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Predictors and moderators of psychological changes during the treatment of adolescent bulimia nervosa

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Abstract

This study examined predictors of psychological change among 80 adolescents with bulimia nervosa (BN) participating in a randomized-controlled trial comparing family-based treatment (FBT) to supportive psychotherapy (SPT). Psychological outcomes (cognitive eating disorder pathology, depression, and self-esteem) were explored at baseline, post-treatment, and 6-month follow-up. Multi-level growth models examined predictors of rate of change in psychological outcomes and moderators of treatment effects. All psychological outcomes improved through 6-month follow-up (moderate to large effect sizes) across both treatments. Overall, few significant predictors were identified. Older adolescents had faster change in self-esteem relative to younger adolescents (*p*=.03). Adolescents taking psychotropic medication at baseline had faster change in eating concerns relative to adolescents not taking medication (*p*=.02). Age (*p*=.02) and baseline purging severity (*p*=.03) moderated the relationship between treatment condition and change in eating concerns, where younger adolescents and individuals with high baseline purging had greater change when treated with FBT relative to SPT. Age and purging did not significantly moderate change in other psychological outcomes. Bulimic symptom improvement did not predict change in psychological symptoms. Generally, FBT and SPT were equally efficacious with respect to psychological improvement, although FBT may be more efficacious in younger adolescents and those with more frequent purging.

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Keywords

bulimia nervosa; adolescents; family-based treatment; supportive psychotherapy

In addition to binge eating and purging, individuals with bulimia nervosa (BN) frequently report concurrent psychological symptoms such as depression, anxiety, low self-esteem, and cognitive eating disorder pathology (e.g., weight and shape concerns) at more severe levels than non-psychiatric controls (Cockerham, Stopa, Bell, & Gregg, 2008; Daley, Jimerson, Heatherton, Metzger, & Wolfe, 2008; Joiner, Schmidt, & Wonderlich, 1997). Some research also suggests that psychological symptom severity increases with bulimic symptom severity (Krug et al., 2008; Daley et al., 2008). Although most research in this area has focused on adults, the presence of co-occurring psychological symptoms has also been documented in adolescents with BN (Binford & Le Grange, 2005). In fact, one study found that adolescents with BN had lower self-esteem, greater depressive symptoms, and greater eating disorder pathology than those diagnosed with anorexia nervosa (Le Grange, Loeb, Van Orman, & Jellar, 2004).

Psychological theories of BN propose that concurrent psychological symptoms (particularly negative affect) play an important role in both the development and maintenance of bulimic pathology (Stice, 2001). Furthermore, certain psychological symptoms (e.g., greater depressive symptoms and lower self-esteem) may lead to poorer treatment outcomes for adults with BN (Baell & Wertheim, 1992; Bulik, Sullivan, Joyce, Carter, & McIntosh, 1998; Fairburn, Peveler, Jones, Hope & Doll, 1993; Stice & Agras, 1999; Stice et al., 2008). Many adult BN treatment trials document positive changes in both broad psychological outcomes and bulimic symptoms during the course of treatment, yet existing research is mixed in regard to whether improvement in psychological symptoms represents a treatment-specific response (Hsu et al., 2001; Laessle et al., 1991; Chen et al., 2003; Cooper & Steere, 1995; Poulsen et al., 2014) or whether symptoms improve regardless of treatment modality (Agras, Walsh, Fairburn, Wilson, & Kraemer, 2000; Fairburn, Jones, Peveler, Hope, & O'Connor, 1993; Troop, Schmidt, Turnbull, & Treasure 2000). It is difficult to understand the nature of psychological change in the treatment of BN, and therefore our ability to elucidate the specific role of treatment type is limited. Furthermore, it is unclear whether bulimic symptom improvement or other factors (e.g., patient demographics, duration of illness) are the driving force behind psychological change within treatment.

Most importantly, the majority of treatment research in BN has been conducted with adult samples. Relatively little is known about the impact of treatment on psychological symptoms among children and adolescents with BN. In one of only two randomized-controlled trials (RCTs) for adolescents with BN, depressive symptoms and self-esteem improved following both family-based treatment (FBT) and non-specific individual supportive psychotherapy (SPT); however, FBT produced greater improvements in cognitive eating disorder pathology relative to SPT (Le Grange, Crosby, Rathouz, & Leventhal, 2007). The only other RCT on the treatment of BN in adolescents did not report on change in psychological outcomes (Schmidt et al., 2007).

