

# **Predictors of non-completion of a day treatment program for adults with eating disorders**

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## **Conflicts of interest**

The authors have no conflicts of interest to declare.

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## **Highlights**

- For patients attending day treatment, low BMI at the start of treatment was a significant predictor of staff-initiated discharge in participants who entered the program with a BMI < 20.
- For all patients, larger changes in BMI over the course of treatment predicted higher likelihood of completing treatment
- Results can help identify which patients may be at risk for not succeeding in multi-diagnostic day treatment programs, and address this risk in the transition to a higher level of care from lower levels.

## **Keywords**

Day treatment

Dropout

Anorexia nervosa

Non-completion

## **Data Availability Statement**

The data that support the findings of this study are available on request from the corresponding author.

The data are not publicly available due to privacy or ethical restrictions.

## **Abstract**

Although treatment dropout is common among patients with eating disorders, very few studies have examined predictors of non-completion in a day treatment. We investigated various potential predictors of dropout from adult day treatment. Participants were 295 adult patients with a diagnosis of Anorexia Nervosa (restricting or binge/purge subtype), Bulimia Nervosa, Other Specified Feeding or Eating Disorder, or Avoidant Restrictive Food Intake Disorder. Predictors included eating-disorder characteristics, motivation at the commencement of treatment, Body Mass Index (BMI), time spent in treatment, and personality dimensions. Logistic regression analyses showed that for patients with a BMI of less than 20 at the start of treatment, low BMI was a significant predictor of staff-initiated termination due to not meeting weight gain goals. Furthermore, completing less than 6 weeks of treatment was associated with staff-initiated termination. For the whole sample, those with higher changes in weight over the course of treatment were less likely to terminate prematurely. None of the other predictor variables yielded significant results. Results of the current study highlight characteristics of patients who are more likely not to complete day treatment and can help identify patients who may be at risk for not succeeding in multi-diagnostic day treatment programs..

## **Introduction**

Dropout from treatment is reported to be a common occurrence among patients undergoing treatment for an eating disorder (ED) (Schnicker et al., 2013). Rates of non-completion range from 20-51% for inpatient treatments, and from 29-73% for outpatient treatments (Fassino et al., 2009). Gaining a better understanding of the reasons for which patients do not complete ED treatment may guide development of measures that improve therapy completion rates—and presumably, correspondingly better therapy outcomes.

Various factors have been reported to be predictive of non-completion of inpatient treatments. Lower BMI at admission, as well smaller differences between BMI at intake and target BMI, have been associated with non-completion of treatment for anorexia nervosa (AN) for both adolescents and adults (Hubert et al., 2013) (Roux et al., 2016). In contrast, one study of adult patients with heterogeneous diagnoses undergoing inpatient treatment found people with a higher admission BMI to be more likely to drop out (del Barrio et al., 2019). Higher levels of dietary restraint and lower levels of weight concerns have also been identified as predictors of dropout in a mixed sample of adolescents and adults with AN (Roux et al., 2016). However, presence of objective or subjective binge eating did not influence rates of non-completion of inpatient treatment for underweight patients diagnosed with AN or Eating Disorder Not Otherwise Specified (EDNOS) (Dalle Grave, Calugi, & Marchesini, 2011). A study on individuals with Bulimia Nervosa (BN) undergoing inpatient treatment found that the only variable distinguishing those who did and did not complete treatment was motivation levels, with those dropping out having lower levels (Diedrich et al., 2016).

Some studies have refined the definition of dropout to examine those who chose to leave and those who were asked to leave inpatient treatment. One study found that patients with AN chose to leave treatment much earlier (median 30 days) than when asked to leave by staff (median 104 days). Reasons

for being asked to leave treatment included not being engaged in treatment, breaking a treatment boundary such as engaging in substance use. Furthermore, patients who discharged themselves were more likely to report decreased motivation (Sly et al., 2014). Interestingly, patients discharged by staff were found to leave the program with similar statistics to those who completed treatment, such as weight gained in treatment and discharge BMI (Sly et al., 2014).

