Empirically defining rapid response to intensive treatment to maximize prognostic utility for bulimia nervosa and purging disorder

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ABSTRACT

Rapid response (RR) to eating disorder treatment has been reliably identified as a predictor of post-treatment and sustained remission, but its definition has varied widely. Although signal detection methods have been used to empirically define RR thresholds in outpatient settings, RR to intensive treatment has not been investigated. This study investigated the optimal definition of RR to day hospital treatment for bulimia nervosa and purging disorder. Participants were 158 patients who completed ≥6 weeks of day hospital treatment. Receiver operating characteristic (ROC) analysis was used to create four definitions of RR that could differentiate between remission and nonremission at the end of treatment. Definitions were based on binge/vomit episode frequency or percent reduction from pre-treatment, during either the first four or first two weeks of treatment. All definitions were associated with higher remission rates in rapid compared to nonrapid responders. Only one definition (i.e., ≤3 episodes in the first four weeks of treatment) predicted sustained remission (versus relapse) at 6- and 12-month follow-up. These findings provide an empirically derived definition of RR to intensive eating disorder treatment, and provide further evidence that early change is an important prognostic indicator.

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Rapid response to treatment has gained considerable attention in the eating disorders literature due to evidence indicating that it has prognostic significance. Rapid response effects have also been well documented in other disorders such as depression, where rapid early symptom change has been associated with improved outcomes (Fennell & Teasdale, 1987; Ilardi & Craighead, 1994). Rapid response to eating disorder treatment generally refers to a large or clinically meaningful change in behavioral symptoms within the initial phase of treatment (e.g., early binge eating and vomiting reduction; early weight gain in anorexia nervosa; early changes to dietary restriction). However, operational definitions of rapid response have varied widely, with no consistent definition being employed. Differences in treatment type and intensity and in patient characteristics (e.g., diagnosis and severity) may complicate the definition of rapid response.

Several studies of bulimia nervosa (BN), binge eating disorder

(BED), and other specified feeding and eating disorders (OSFED) featuring binge eating and/or vomiting symptoms have shown that rapid response to eating disorder treatment predicts better outcomes. Individuals who made greater reductions in binge eating and/or purging behaviors within the first three to six weeks of treatment were more likely to be remitted at post-treatment (Agras et al., 2000; Fairburn, Agras, Walsh, Wilson, & Stice, 2004; Grilo, Masheb, & Wilson, 2006; Grilo & Masheb, 2007; le Grange, Doyle, Crosby, & Chen, 2008; Masheb & Grilo, 2007; Olmsted, Kaplan, Rockert, & Jacobsen, 1996; Vaz, Conceicao, & Machado, 2014; Zunker et al., 2010) and were less likely to relapse between 6 and 24 months follow-up (Fairburn et al., 2004; le Grange et al., 2008; Olmsted et al., 1996; Olmsted, MacDonald, McFarlane, Trottier, & Colton, in press). Similarly, patients with BN who rapidly normalized their eating within the first four to six weeks of treatment had lower rates of binge eating and vomiting at post-treatment (Wilson, Fairburn, Agras, Walsh, & Kraemer, 2002). In transdiagnostic eating disorder samples, rapid reduction in the cognitive psychopathology of eating disorders (Raykos, Watson, Fursland, Byrne, & Nathan, 2013) and rapid normalization of eating (McFarlane, Olmsted, &

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Trottier, 2008) were associated with better remission rates and lower relapse rates, respectively.

Despite the fact that rapid response to treatment has consistently been associated with higher remission and lower relapse rates, this literature is limited by the use of many different operational definitions of rapid response. Operational definitions of key constructs critically affect rates of relapse and affect interpretability and comparability of findings (Olmsted, Kaplan, & Rockert, 2005). Research on rapid response has defined the "initial period" of treatment as the first week (Zunker et al., 2010), first three weeks (McFarlane et al., 2008; Vaz et al., 2014), first four weeks (Agras et al., 2000; Fairburn et al., 2004; Grilo et al., 2006; Grilo & Masheb, 2007; Masheb & Grilo, 2007; McFarlane, MacDonald, Royal, & Olmsted, 2013; Olmsted et al., 1996, in press; Wilson et al., 2002; Zunker et al., 2010), first five weeks (Raykos et al., 2013), and first six weeks (le Grange et al., 2008; Wilson et al., 2002). The operationalization of response itself has also varied widely to include binge eating and/or vomiting reduction ranging from 49% to 85% within the first four to six weeks (i.e., Agras et al., 2000; Fairburn et al., 2004; Grilo et al., 2006; Grilo & Masheb, 2007; le Grange et al., 2008; Masheb & Grilo, 2007; Zunker et al., 2010). Other studies have used specific frequency thresholds in the first phase of treatment, including abstinence (Bulik, Sullivan, Carter, McIntosh, & Joyce, 1999; Fairburn et al., 2004), two or fewer episodes (McFarlane et al., 2013), and three or fewer episodes (Olmsted et al., 1996, in press). Definitions of remission and relapse (i.e., key outcomes), and treatment characteristics and intensities, have also varied widely. Thus, although the findings converge in showing that rapid response to treatment consistently predicts better treatment outcomes, this variability in definitions of key constructs makes it challenging to compare the results of studies and does little to identify the optimal definition of rapid response for use in future research and clinical applications.