Thus, while research has established the relationship between BN and psychological symptom comorbidity, as well as the positive impact of treatment on psychological outcomes, predictors of these changes are poorly understood and research of this kind among adolescents is nonexistent. This study aimed to bridge this gap by exploring the relationships between treatment for adolescent BN and psychological symptom improvement. Data from a previously published RCT (Le Grange et al., 2007) were utilized to explore change in secondary psychological outcomes during two treatments for adolescent BN: FBT and SPT. The main outcome findings from this trial have been published (Le Grange et al., 2007), where FBT was superior to SPT in the number of adolescents achieving full remission from BN (i.e., one-month abstinence from bingeing and purging) at end of treatment and 6-month follow-up. Other analyses using this sample found that adolescents with lower cognitive eating disorder pathology and lower depressive symptoms had better remission-related outcomes at post-treatment and 6-month follow-up (Le Grange, Crosby, & Lock, 2008), particularly when treated with FBT versus SPT (Le Grange et al., 2008). Although cognitive eating disorder pathology has been proposed as an essential element of comprehensive eating disorder recovery (Bardone-Cone et al., 2010), predictors of change in eating disorder cognitions or other psychological variables have not been explored in this sample.

The current study examined treatment, demographic, and clinical predictors of change in secondary psychological outcomes: cognitive eating disorder pathology, depressive symptoms, and self-esteem. We hypothesized that individuals in both treatments would experience comparable rates of improvement in psychological symptoms, and that change in bulimic symptoms (i.e., binge eating and purging) would predict change in psychological outcomes. Given the limited research on predictors of psychological outcomes in BN, we had no other specific hypotheses about predictors of change in psychological symptoms. Thus, these analyses can be considered exploratory.

Method

Participants

Eighty adolescents ages 12–19 participated in an RCT comparing FBT to SPT for BN. Adolescents met either full or subthreshold DSM-IV BN criteria (subthreshold participants met all diagnostic criteria but with bingeing and purging averaging once per week for six months). Both treatments were provided in 20 outpatient sessions over a six-month period. FBT sessions included the whole family and SPT was conducted with the adolescent alone with up to three collateral parent sessions. Both treatments have been previously described in detail (Le Grange et al., 2007). In brief, FBT (Le Grange & Lock, 2007) initially unites parents to take temporary control of all food-related decisions in order to directly interrupt disordered eating behaviors (e.g., bingeing and purging), then transitions control back to the adolescent. SPT, adapted from adult treatment trials (Fairburn, Kirk, O'Connor, & Cooper, 1986; Walsh et al., 1997), served as a non-specific control treatment focused on issues underlying the eating disorder such as emotional concerns, emotional expression, and independence. All research procedures were approved by the Institutional Review Boards at

the treatment site. All adolescent and parent participants consented to involvement in the research (assent for participants aged <18 years).

Assessments

Outcomes—As noted above, full remission in the main report (Le Grange et al., 2007) was defined as one-month abstinence from bingeing and purging. The current study explored changes in five secondary psychological outcomes: cognitive eating disorder pathology (i.e., Shape/Weight Concerns, Eating Concerns, and Restraint), depression, and self-esteem. All outcomes were assessed at baseline, post-treatment, and 6-month follow-up. Cognitive eating disorder pathology was assessed via the subscale scores of the Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993): Eating Concerns, Weight Concerns, Shape Concerns, and Restraint. Prior research indicates high convergence between the Shape Concerns and Weight Concerns subscales (Wade, Byrne, & Bryant-Waugh, 2008), therefore a combined Shape/Weight Concerns subscale was created. The EDE is the gold standard for diagnostic assessment of eating disorder pathology and has well-established psychometric properties (e.g., Rizvi, Peterson, Crow, & Agras, 2000). Internal consistency in this sample was adequate (Chronbach's alphas=0.60 for Eating Concerns, 0.69 for Restraint, and 0.87 for Shape/Weight Concerns). Depressive symptoms were assessed via the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II is a well-validated self-report inventory that includes cutoffs for clinical severity. Internal consistency in this sample was good (Chronbach's alpha=0.93). Self-esteem was assessed via the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), a widely used self-report measure of self-esteem. Internal consistency in this sample was good (Chronbach's alpha=0.90). All outcome measures were completed by the adolescent and were scored such that higher scores indicated more pathological levels of the construct.