Various factors have been identified as predictors of non-completion of outpatient treatment. Jordan et al. (2014), studying patients with AN, found lower self-transcendence (i.e., lower patience, mindfulness, etc.), lower self-directedness, more-marked borderline traits, and presence of any personality disorder to predict dropout (Jordan et al., 2014; Waller et al., 1996; Fassino et al., 2009). Waller et al. (1996) also found that individuals with bulimia nervosa (BN) or anorexia binge-eating/purging type (AN-BP) who dropped out of treatment had higher perceived severity of ED symptoms than those who completed (Waller et al., 1996). In a diagnostically heterogeneous sample (including patients with AN, BN, and EDNOS), lowest reported weight, higher pre-treatment avoidance of affect, and having spent more time on a waiting list prior to treatment were reportedly predictive of dropout (Carter et al., 2012). A meta-analysis of dropout from CBT treatments for various diagnoses (AN, BN and BED) found that diagnosis, baseline symptom severity and age did not impact dropout rate and that there was some evidence that longer treatment protocols were associated with lower drop-out (Linardon, Hindle, & Brennan, 2017).

Very few studies have examined factors that predict non-completion of day treatments, which are usually an intermediate intensity between outpatient and inpatient. One study examined a sample of adolescent patients with various ED diagnoses (AN, BN, EDNOS, binge eating disorder - BED) in day treatment and found that 41.5% left before completing the program (Grewal et al., 2019). The authors found that adolescents who did not complete the program were more likely to have been prescribed

selective serotonin reuptake inhibitors (SSRIs), and less likely to have a history of purging, although there were no differences between completers and non-completers as to age, family history of an eating disorder, age of onset of the ED, or percent of goal weight upon admission to treatment (Grewal et al., 2019). Age was the best predictor of dropout in a day treatment program for adults with AN, such that the younger the patient, the higher the risk for dropout (Agüera et al., 2015).

Another study, this time examining adult patients receiving day hospital treatment for bulimia-spectrum disorders, found that there was a higher rate of dropout within the first four weeks of treatment in patients with post-traumatic stress disorder (PTSD) than in those without (Trottier, 2019). This four-week window is potentially important, as early positive response to treatment has been reported to predict better patient outcomes (Trottier, 2019). Finally, a study on adults in a multi-diagnostic day treatment program found that the most frequent reason for terminating treatment prematurely in underweight patients was not meeting preagreed weight gain goals (Beintner et al., 2020).

While numerous studies have identified factors related to premature termination of ED treatment, few have examined non-completion of day treatment, and to our knowledge, no study to date has examined multiple factors predicting non-completion of day treatment in a trans-diagnostic (AN, BN, Avoidant Restrictive Food Intake Disorder ARFID), and Other Specified Feeding or Eating Disorder [OSFED]) sample of adults with EDs. The current study aimed to examine factors that are predictive of treatment dropout in a multi-diagnostic adult day treatment ED program. Based on previous literature demonstrating these variables to be significant predictors, and also based on data available for the current study, using a naturalistic study design, we explore BMI, age, diagnosis, eating disorder symptoms, motivation for treatment and personality variables as possible predictors. We additionally examine early termination from treatment and change in BMI as predictors of non-completion.

## **Methods**

Procedures in this study complied with the ethical standards of our institutional Research Ethics Board and the Helsinki Declaration, revised in 2008.

## **Participants**

Participants in this study were 295 patients (seven of whom were male) diagnosed with an ED according to either the Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> or 5<sup>th</sup> Edition criteria and for whom data on BMI and number of weeks of treatment completed were available. For those diagnosed according to DSM-IV criteria, we unified the diagnostic criteria into DSM-5 by validating and recoding post-hoc into DSM-5. We estimate that 409 unique patients began treatment during the period studied (2010-2019); therefore our sample of 295 represents 72.1% of eligible patients. All patients were treated in either a 12 or 16 week day treatment program at the Douglas Mental Health University Institute's Eating Disorders Continuum (EDC), and consented to participate in research. Two hundred and eight participants had a BMI ( $\text{kg/m}^2$ ) of less than 20.0 at the commencement of treatment (under BMI 20 group), and 87 began treatment with a BMI of 20.0 or above (BMI 20 or higher group).

