as well as using the DBS in an adolescent sample when it has been used but not validated in adolescents; future research should attempt to validate the measure in this population. While motivational interviewing has been studied with some promising findings in the EDs (Macdonald et al., 2012), future studies should examine how motivational interviewing or a harm reduction model (Westmoreland & Mehler, 2016) could be utilised more specifically based upon the perceived benefits of the ED, as well as in combination with therapies such as ACT that encourage psychological flexibility. While FBT for adolescents has been found to be most effective for outpatients with AN (J. D. Lock, 2019), it is warranted to further study how therapies such as EFFT could enhance its success by helping parents validate their child's experience, particularly with adolescents not yet ready to change.

In conclusion, this study found that, for adults, the benefits of the ED predict restricting behaviour and OCD symptoms at EOT and coping by avoidance predicts anxiety and OCD symptoms at EOT whereas for adolescents, coping by avoidance predicts restricting behaviour at EOT. Baseline motivation to recover may be an important predictor of outcome for adult patients in IP/RES/PHP but does not appear strongly associated with outcomes for adolescent patients as measured by the DBS. These results shed additional light on the ongoing need for informed strategies to better address the recalcitrant nature of psychological symptom remission in patients with EDs. The aforementioned motivation symptoms should be targeted and ameliorated during treatment of adults, but not for adolescents.

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CONFLICT OF INTERESTS

Dr. Rienecke receives consulting fees from the Training Institute for Child and Adolescent Eating Disorders, LLC, and receives royalties from Routledge. Dr. Le Grange receives royalties from Guilford Press and Routledge and is Co-Director of the Training Institute for Child and Adolescent Eating Disorders, LLC. Drs. Blalock and Le Grange consult for Eating Recovery Center. All other authors declare no conflict of interest.

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