Predictor—Baseline predictor variables were selected from those previously examined in this sample (Le Grange et al., 2008): treatment condition (FBT or SPT), adolescent age, adolescent race/ethnicity, intact or non-intact family status, duration of illness in months, presence or absence of psychotropic medication, presence or absence of a psychiatric comorbidity (obtained from the Schedule for Affective Disorders and Schizophrenia for School-age Children; Ambrosini, 2000), full or subthreshold BN diagnosis (obtained from the EDE), and baseline bingeing and purging frequency (obtained from the EDE). Frequency of bingeing or purging across time was assessed via within-treatment weekly symptom recall.

Analyses

Statistical Package for the Social Sciences (SPSS; version 19) was used to calculate sample descriptives. Cohen's *d* effect sizes were calculated based on difference between baseline and 6-month follow-up outcome scores, divided by the standard deviation of the change score. Cohen (1988) provides guidelines for interpreting these effect sizes where small *d*=.2, moderate *d*=.5, and large *d*=.8. Given the current focus on examining rate of change within a nested data structure (i.e., time nested within adolescents), slopes-as-outcome models were used to examine growth trajectories for each psychological outcome; these models were based on the general linear model using maximum likelihood estimation. The parameter of

greatest interest in these models is the predictor (level-2) × time (level-1) interaction, which indicated whether the predictor impacted the rate of change in the outcome. The predictor main effect indicated whether the outcome level at the end of treatment differed by the predictor, given that time was centered at the end of treatment, with baseline coded as −2 and follow-up coded as 1. All other continuous predictors were mean centered, and dichotomous predictors were centered as −0.5 and 0.5. This model assumed a linear model for each individual's trajectory, such that the intercept represents response at the end of treatment and the slope represents rate of response. An unstructured covariance structure was specified.

The unconditional growth model was examined for each outcome, with time as the only predictor, using SuperMix Version 1.1 (Hedeker, Gibbons, du Toit, & Patterson, 2008). For models that were statistically significant (i.e., models indicating significant reductions in the outcome over time), intraclass correlations (ICCs) were calculated to assess the percent of variability in each outcome attributable to the adolescent level. Subsequently, conditional multilevel growth models were used to test for predictors of outcome slope. These models appropriately examine multilevel data and can accommodate missing data. Initially, potential covariates were screened for inclusion in the final multivariable models for each outcome by examining the following set of effects in one model: main effects of the potential covariate, time, and treatment; two-way interactions of the potential covariate with time (i.e., slope over time) and treatment; and three-way interaction of the potential covariate with time and treatment, controlling for the baseline value for each outcome (included as a covariate). Any covariate that was associated with the outcome slope at the trend level (p .10) was then entered into an initial multivariable multilevel model. However, any non-significant predictors from the initial multivariable model were removed in order to examine a more parsimonious final multivariable model. Follow-up analyses were conducted to illuminate the direction of significant effects for continuous variables by examining the predictor centered at one standard deviation above and one standard deviation below the mean.

Results

Participant Characteristics

Forty-one participants were allocated to FBT and 39 to SPT. Participants in the sample were *M (SD)* 16.05 (1.60) years of age with a *M (SD)* duration of illness of 21.24 (22.26) months. Approximately half met full diagnostic criteria for BN (*N*=37) and half met subthreshold diagnostic criteria (*N*=43). Participants were primarily female (97.5%) and mean body mass index was 22.07 kg/m^2 (*SD*=2.96). Around half of participants had a comorbid psychiatric diagnosis at baseline (46.9%), around one third were taking psychotropic medications (32.1%), and about half were from intact families (56.8%). The majority of participants were Caucasian (63.7%), with a minority identifying themselves as Hispanic (20.0%), African American (11.3%), or other race/ethnicity (5.0%). There were no differences between treatment groups on any baseline demographic or clinical characteristic (Le Grange et al., 2007).