In the under BMI 20 group, there were 95 participants (45.7%) with Anorexia Nervosa Restricting type (AN-R), 67 with AN-BP (32.2%), 4 (1.9%) with ARFID, 24 (11.5%) with BN, and 18 (8.7%) with OSFED. Data on reasons for non-completion are seen in Table 1. Fifty-three (25.5%) participants completed six weeks or less of treatment, while 155 (74.5%) completed more than six weeks.

In the BMI 20 or higher group, there were 43 with BN (49.4%), and 44 with OSFED (50.6%). Data on reasons for non-completion are seen in Table 1. In this group, 15 participants (17.2%) completed six weeks or less of treatment, and 72 (82.8%) completed more than six weeks.

Data was available for 193 participants regarding medication: 151 (73.7%) participants were taking a psychoactive medication. Chi-square analyses showed no differences between those who were

and were not taking psychoactive medications on reason for non-completion ( $\chi^2(2)=1.607, p=.448$ ).

Information on comorbid diagnoses is available in Table 2.

### **Description of Day Treatment**

The Day Treatment Program at the Douglas EDC is an intensive, group-based treatment that runs four days per week, from 9:30am to either 3:30 or 7:30pm (later time for patients who need more support) and includes supervised meals and snacks (1 meal and 2 snacks for the shorter day program, and 2 meals and 2 snacks for the program that includes the evening), group therapy (Cognitive Behavioral Therapy, Dialectical Behavioural Therapy, Body Image, Nutrition, Art therapy, mindfulness and open process groups), and individual therapy. All patients, regardless of diagnosis or initial BMI, participate in the same treatment programming. Patients admitted with a BMI less than 18.5 are enrolled in a 16-week program, while those with a BMI of 18.6 or higher participate in a 12-week program. Anyone with a BMI less than 20.0 at the commencement of treatment must commit to gaining a minimum of 500g per week, up to a BMI of 20, and any patient whose BMI falls under this threshold at any point throughout the program must similarly commit to this contract. Patients who fail to gain the minimum 500g receive a “flag”, and upon receiving 3 “flags”, patients are asked to leave the program and continue treatment as an outpatient. In addition, failure to adhere to treatment, through non-excused absences, non-adherence to the meal plan, refusal to be weighed, violent or abusive behaviour, or alcohol or drug use can, while rare, result in a patient being asked to leave the day treatment program.

### **Measures**

***Eating Disorders Examination Questionnaire (EDE-Q)*** (Fairburn & Beglin, 2008).

The EDE-Q is a self-report questionnaire adapted from the Eating Disorder Examination interview that measures both the frequency and severity of eating disorder features over the past 28 days (Fairburn et al., 2014). In addition to a global score, the 28 items produce 4 subscales: restraint, eating



concerns, shape concerns, and weight concerns. Internal consistency has been measured as  $\alpha = .95$  for the global score;  $\alpha = .85$  for restraint;  $\alpha = .81$  for eating concerns  $\alpha = .83$  for weight concerns; and  $\alpha = .91$  for shape concern (Aardoom et al., 2012). In the current study, the reliability of the EDE-Q, measured by Cronbach's Alpha, was 0.956 for the global or total score.

***Big Five Inventory (BFI) (John and Srivastava, 1999).***

The Big Five Inventory is a self-report questionnaire based on the Big Five model of personality that consists of five dimensions: extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (John and Srivastava, 1999). Facets that reflect these dimensions include assertiveness, compliance, competence, self-consciousness, and imaginativeness respectively (John and Srivastava, 1999). The questionnaire consists of 44 items that participants rate on a Likert scale from 1 (disagree strongly) to 5 (agree strongly) based on how well they think it reflects themselves. Sample items include: "Is helpful and unselfish with others" and "Worries a lot" (John and Srivastava, 1999). The mean reliability of the BFI has been measured as  $\alpha = .83$  (John and Srivastava, 1999). In the current study, the reliability of the BFI, measured by Cronbach's Alpha, was .851.

