Ready or not: Examining self-reported readiness for behavior change at intake assessment for adults with an eating disorder

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Hudson, C. C. & Mac Neil, B. A., Ready or not: Examining self-reported readiness for behavior change at intake assessment for adults with an eating disorder, Behavior Modification Vol. 44(2) pp. 214-227 Copyright © 2018 The Author(s). DOI: 10.1177/0145445518807129.

Abstract

We explored whether a single-item self-report measure (i.e., the Readiness Ruler) was an appropriate measure of treatment engagement in adult outpatients with eating disorders. One hundred and eight women diagnosed with an eating disorder completed the Readiness Ruler and measures of symptom severity at intake to a hospital-based outpatient treatment program. Treatment engagement was operationalized as attendance to a minimum of one session of a cognitive behavioral therapy (CBT) treatment group, the number of CBT group sessions attended, and whether the participants dropped out of the CBT group prematurely. Results suggest that the Readiness Ruler was not associated with attending the CBT group. Among the participants that attended the program, the Readiness Ruler was not associated with the number of CBT group sessions attended or CBT group dropout. Higher Readiness Ruler score was associated with more severe symptomatology. In conclusion, the Readiness Ruler may not be a good predictor of CBT group treatment engagement for individuals with eating disorders, and may instead be a proxy for symptom severity.

Keywords: eating disorders, readiness to change, readiness ruler, treatment engagement

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Eating disorders are associated with severe psychological and physiological repercussions (American Psychiatric Association, 2013; Mehler & Walsh, 2016; Rosling, Sparén, Norring, & von Knorring, 2011). Evidence-based treatment is necessary to improve symptoms and minimize the impact of these negative consequences; however, individuals with eating disorders are often reluctant to engage in their recommended care (Cockell, Geller, & Linden, 2002). Identifying factors associated with readiness to engage in treatment may help clinicians to maximize both clinical resources and may increase patients' success in treatment (Geller, 2002).

Readiness to change has been identified as an important predictor of treatment engagement in individuals with eating disorders. Participants' scores on interviews designed to assess readiness to change and treatment motivation have been associated with their decisions to engage in treatment (Geller, Cockell, & Drab, 2001; Geller, Drab-Hudson, Whisenhunt, & Srikameswaran, 2004), treatment completion (Allen et al. 2012; Geller, Cockell, & Drab, 1999), and premature dropout (Geller et al., 2001; Geller et al., 2004). Participants who report low levels of readiness to change their behavior may benefit from motivational interviewing before engagement in traditional treatments for eating disorders in order to maximize the effectiveness of limited resources (Geller & Dunn, 2011). Although evaluating readiness to change behavior can improve the treatment of individuals with eating disorders, interviews can be lengthy and time consuming, which may not be feasible for clinicians working in busy hospital-based treatment centers. To address this issue, self-report questionnaires have been developed as a more efficient method to measure readiness to change. However, the majority of these scales rely

on the transtheoretical model of behavior change (see Hötzel, von Brachel, Schlossmacher, & Vocks, 2013 for a review), which posits that a person changes by passing through a defined sequence of qualitatively distinct stages (Prochaska & DiClemente, 1983; Prochaska, DiClemente & Norcross, 1992). This model has received some criticism for asserting that readiness to change is a categorical construct, with individuals needing to pass through four discrete stages (Bandura, 1997; Davidson, 1992; Littell & Girvin, 2002). Researchers have suggested that this model oversimplifies behavioral change by imposing artificial categories on a continuous process, and instead, researchers and clinicians should be using continuous measures of behavior change (Littell & Girvin, 2002).

A single-item self-report measure of readiness to change, the Readiness Ruler, was developed as a continuous measure of behavior change for individuals with substance abuse disorders (Miller & Rollnick, 2002; Rollnick, Mason, & Butler, 1999). The Readiness Ruler has been used widely in the substance abuse literature with good concurrent and predictive validity (Maisto et al., 2011) and it has recently been used with individuals with attention-deficit/hyperactivity disorder (Sibley, Comer, & Gonzalez, 2017), obsessive compulsive disorder (Maher et al., 2012), and diabetes (Ellis, Berio, Carcone, & Naar-King, 2011). The Readiness Ruler consists of a single item that is rated on a 10-point scale, with higher scores indicating that individuals are more prepared to change their behavior. Higher scores on the Readiness Ruler is associated with positive treatment outcomes for individuals with substance abuse disorders, including greater odds of abstinence, fewer drinks per day, and greater odds of early remission (Maisto et al., 2011; Smith, Davis, Mendoza, & Zhang, 2017). Higher scores on the Readiness Ruler were associated with more frequent homework completion and post-treatment symptom reduction in patients with obsessive-compulsive disorder (Maher et al., 2012), as well as better