Change in Psychological Outcomes Over Time

All five psychological outcomes were significantly improved from baseline to 6-month follow-up ($ps<.001$). Changes represented medium to large effects over time (Table 1). The ICC values from the unconditional growth models (i.e., time nested within adolescent) for all outcomes reflected substantial variance in the outcome at the adolescent level: Shape/Weight Concerns=.56, Eating Concerns=.52, Restraint=.65, depressive symptoms=.59, self-esteem=.74.

Predictors and Moderators of Rate of Change in Psychological Symptoms

Shape/Weight Concerns—In initial bivariate models, significant or marginally significant predictors of change in Shape/Weight Concerns included age ($p=.01$, by time: $p=.02$, by treatment: $p=.04$), use of psychotropic medication ($p=.03$, by time: $p=.06$), and full or subthreshold diagnosis ($p=.03$). Only the main effect of age was significant in the initial multivariable model ($p=.02$), but it was no longer significant when examined in insolation in the final model ($p=.22$; see Table 2).

Eating concerns—In initial bivariate models, significant or marginally significant predictors of change in Eating Concerns included age ($p=.07$, by time: $p=.10$; by treatment: $p=.01$; by time by treatment: $p=.02$), use of psychotropic medication ($p=.01$; by time: $p=.01$), and baseline purging frequency (by treatment: $p=.03$; by time by treatment: $p=.04$). Several predictors were retained in the final multivariable model (Table 2). Medication use remained a significant predictor of Eating Concerns, such that adolescents using medication at baseline had lower overall Eating Concerns as well as faster reductions in Eating Concerns relative to adolescents not using medication ($ps<.02$). Age was also significantly associated with rate of change in Eating Concerns by treatment ($p=.02$), such that younger adolescents (using the estimated slope of the value 1SD below the mean) in SPT had the slowest reductions in Eating Concerns ($B=-0.46$, $SE=0.13$, $p<.001$). Reductions were faster for older adolescents (using the estimated slope of the value 1SD above the mean) in SPT ($B=-0.97$, $SE=0.14$, $p<.001$) and reductions were equivalent across ages in FBT ($B=[-0.94,-0.85]$, $SE=[0.11,0.15]$, $ps <.001$; see Figure 1). Finally, purging frequency was significantly associated with rate of change by treatment ($p=.03$), such that adolescents with greater purging at baseline (using the estimated slope of the value 1SD above the mean) had the fastest reductions in Eating Concerns in FBT ($B=-1.11$, $SE=0.15$, $p<.001$) but the slowest reductions in SPT ($B=-0.62$, $SE=0.14$, $p<.001$; see Figure 2). Adolescents with lesser purging at baseline (using the estimated slope of the value 1SD below the mean) had similar reductions in Eating Concerns across FBT ($B=-0.69$, $SE=0.15$, $p<.001$) and SPT ($B=-0.79$, $SE=0.14$, $p<.001$).

Restraint—There were no significant or marginally significant predictors of rate of change in Restraint, other than time and baseline Restraint ($ps<.001$; Table 2).

Depressive symptoms—In initial bivariate models, age ($p=.03$; by time: $p=.09$; by treatment: $p=.01$; by time by treatment: $p=.08$) was the only significant or marginally significant predictor of change in depressive symptoms. In the initial multivariable model, the main effect of age and its interaction with treatment were retained as predictors of

change in depressive symptomatology, but neither the main effect nor its interaction with treatment were significant in the final model (*p*s>.08; Table 2).

Self-Esteem—In initial bivariate models, age (*p*=.01, by time: *p*=.02; by treatment: *p*=.04; by time by treatment: *p*=.10) and full or subthreshold diagnosis (by treatment: *p*=.09) were significant or marginally significant predictors of change in self-esteem. In the final multivariable model (Table 2), only age remained a significant predictor of overall change and rate of change in self-esteem (*p*=.03), such that older adolescents had faster change in self-esteem (*B*=−2.62, *SE*=0.46, *p*<.001) than younger adolescents (*B*=1.23, *SE*=0.44, *p*=. 01); correspondingly, older adolescents had better overall self-esteem at the end of treatment (*p*=.01).