***Autonomous and Controlled Motivation for Treatment Questionnaire (ACMTQ) (Zuroff et al., 2007).***

The Autonomous and Controlled Motivation for Treatment Questionnaire is a self-report questionnaire developed by Zuroff et al., originally adapted from the Treatment Self-Regulation questionnaire and used in samples of participants with depression (Zuroff et al., 2007). The ACMTQ measures both autonomous and controlled motivation and consists of twelve items (divided into these two subscales) that participants must rate on a Likert scale of 1 to 7 (1= strongly disagree, and 7 = strongly agree), according to how well the statement aligns with why they pursued eating disorder treatment. For instance, an item like "Treatment is a part of my life" would correspond to autonomous motivation, while "I want my therapist to think I am good" would correspond to controlled motivation.

In a sample of 463 women with a diagnosed eating disorder, the internal consistency of the ACMTQ autonomous motivation subscale was  $\alpha = 0.85$ , and  $\alpha = 0.80$  for the controlled motivation subscale, with a test-retest reliability of 0.73 for both (Sansfaçon et al., 2019). For the current study, only the autonomous motivation subscale was used, due to previous studies not finding significant results with the controlled motivation subscale (Thaler et al., 2016; Sansfaçon et al., 2018). In the current study, the reliability of the ACMTQ, measured by Cronbach's Alpha, was  $\alpha = 0.837$  for the autonomous motivation subscale and  $\alpha = 0.801$  for the controlled motivation subscale.

## **Procedure**

At the start of day treatment, participants completed the Eating Disorder Examination - Questionnaire (EDE-Q), The Big Five Inventory (BFI), The Autonomous and Controlled Motivation for Treatment Questionnaire (ACMTQ). The measures were also administered at the end of treatment. Often if a patient did not complete the program, end-of-treatment data was not obtained. Weight and height were measured by a clinician at the start of treatment and weight was monitored at the start of every week.

## **Statistical Analyses**

Logistic regression analyses were performed separately for the under BMI 20 and BMI 20 or higher groups due to the fact that only those who begin the day treatment program with a BMI under 20 are on a weight gain contract (500g/week) and can therefore accumulate 3 “flags” and be asked to leave the program (staff-termination). Those who begin with a BMI above 20 are not on a weight gain contract and can therefore not accumulate flags and be asked to leave.

For the under BMI 20 group, logistic regression analyses were conducted with treatment outcome (i.e. 3 categories: staff terminated due to not meeting weight gain goals, chose to leave (self-

terminated) or completed) as the dependent variable, and pre-treatment EDEQ Total, BMI, autonomous motivation, personality and age as predictor variables.

For the BMI 20 or higher group, logistic regression analyses were conducted with treatment outcome (i.e., completed vs. chose to leave (self-terminated)) as the dependent variable, and pre-treatment EDE-Q Total, BMI, motivation, personality and age as predictor variables.

Additional regressions were conducted to examine effects of change in BMI during treatment, as well as early termination (completing less than 6 weeks) vs. non-early termination within the sample of those who did not complete treatment.

## **Results**

Table 3 presents values for predictor variables at pre-treatment, for the under BMI 20 group and the BMI 20 and higher group. Nominal logistic regressions were conducted for the under BMI 20 group to find the model with the best fit. Results are presented in Table 4. The model with the best fit included treatment outcome (staff- terminated due to not meeting weight gain goals, chose to leave (self-terminated) or completed) as the dependent variable, and pre-treatment BMI, EDE-Q total score, autonomous motivation, and age as predictor variables. The full model significantly predicted treatment outcome ( $X^2 = 23.34$ ,  $df = 8$ ,  $p = .003$ ), and BMI was a significant predictor ( $X^2 = 11.45$ ,  $df = 2$ ,  $p = .003$ ) such that higher BMIs were associated with less likelihood of staff termination (i.e. being asked to leave due to not meeting weight gain goals) ( $B = -.312$ ,  $SE = .117$ ,  $p = .008$ ). autonomous motivation ( $X^2 = 2.513$ ,  $df = 2$ ,  $p = .285$ ), and EDE-Q total ( $X^2 = .68$ ,  $df = 2$ ,  $p = .711$ ) were not significant predictors. Age showed trend level significance ( $X^2 = 5.476$ ,  $df = 2$ ,  $p = .065$ ,  $B = -.054$ ,  $SE = .025$ ,  $p = .003$ ) such that older participants were less likely to be staff-terminated. Models with personality variables did not fit well and were all non-significant.