therapeutic alliance and greater number of sessions attended in individuals with diabetes (Ellis, Berio, Carcone, & Naar-King, 2011). To our knowledge, only one study has assessed the use of a single-item measure of readiness to change in individuals with eating disorders (Bewell & Carter, 2008). In this study, the authors assessed readiness to change four weeks into an inpatient treatment for adolescents with anorexia nervosa. The results suggested that higher scores on a single-item measure of readiness to change were associated with lower odds of treatment dropout compared with individuals who had lower levels of readiness to change. This preliminary research suggests that a brief measure used to assess readiness to change may be appropriate to assess individuals' willingness to change their behavior during inpatient care. However, research is needed to determine the utility of a single-item measure of readiness to change in an outpatient sample of individuals with eating disorders.

The purpose of this study was to explore whether a single-item measure (i.e., the Readiness Ruler) was an appropriate measure of readiness to change in a clinical sample of adults with eating disorders enrolled in a hospital-based outpatient treatment program. To test this research question, we explored whether participants' score on the Readiness Ruler at intake assessment was associated with participants' attendance in an evidence-based CBT group, the number of sessions they attended, and whether they dropped out of the CBT group. Although participants also had access to other adjunct group treatments, the CBT group was chosen as the indicator of treatment engagement because the adjunct groups were not aimed at reducing core eating disorder symptomatology (i.e., increasing nutritional intake, decreasing compensatory behaviors). The CBT group is the main component of treatment in the outpatient clinic and was based on current best practices in the treatment of individuals with eating disorders (Fairburn,

2008; Wade, Byrne, & Allen, 2017). All individuals who were seen at intake assessment were eligible and encouraged to attend this CBT group.

Based on prior research, we expected to find a significant relation between readiness to change and CBT group treatment engagement if the Readiness Ruler is a valid assessment of readiness to change in outpatients with eating disorders. As an exploratory analysis, we also examined the association between clinical characteristics (i.e., satisfaction with life, depressive symptoms, anxiety symptoms, body mass index (BMI) and participants' self-reported readiness to change eating disorder behavior to determine whether the variables that influence motivation could explain participants' self-reported readiness to change.

Methods

Participants

Participants were 112 female patients accepted into an adult eating disorder outpatient program over a two and a half year period. The clinic accepts patients 18-years-old or older who have been referred by a physician for eating disorder symptoms. Participants meeting criteria for anorexia nervosa (AN), bulimia nervosa (BN), or other specified feeding or eating disorder (OSFED) were accepted into the group treatment program. Patients with binge eating disorder were not seen in the outpatient program at the time of this study and were therefore excluded from the current study. Four participants were excluded because they did not meet criteria for a diagnosis of an eating disorder at intake assessment. The final sample consisted of 108 women, ages 18-60 (M = 27.24, SD = 10.59) who met the *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (*DSM-5*; American Psychiatric Association, 2013) criteria for an eating disorder and who were enrolled in a hospital-based outpatient adult eating disorder group therapy program. *DSM-5* diagnoses were provided through psychiatric clinical interview with

accompanying psychometric measures administered by a licensed clinical psychologist. Overall, 32.4% of the sample met criteria for AN, 32.4% for BN, and 35.2% for OSFED. Subtypes of OSFED were not reported because of the difficulties with reliability differentiating between these subtypes (Ekeroth, Clinton, Norring, & Birgegård, 2013). This study met ethical compliance and clearance through the local University Health Science and Affiliated Teaching Hospitals Research Ethics Board as part of the clinic's ongoing program evaluation research.

Measures

Physical measures. Participants' weight and height was assessed at intake assessment using a calibrated digital scale with a built-in stadiometer. Participants were weighed in their clothing with their shoes off. Weight was assessed in kilograms and height was assessed in centimeters. BMI was calculated using the formula kg/m^2. In the current study, a BMI less than 18.5 was considered underweight, 18.5 to 24.9 was consisted normal weight, 25 to 29.9 was considered overweight, and 30 or more was considered obese.