Discussion

This study examined change across five psychological outcomes during two treatments for adolescent BN. Across treatments, adolescents experienced improvements in cognitive eating disorder pathology, depressive symptoms, and self-esteem through 6-month follow-up. To our knowledge, this is the first study to evaluate predictors of psychological outcomes in an adolescent BN sample and the first to directly examine the relationship between bulimic symptom improvement and psychological outcomes in the treatment of BN. Generally, these data suggest that FBT and SPT are equally efficacious in improving psychological symptoms in adolescents with BN. Contrary to our hypothesis, improvement in bulimic symptoms (i.e., binge eating and purging) was not significantly associated with psychological change, although several baseline predictors and moderators of certain aspects of psychological change were identified.

The broad psychological improvements seen in this study are in line with past research, albeit for adults with BN (e.g., Agras et al., 2000; Fairburn et al., 1993; Troop et al., 2000). Change in psychological outcomes over time yielded medium to large effect sizes, suggesting clinically significant improvement in psychological functioning over the course of treatment and follow-up. In fact, mean scores for depressive symptoms dropped from the "moderate" range (scores of 20–28) to the "minimal" range (scores of 0–13) (Beck et al., 1996). Means scores for self-esteem and cognitive eating disorder pathology, however, were greater than one standard deviation from adolescent community norms at follow-up (Bagley, Bolitho, & Bertrand, 1997; Wade et al., 2008). This may indicate that adolescents were not fully recovered at 6-month follow-up from a broad psychological stance. Given the lack of other research about psychological improvement in adolescent BN treatment samples, it is difficult to know whether psychological change is within an expected range or smaller than typical improvements seen over a similar time period.

Importantly, rate of change in psychological outcomes was not impacted by change in bulimic symptoms. Past research has not directly examined this relationship, although rate of change in bulimic symptoms (particularly early change) has been found to predict eventual bulimic symptom remission in adult samples (e.g., Agras et al., 2000; Fairburn, Agras, Walsh, Wilson, & Stice, 2004), and in the current adolescent sample (Le Grange, Doyle, Crosby, & Chen, 2008). However, the relationship between bulimic symptom

improvement and broader psychological recovery is still unclear, and results from the current study suggest these facets of recovery may not be directly linked (at least not over the time frame examined).

In general, this study identified few significant predictors of psychological change. There was faster change in self-esteem for older adolescents across treatments, suggesting that younger age at entry to treatment may indicate a poorer psychological prognosis. However, there was significantly greater change in eating concerns for younger adolescents receiving FBT versus SPT, while older adolescents had equal rate of change in both treatments. This may suggest that FBT is better suited to address certain psychological symptoms in younger adolescents relative to individual therapy, while older adolescents may benefit psychologically from either FBT or SPT. Age did not predict change in other psychological outcomes, however. Change in cognitive eating disorder symptoms may be a particularly important treatment target, mediating outcome in FBT among adolescents with BN (Lock, Le Grange, & Crosby, 2008). Younger age has been linked to illness remission in adolescent anorexia nervosa (e.g., Le Grange et al., 2012) but not BN (Le Grange et al., 2008). Our findings suggest that age may also be important factor in determining treatment appropriateness with respect to improved self-esteem and eating concerns, but replication is needed.

This study also provides some information about clinical severity and one facet of psychological response. Individuals taking psychotropic medications before treatment had faster reductions in eating concerns and lower overall eating concerns at the end of treatment. Furthermore, individuals with greater baseline purging had faster change in eating concerns when treated with FBT relative to SPT, while individuals with lesser baseline purging did equally well in both treatments. This is consistent with research in adolescent anorexia nervosa, where individuals with more severe cognitive eating disorder pathology at baseline had greater remission from anorexia nervosa when treated with FBT relative to individual treatment (Le Grange et al., 2012). However, analyses with the current sample found that individuals with *less* severe baseline global cognitive eating disorder pathology had greater partial remission (defined as no longer meeting diagnostic criteria for full or subthreshold BN) when treated with FBT relative to SPT (Le Grange et al., 2008). Medication, purging status, and other markers of clinical severity did not moderate change in other psychological outcomes. Thus, the relationship between clinical severity and broader outcome inclusive of behavioral and psychological domains is difficult to interpret without additional research.

There are several limitations to this study. This sample was composed of treatment-seeking adolescents and their families in a clinical research setting, and thus may not generalize to other clinical settings. While we assessed multiple psychological outcomes, additional psychological variables known to impact eating disorder symptoms (e.g., anxiety) were not included. The sample size is relatively small, resulting in limited power. Despite the large number of predictors and outcomes examined, relatively few significant predictors emerged. Given the possibility of spurious findings, additional research is needed to confirm the reliability of these findings. Strengths of the study include the use of manualized treatments,

use of well-validated assessment tools, and multilevel analyses to address the hierarchical structure of these data.