Another nominal regression analysis was conducted with age as a categorical variable to attempt to localize the effect of age. The sample was divided into age 25 and under, and 26 and over, due to this division creating somewhat equal groups and also due to a movement within the ED field to create treatment programs that include both youth and young adults, that often go up to age 25 (Potterton et al., 2020; Williams, O'Reilly, & Coelho, 2020). The full model significantly predicted treatment outcome ( $X^2 = 23.75$ ,  $df = 8$ ,  $p = .003$ ). BMI was again significantly associated with staff termination ( $B = -.324$ ,  $SE = .117$ ,  $p = .006$ ). The age groups showed trend level significance overall ( $X^2 = 5.89$ ,  $df = 2$ ,  $p = .053$ , such that higher age was associated with less likelihood for staff termination ( $B = -1.069$ ,  $SE = .446$ ,  $p = .017$ ).

For the BMI 20 or higher group, logistic regression analyses were performed with treatment outcome (completed vs. chose to leave (self-terminated)) as the dependent variable and pre-treatment BMI, EDE-Q total score, autonomous motivation, and age as predictor variables. Results are presented in Table 5. The full model was not significant ( $X^2=7.294$ ,  $df = 4$ ,  $p = .121$ ).

Results from chi-square analyses show a significant association between dropout reason and diagnostic group ( $X^2= 73.72$ ,  $df=6$ ,  $p=.000$ ) for the whole sample. However due to small cell sizes within the BN and OSFED groups, we re-ran the analyses selecting only those with AN-R/ARFID (combined due to low n's in the ARFID sample) or AN-BP. There was a trend-level association between dropout reason and diagnostic group ( $X^2= 4.91$ ,  $df=2$ ,  $p=.086$ ); 61.2% ( $N = 60$ ) of the AN-R/ARFID group received three flags, in contrast to 44.6% ( $N = 29$ ) of the AN-B/P group. However, an independent samples t-test comparing BMI between the two AN subtypes showed that BMI was significantly lower in the AN-R/ARFID group compared to the AN-B/P group ( $t= -2.06$ ,  $df = 164$ ,  $p = .041$ ).

To explore whether the number of weeks completed was associated with reasons for non-completion, we categorized only the patients who did not complete treatment into those who completed 6 weeks or less (early-terminators) and those who completed more than 6 weeks (non-early-terminators). For only those in the under 20 BMI group we then examined whether early termination predicted reason for non-completion (staff termination vs. self-termination). A logistic regression analysis was performed with reason for non-completion as the dependent variable, and early termination (yes vs. no) and BMI as predictor variables. Results are shown in Table 6. As in the other models, BMI was a significant predictor ( $B = .268$ ,  $SE = .119$ ,  $p = .0024$ ), such that higher BMIs were associated with higher likelihood of self-termination. Early termination was also significant ( $B = -1.826$ ,  $SE = .431$ ,  $p = .000$ ) and showed that those who did terminate early (completed 6 weeks or less) were more likely to be staff terminated.