1. Empirical definitions of rapid response

One key value of the rapid response construct is its apparent predictive validity in discriminating remission from nonremission. Therefore, the most useful definition may be one that is empirically derived to best discriminate between outcomes. A number of studies have utilized signal detection methods to determine this. For example, Grilo and colleagues used receiver operating characteristic (ROC) curves to empirically define rapid response in three different studies of BED. Each compared cognitive behavioral therapy (CBT; with and without combined psychopharmacological treatments) to other treatments over 12—16 weeks. In all three studies, ROC analyses defined rapid response as 65%—70% reduction in binge eating in the first four weeks of treatment (Grilo et al., 2006; Grilo & Masheb, 2007; Masheb & Grilo, 2007). These findings were replicated by a subsequent study (Zunker et al., 2010). Similarly, signal detection methods defined rapid response as 70% or greater reduction in purging in the first 6 weeks of individual CBT for BN (Agras et al., 2000). This indicates that definitions for BED and BN may be similar in outpatient CBT-based treatments.

In summary, several studies have used signal detection methods to empirically define rapid response and have found that 65%—70% reduction in binge eating/purging during the initial phase of treatment best differentiated remission and nonremission. However, all of these studies involved outpatient treatments (i.e., individual, group, or guided self-help CBT, with or without adjunctive psychopharmacology) delivered over 12—18 weeks. These operational definitions may not generalize beyond low-intensity outpatient CBT, or the specific eating disorder diagnoses that were the subject of the studies, the majority of which were BED. An empirical definition of rapid response to intensive treatment (i.e., day

hospital, residential or inpatient settings) — which differs in length and intensity to individual psychotherapy, as well as in terms of patients' illness severity — has not yet been determined. This is important, given that intensive treatments are both commonly used and frequently recommended in the treatment of eating disorders (Yager et al., 2006).

Day hospital (DH) programs for BN are far more intensive than individual CBT and typically provide 35—40 h per week of hospital-based treatment (e.g., Olmsted, McFarlane, Trottier, & Rockert, 2013). Therefore DH treatment is shorter in duration but more intensive, and includes a much higher degree of behavioral containment. Its different treatment structure, duration, and intensity suggest that the optimal definition of rapid response may differ from published empirically derived cutoffs. Additionally, patients who receive intensive treatment for BN tend to have more severe eating disorders, indicated by much higher symptom frequencies (e.g., MacDonald, McFarlane & Olmsted, 2014), than those who participate in outpatient CBT. Therefore, whether published empirically derived thresholds of rapid response (i.e., 65—70% reduction) generalize to intensive treatment for BN has yet to be determined.

2. The current study

The purpose of the current study was to empirically derive a definition of rapid response to DH treatment for BN and OSFED-Purging Disorder (OSFED-PD) by using signal detection methods to determine the threshold of binge eating and/or vomiting episodes in the initial weeks of DH treatment that can best differentiate behavioral remission from nonremission. Given that rapid response has not been investigated using signal detection methods in intensive treatments, no specific hypotheses about the defined thresholds were generated. A secondary goal was to validate these definitions by examining whether they could predict sustained remission. It was hypothesized that the generated rapid response definitions would predict sustained remission (versus relapse) at 6- and 12-month follow-up.

3. Methods

3.1. Participants

Participants were eligible if they were diagnosed with DSM-5 BN or OSFED-PD (i.e., had ≥1 episode of binge eating/vomiting, or vomiting alone, per week in the three months before treatment, and BMI > 18.5; American Psychiatric Association, 2013), were on their first admission to our DH, completed ≥6 weeks of DH (a full dose is 6—8 weeks), and provided complete eating disorder symptom data during treatment and for the first month of post-treatment follow-up. We included individuals with both BN and PD because of the behavioral and clinical similarities between the disorders. The study included 158 participants between 2007 and 2013. An additional 464 patients admitted to the DH during the same period were ineligible for the study, for the following reasons: 46.3% had a diagnosis of anorexia nervosa; 13.4% had an OSFED diagnosis other than purging disorder; 3.9% were repeat patients in our center; 17.9% completed fewer than 6 weeks of treatment; and 18.5% were otherwise eligible but did not provide complete symptom data during the first month follow-up and therefore could not be classified in the primary analyses.

3.2. Measures

3.2.1. Eating Disorder Examination (EDE)

The EDE is a semi-structured clinical interview that provides