This study represents an important first step in understanding psychological recovery within adolescent BN. These results suggest that psychological improvement can be expected. Although broad psychological recovery does not appear to differ by treatment type, some treatment, demographic, and clinical factors may impact specific facts of continued psychological change. We recommend that future research continue exploring psychological recovery in BN. Specifically, research should evaluate predictors of psychological improvement during various eating disorder treatments, with particular attention on the relative importance of psychological versus behavioral improvement in long-term recovery. Given the important role of psychological symptoms in the development and maintenance of bulimic pathology, it is possible that long-term maintenance of behavioral remission is less likely in the absence of significantly improved psychological outcomes.

Acknowledgements

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Highlights

- Cognitive eating disorder symptoms, depressive symptoms, and self-esteem improve following two treatments for adolescent bulimia nervosa

- Older adolescents had a faster improvements in self-esteem relative to younger adolescents

- Adolescents taking psychotropic medication at baseline had faster improvements in eating concerns relative to adolescents not taking medication

- Younger adolescents and individuals with high baseline purging have greater improvement in eating concerns when treated with family-based therapy relative to individual supportive psychotherapy
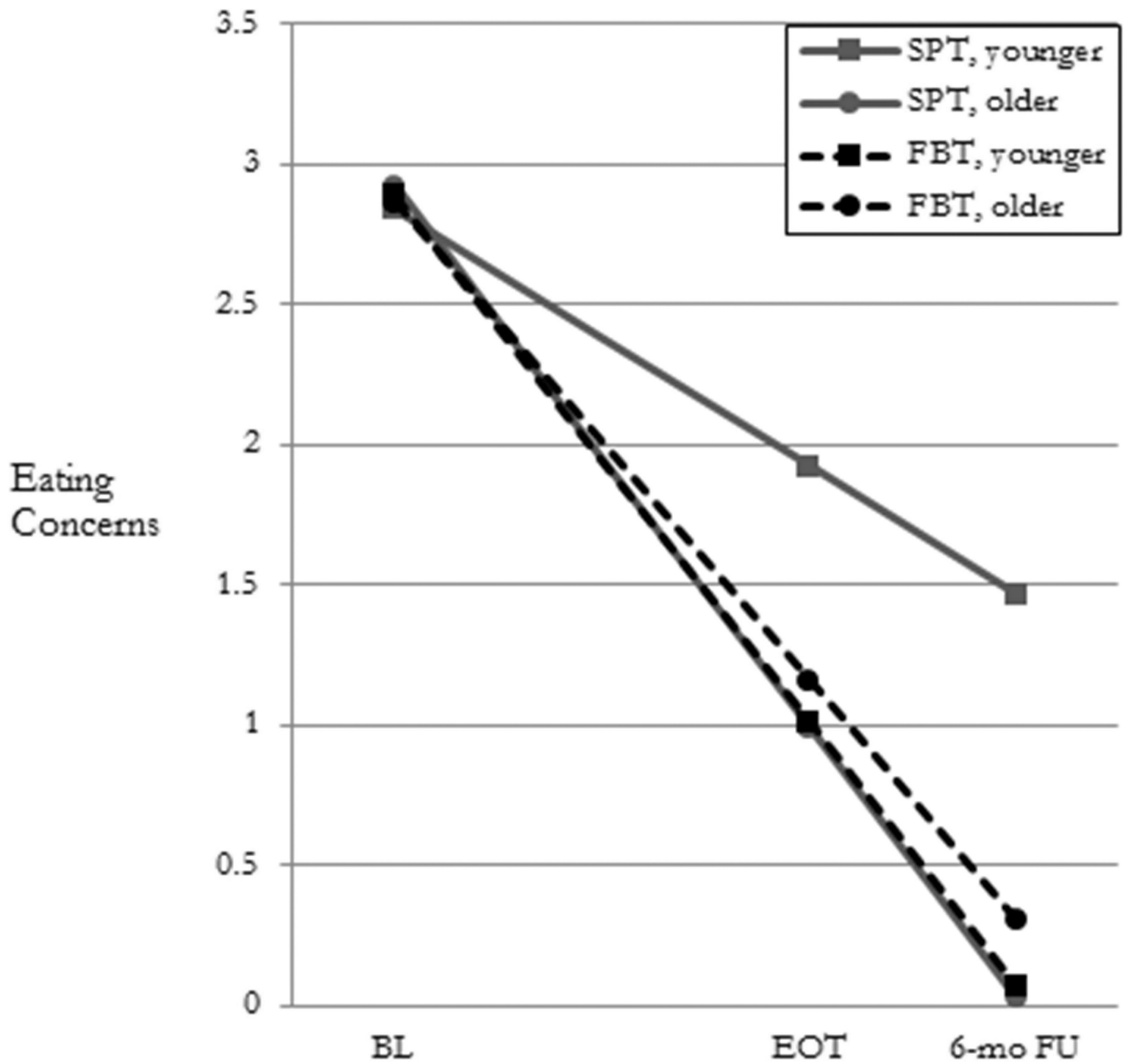
Figure 1.
The effect of treatment type and age (younger = estimated slope of the value 1*SD* below the mean, older = estimated slope of the value 1*SD* above the mean) on reductions in eating concerns (p = .02).
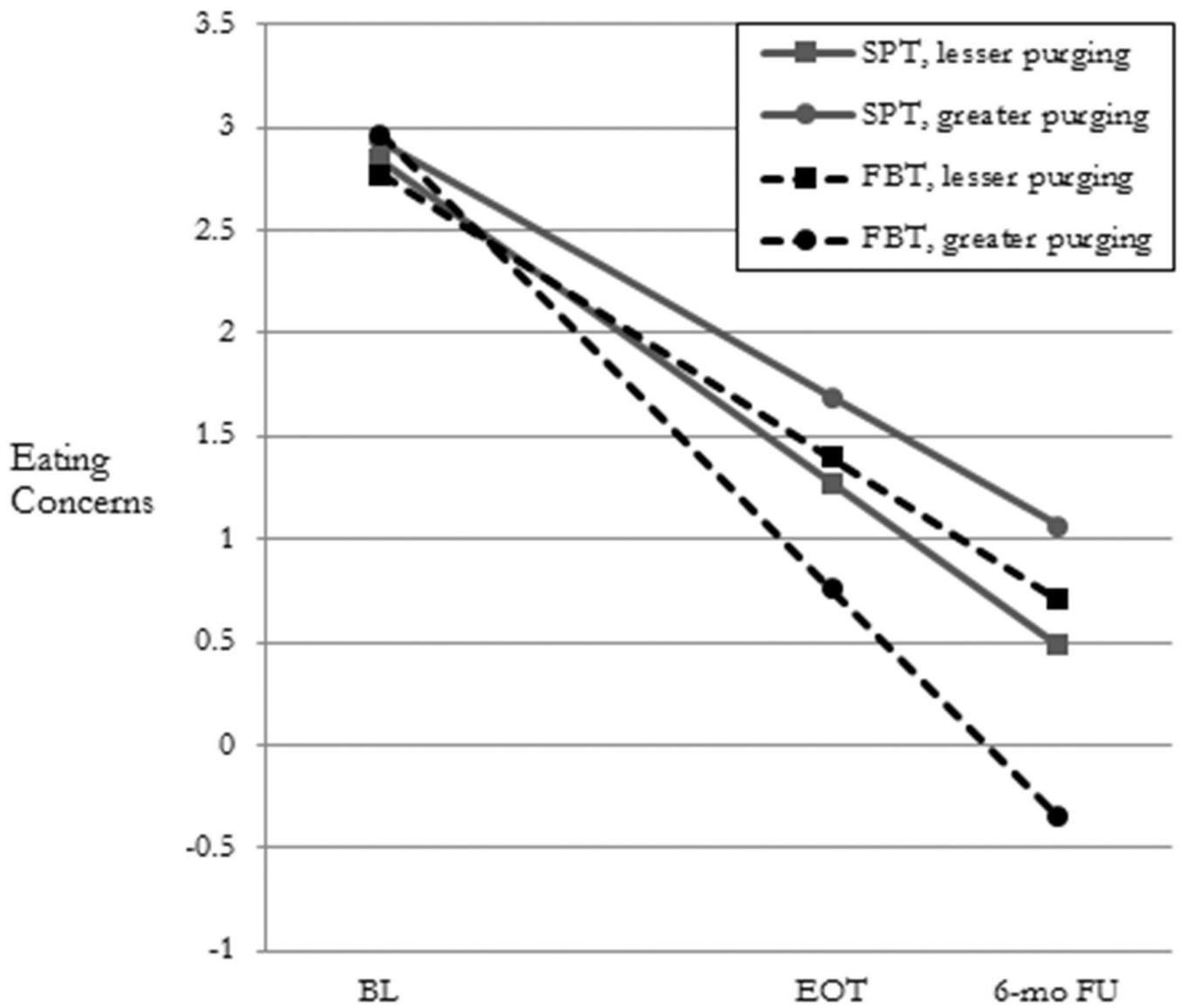
Figure 2.
The effect of treatment type and baseline purging frequency (lesser purging = estimated slope of the value 1*SD* below the mean, greater purging = estimated slope of the value 1*SD* above the mean) on reductions in eating concerns (p = .03).