Finally, we examined whether change in BMI during treatment predicted outcomes. For the under BMI 20 group, we ran a model with BMI, EDE-Q Total, Autonomous motivation, age, and change in BMI change from the start to end of treatment as predictors of outcome (completed vs. staff terminated vs. self-terminated). The overall model was significant ( $X^2 = 85.42$ ,  $df = 10$ ,  $p = .000$ ). BMI was a significant predictor ( $B = -.637$ ,  $SE = .192$ ,  $p = .001$ ) such that higher BMIs were associated with less likelihood of staff termination. Furthermore, BMI change was significant ( $B = -2.042$ ,  $SE = .389$ ,  $p = .000$ ) such that those with higher changes in their BMI during treatment were less likely to be staff-terminated. BMI change was also significant for those with self-termination ( $B = -1.550$ ,  $SE = .402$ ,  $p = .000$ ) in that those with larger BMI changes were less likely to chose to leave treatment prematurely. A similar regression was run for the BMI 20 or higher group. The overall model was significant ( $X^2 = 17.054$ ,  $df = 5$ ,  $p = .004$ ) and only BMI change was a significant predictor of outcome such that those with larger changes were less likely to self-terminate treatment ( $B = -1.130$ ,  $SE = .505$ ,  $p = .025$ ).

## Discussion

The aim of this study was to identify predictors of treatment non-completion in a day treatment program for eating disorders. To our knowledge, this is the first study examining multiple predictors of treatment non-completion of day treatment in an adult, multi-diagnostic sample.

Our findings indicated many weight-related factors to be associated with non-completion. For instance, low BMI at the start of treatment was a significant predictor of staff-initiated discharge in participants who entered the program with a BMI < 20,. Furthermore, the amount of weight gained during treatment significantly predicted outcome such that those who were underweight and had larger changes in BMI (from start to end of treatment) were less likely to be asked to leave due to not meeting weight gain goals. In the BMI 20 or higher group, those with larger changes in BMI were less likely to choose to leave treatment. In these respects, our findings resemble those of Hubert et al. (2013), who found that inpatients with AN were more likely to terminate early if they started with a lower BMI. We note, however, that other studies have reported quite the opposite--that inpatients with a higher BMI, or a BMI closer to their treatment target, were more vulnerable to dropout (del Barrio et al., 2019, Roux et al., 2016).

In patients who began treatment with a BMI less than 20, our findings suggested that staff-termination most often occurred early in treatment (i.e. to be asked to leave therapy within the first six weeks of treatment). Another study on day treatment found, similarly, that patients were more likely to drop out of treatment within the first four weeks of an eight-week program (Trottier, 2019). We suspect that a common factor may be that in both our program and that described by Trottier, there are high expectations for change early on in treatment. Furthermore, for those who began the program with a BMI under 20, the majority was staff-terminated due to not meeting weight gain goals, a very similar finding to Bientner and colleagues (2020) who also found that the most frequent reason for terminating

treatment in underweight patients was failure to meet pre-agreed weight gain goals. There was trend level significance in the under BMI 20 group to suggest that participants who were aged 25 or younger were more likely to be staff-terminated than were those over 25. A previous study by Sly et al. (2014) reported that older patients were more likely to self-terminate inpatient treatments due to patient-initiated discharge, as opposed to staff-initiated discharge.

In the whole sample, there was a trend-level association between dropout reason and diagnostic group, with those in the AN-R/ARFID group more likely to be staff terminated the AN-BP group. This differs from previous studies that reported patients with AN-BP are more likely to drop out than those with AN-R, however these findings relate to inpatient samples, as opposed to day treatment (Fassino et al., 2019). The finding that initial BMI was significantly lower in the AN-R/ARFID group compared to the AN-B/P group suggests that this difference may be more related to initial BMI than to any diagnostic differences between the two groups.

While motivation did not significantly predict outcome, ancillary analyses ran with the current data showed that for the whole sample there was a significant difference in pre-treatment levels of autonomous motivation between participants who completed six weeks or less and those who completed more than six weeks, with motivation lower in those who completed six weeks or less. Other studies have examined the role of motivation and have reported a decrease in motivation after 4 weeks among inpatients with AN who discharged themselves based on the Anorexia Nervosa Stages of Change Questionnaire (Sly et al., 2014). Despite previous research highlighting the effects of motivation on dropout, Waller has highlighted how the best index of motivation is early behavioural change, such that changes within the first few weeks of treatment can enhance motivation, which in turn could lead to less early termination from treatment (Waller, 2012). Furthermore, an argument can be made for the impact of motivation in a highly structured therapy such as day treatment in that such a treatment is powerful



enough to effect change (i.e. weight gain) regardless of patient motivation. Further investigation into whether those with lower pre-treatment autonomous motivation are more vulnerable to a decrease in motivation partway through the program may provide further insight into which patients are most at risk of non-completion.