Readiness to change eating disorder behavior. The Readiness Ruler is a single-item self-report scale originally developed by Stephen Rollnick and colleagues (Miller & Rollnick, 2002; Rollnick, Mason, & Butler, 1999). The Readiness Ruler was used in the present study to assess how prepared participants viewed themselves to be in regard to changing their engagement in eating disorder behavior. Participants were presented with a line and asked, "Rate where you are now on this line that measures your change in eating disorder behavior. Are you not prepared to change, already changing, or somewhere in the middle?" on a 10-point scale (0 = *Not prepared to change* to 10 = *Already changing*). Higher scores indicated that the participant was more ready to change their behavior.

Life satisfaction. The 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) was used to measure participants' life satisfaction. Participants indicate how much they agree with each statement on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*). Scores on the SWLS can range from 7 to 35, with high scores indicating that participants were more satisfied with their life. The internal consistency of the SWLS in the current sample was good (Cronbach's $\alpha = 0.86$).

Depressive symptoms. Participants completed the 21-item self-report Beck Depression Inventory, Second Edition (BDI-II; Beck, Steer, & Brown, 1996) to assess the presence, severity, and clinical descriptors of depressive symptoms. Scores on the BDI-II can range from 0 to 63, with higher scores suggesting more severe depressive symptoms. The internal consistency of the BDI-II in the current sample was good (Cronbach's $\alpha = 0.83$).

Anxiety symptoms. Participants completed the 21-item self-report Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) to assess the presence, severity, and clinical descriptors of anxiety symptoms. Scores on the BAI can range from 0 to 63, with higher scores suggesting more severe anxiety symptoms. The internal consistency of the BAI in the current sample was excellent (Cronbach's $\alpha = 0.92$).

CBT group treatment engagement and dropout. Treatment engagement was operationalized as attending at least one session of the CBT group. Dropout was operationalized as not attending any of the final six sessions of the CBT group. Participants could attend a maximum of 16-sessions, and the group facilitator tracked attendance. Partial attendance (e.g., attending for half of the session) was counted as session attendance.

Procedure

Participants completed all assessments as a part of the standard intake procedure at the adult eating disorders outpatient clinic. Participants first completed a one and a half hour clinical interview with a psychiatrist who specialized in eating disorders. This psychiatrist provided a *DSM-5* diagnosis, if applicable. A licensed clinical psychologist met with participants and administered psychometric questionnaires. In addition, participants met with a registered dietitian to assess their height and weight using a calibrated digital scale. Participants provided their written consent for the study as a part of the clinic's ongoing program evaluation research. All participants were eligible and encouraged to attend the 16-week CBT group based on current best practices in the treatment of adults with eating disorders (for a description of the group programming and preliminary outcomes see Mac Neil, Leung, Nadkarni, Stubbs, & Singh, 2016). All participants were advised at intake assessment that the CBT group was the core treatment programing at the clinic and they would be registered into the group. Participants were able to either accept or decline the group at any time. While participants did have access to other treatment modalities (e.g., acceptance and commitment therapy, cognitive remediation therapy), these adjunct treatment groups targeted participants' psychological flexibility rather than eating disorder symptom reduction, which was the main goal of the CBT group. Data from the adjunct treatments were not included in the current study. Participants were monitored medically by the nurse practitioner weekly to monthly as part of the participants' routine care in the clinic. Participants were seen more frequently when there were concerns about their physical health status by the team nurse practitioner. All patients were monitored for weight status and blood pressure were monitored as part of their ongoing engagement in the outpatient clinic. When concerns arose participants were referred out of the clinic for blood work and an electrocardiogram (EKG). Participants were also provided with psychiatric follow-up as

needed. The psychiatrist also provided treatment recommendations for any comorbid presenting concerns. The team psychiatrist determined the frequency of psychiatry follow-up.

Statistical Analyses

The data were analyzed using SPSS version 24. The following characteristics of the data were inspected prior to data analysis: distribution of scores on all measures, the presence of outliers that were three standard deviations from the mean, and the relation between demographic variables and the primary variables of interest. Means and standard deviations were calculated for descriptive statistics. Logistic regression analyses were conducted to examine whether the Readiness Ruler was associated with CBT treatment engagement and dropout, with the Readiness Ruler as the independent variable and CBT treatment engagement and drop out as two separate dependent variables. A linear regression was conducted to evaluate the association between the Readiness Ruler and the number of sessions participants attended, with the Readiness Ruler as the independent variable and the number of sessions attended as the dependent variable. Pearson correlations were conducted to explore the relation among the Readiness Ruler, satisfaction with life (as assessed by the SWLS), depressive symptoms (as assessed by the BDI-II), and anxiety symptoms (as assessed by the BAI).