Table 1

Change in psychological outcomes across treatments from baseline to 6-month follow-up

	Baseline	6-month follow-up	Cohen's d
	M (SD)	*M (SD)*	
Shape/Weight Concerns	4.01 (1.25)	2.06 (1.53)	1.39
Eating Concerns	2.91 (1.32)	1.01 (1.23)	1.33
Restraint	3.72 (1.46)	1.56 (1.54)	1.12
Depressive Symptoms	25.21 (11.94)	12.13 (11.23)	0.95
Self-Esteem	27.43 (6.00)	21.98 (7.26)	0.72

Note: All measures of psychological outcomes were scored such that higher scores indicate more pathological levels of the construct. Scoring for the Rosenberg Self-Esteem Scale (Rosenberg, 1965) typically dictates that lower scores equal lower self-esteem, but in the present study the scale was reverse scored such that higher scores indicate lower self-esteem.

Table 2

All effects in final multivariable models for each psychological outcome

	Shape/Weight Concerns			Eating Concerns			Restraint			Depression			Self-Esteem		
	B	SE	p	B	SE	p	B	SE	p	B	SE	p	B	SE	p
Intercept	2.57	0.13	<.001	1.53	0.10	<.001	2.07	0.14	<.001	15.25	1.00	<.001	23.41	0.56	<.001
Time	−0.68	0.08	<.001	−0.66	0.06	<.001	−0.78	0.09	<.001	−4.72	0.63	<.001	−1.93	0.31	<.001
Outcome (BL)	0.84	0.07	<.001	0.79	0.06	<.001	0.77	0.06	<.001	0.79	0.06	<.001	0.92	0.05	<.001
Treatment	---	---	---	−0.40	0.20	.04	---	---	---	−0.51	1.36	.71	---	---	---
Time × Treatment	---	---	---	−0.19	0.13	.13	---	---	---	---	---	---	---	---	---
Age	−0.07	0.06	.22	−0.12	0.06	.05	---	---	---	−0.58	0.44	.18	−0.93	0.37	.01
Age × Time	---	---	---	−0.07	0.04	.10	---	---	---	---	---	---	−0.44	0.20	.03
Age × Treatment	---	---	---	0.36	0.13	.01	---	---	---	1.56	0.88	.08	---	---	---
Age × Time × Treatment	---	---	---	0.19	0.08	.02	---	---	---	---	---	---	---	---	---
Medication use (BL)	---	---	---	0.50	0.20	.01	---	---	---	---	---	---	---	---	---
Medication use (BL) × Time	---	---	---	0.29	0.13	.02	---	---	---	---	---	---	---	---	---
Purging (BL)	---	---	---	−0.01	0.01	.60	---	---	---	---	---	---	---	---	---
Purging (BL) × Time	---	---	---	−0.01	0.01	.33	---	---	---	---	---	---	---	---	---
Purging (BL) × Treatment	---	---	---	−0.05	0.02	.01	---	---	---	---	---	---	---	---	---
Purging (BL) × Time × Treatment	---	---	---	−0.03	0.01	.03	---	---	---	---	---	---	---	---	---

Note: BL = baseline.