Despite previous studies highlighting associations between non-completion and personality traits, or ED symptoms, our results did not show any significant associations between non completion and the subscales of the BFI, nor the EDE-Q. While some previous studies have seen ED symptoms to be predictive of non-completion of treatment, others have not (e.g. Jordan et al., 2014; Waller et al., 1996; Fassino et al., 2009). Therefore, it is possible that in the current study, initial BMI acted as a stronger predictor of non-completion as compared to ED symptom severity. Lack of effects of personality is most likely due to not all participants having data on the BFI leading to reduced power when examining this variable. The current study has several limitations. One limitation is the fact that participants whose BMI drops below 20 at any point during the course of treatment are also asked to enter into a weight gain contract. Although these participants are included as part of the BMI 20 or higher group, they may be responding to treatment very differently from those in either group. For instance, patients in the under BMI 20 group already under a weight contract who receive flags may be failing to gain weight, whereas a patient who is asked partway through treatment to enter into one had to have been actively losing weight. So, it is possible that there are behavioural differences between these two groups that are not captured by this study. However, the number of patients in the sample whose BMI dropped below 20 over the course of treatment was small. Another limitation concerns identification of reasons for dropout. Data was only available on whether someone completed, was asked to leave due to not meeting weight gain goals, or chose to leave on their own. However, data on

reasons for choosing to leave were not obtained and could provide insights into why some patients elect to not continue with their treatment.

Future studies examining non-completion in an adult day treatment settings are necessary to improve clinical understanding of who is most vulnerable to dropout and which patients may benefit from further support, such as motivational readiness work. Furthermore, studies that can identify what should be the low-end cut-off for BMI in order to be eligible to participate in a day treatment program could enhance success and treatment completion. In addition, further research examining age and ED chronicity may be useful to further explore differences between older and younger patients in day treatment.

Finally, as many patients enter day treatment from outpatient therapy, it may be useful for outpatient treatment providers to be aware of which patients may be at risk for not succeeding, and address this risk in the transition to a higher level of care. Our group is currently in the process of examining weight gain and weight change trajectories of patients in day treatment to see if certain types of trajectories predict completion or non-completion.

In conclusion, our results add to the body of literature on factors affecting treatment completion for patients with EDs and help clarify which predictors seem to be the most salient for multi-diagnostic adult samples participating in day treatment. Our results show that low BMI at the start of treatment is a significant predictor of staff-initiated discharge in participants who entered the program with a BMI < 20, and of self-termination in participants with a pre-treatment BMI >20. For all patients, larger changes in BMI over the course of treatment predicted higher likelihood of completing treatment.

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**Table 1.** Reasons for non-completion, by weight status group

Weight status	Completed	Staff-terminated	Self-terminated	Total
Underweight (BMI <20.0)	65	99	38	202
Normal weight (BMI ≥20.0)	59	3	19	81
Total	124	102	57	283

Abbreviation: BMI, body mass index.

**Table 2.** Presence of comorbid diagnoses, by weight status group

Weight status	Underweight (BMI <20.0) (n, %)	Normal weight (BMI ≥20.0) (n, %)
Diagnosis		
Anxiety disorder	25/132 (18.9%)	17/53 (32.1%)
Depressive Disorder	16/130 (12.3%)	10/53 (18.9%)
Posttraumatic Stress Disorder	3/129 (2.3%)	1/52 (1.9%)
Borderline Personality Disorder	22/132 (16.7%)	15/53 (28.3%)
Obsessive-Compulsive Personality Disorder	6/132 (4.5%)	1/53 (1.9%)
Substance Use Disorder	5/132 (3.8%)	2/53 (3.8%)

Abbreviation: BMI, body mass index.

**Table 3.** Descriptives for predictor variables at pre-treatment and p-values from independent samples t-test results between groups

Variable	Under BMI 20 group (BMI <20.0) <i>M (SD)</i>		BMI 20 or higher group (BMI ≥ 20.0) <i>M (SD)</i>		t-test p value
Age	27.23 (10.15)	n=207	27.51 (7.47)	n=87	.818
Weeks of treatment	9.64 (4.29)	n=208	10.18 (3.52)	n=87	.301
BMI	16.91 (1.82)	n=208	23.76 (4.20)	n=87	.000
EDE-Q-Restraint	4.56 (1.86)	n=178	4.20 (1.92)	n=70	.161
EDE-Q-Shape Concerns	4.82 (1.49)	n=178	5.35 (1.16)	n=69	.008
EDE-Q-Weight Concerns	4.26 (1.65)	n=178	4.89 (1.44)	n=69	.005
EDE-Q-Eating Concerns	3.56 (1.66)	n=178	3.89 (1.66)	n=70	.156
EDE-Q-Total	4.30 (1.48)	n=178	4.58 (1.31)	n=69	.164
ACMTQ- Autonomous Motivation	5.95 (0.97)	n=135	6.08 (0.89)	n=58	.370
BFI-Extraversion	2.69 (0.85)	n=61	2.70 (0.98)	n=19	.990
BFI-Agreeableness	3.82 (0.66)	n=61	3.80 (0.66)	n=19	.938
BFI- Conscientiousness	3.57 (0.91)	n=61	3.49 (0.59)	n=19	.729
BFI-Neuroticism	4.10 (0.75)	n=61	4.33 (0.46)	n=19	.204
Pre-Treatment BFI- Openness	3.30 (0.85)	n=65	3.53 (0.84)	n=19	.291

Abbreviations: ACMTQ, Autonomous Motivation for Treatment Questionnaire; BFI, The Big Five Inventory; BMI, body mass index (kg/m<sup>2</sup>); EDE-Q, Eating Disorder Examination-Questionnaire.



Table 4. Nominal logistic regression results examining predictors of non-completion for the under BMI 20 group.

Variable		B	SE	Wald	df	p	Exp (B)
Staff-terminated	BMI	-.312	.117	7.07	1	.008	.732
	EDEQ-Total	-.091	.143	.407	1	.523	.913
	Autonomous Motivation	-.341	.250	1.862	1	.172	.711
	Age	-.054	.025	4.691	1	.030	.948
Self-terminated	BMI	.062	.151	.169	1	.681	1.064
	EDEQ-Total	-.135	.178	.572	1	.449	.874
	Autonomous Motivation	-.378	.290	1.696	1	.193	.686
	Age	-.010	.026	.161	1	.688	.990

Note: Reference category is completed treatment

Abbreviations: BMI, body mass index; EDEQ, Eating Disorder Examination-Questionnaire.

Table 5. Logistic regression results examining predictors of non-completion for the BMI 20 or higher group.

Variable	B	SE	Wald	df	p	Exp (B)
BMI	-.225	.126	3.181	1	.075	.798
EDEQ-Total	-.108	.270	.163	1	.687	.897
Autonomous Motivation	.050	.366	.018	1	.892	1.051
Age	-.035	.044	.621	1	.431	.966

Note: Reference category is completed treatment

Abbreviations: BMI, body mass index; EDEQ, Eating Disorder Examination-Questionnaire.

Table 6. Logistic regression results examining early termination and BMI as predictors of reason for non-completion for the under BMI 20 group.

Variable	B	SE	Wald	df	p	Exp (B)
Terminated early	-1.826	.431	17.970	1	.000	.161
BMI	.268	.119	5.063	1	.024	1.308

Note: Reference categories are terminated early (6 weeks or less) and staff-termination (outcome)

Abbreviation: BMI, body mass index.