Results

Descriptive Statistics

All data were approximately normally distributed (skewness < |1.00|) and no outliers were detected. Participants' average score on the Readiness Ruler was 5.89 (*SD* = 2.34). Of the 61 participants who attended the CBT group, they attended an average of 10.71 sessions (range = 1 to 16, *SD* = 4.31). On average, participants were in the *Dissatisfied* range for satisfaction with

life on the SWLS (M = 14.30, SD = 6.80), the *Severe* range for depressive symptoms on the BDI-II (M = 32.30, SD = 11.37), the *Moderate* range for anxiety symptoms on the BAI (M = 24.86, SD = 13.27), and the *Normal Weight* range for BMI (M = 22.72, SD = 5.83).

Clinical Characteristics Associated with Readiness to Change

Correlations among clinical variables are presented in Table 1. Higher readiness to change on the Readiness Ruler was associated with significantly higher life satisfaction on the SWLS (r = .29, p = .003), lower depression symptoms on the BDI-II (r = -.29, p = .003), and lower anxiety symptoms on the BAI (r = -.25, p = .003). Readiness Ruler scores were not associated with BMI.

CBT Group Treatment Engagement

Sixty-one participants (56.50%) attended at least one CBT group session. The remaining participants either did not attend any treatment programming (14.8%) or only attended the clinic's adjunct groups (28.7%), including nutrition groups, acceptance and commitment therapy, and cognitive remediation therapy (Mac Neil, Leung, Nadkarni, Stubbs, & Singh, 2016; Mac Neil & Hudson, 2018; Mac Neil et al., 2016; Sandoz, Wilson, DuFrene, 2011; Tchanturia, Davies, Reeder, & Wykes, 2010). Approximately one quarter (24.59%) of participants dropped out of the CBT group. The Readiness Ruler was not associated with participants' engagement in the CBT group, $\chi^2(1) = 0.02$, p = .90, Nagelkerke R^2 = .00. Among the participants who did attend the CBT treatment group, the Readiness Ruler was not associated with the number of group sessions participants attended, $r(61) = .07$, p = .58, or whether they prematurely dropped out of the CBT group, $\chi^2(1) = 0.83$, p = .36, Nagelkerke R^2 = .02.

Discussion

The current study is the first to use a single item self-report measure of readiness to change eating disorder behavior at intake assessment with a clinical sample of adult outpatients with a *DSM-5* diagnosis of an eating disorder. Self-reported readiness to change eating disorder behavior was not associated with participants' engagement in a CBT group, which was the core aspect of the outpatient eating disorder treatment program. Higher self-reported readiness to change was, however, associated with higher levels of life satisfaction and fewer symptoms of depression and anxiety. Taken together, these results suggest that a single item self-report of readiness to change may not be a helpful predictor of treatment engagement in adult outpatients with eating disorders at intake assessment into a group therapy program. Instead, self-reported readiness to change may be a proxy for symptom severity in this population. Readiness to change is a multifaceted construct, and personal beliefs may be one of many other factors (e.g., family and occupational pressures) that could influence whether an individual engages in treatment (Geller & Drab, 1999). Future work could examine external factors that may be more important for treatment engagement compared to subjective beliefs about whether outpatients with eating disorders are ready to change their behavior at intake assessment.

The results of the current study are in contrast to the results reported by Bewell and Carter (2008), who found that higher scores on a single item self-report measure of readiness to change was associated with lower odds of treatment dropout in a sample of inpatients with eating disorders. These authors asked participants how willing they were to change their eating and weight, whereas participants in the current study were asked how willing they were to change their engagement in eating disorder behavior. It is possible that this subtle difference in phrasing may influence these discrepant results. In addition, self-reported readiness to change may be a better predictor of treatment engagement among inpatient samples. It may be that readiness to

change is only associated with treatment engagement among those who have the most severe eating disorder symptoms. Finally, Bewell and Carter (2008) had participants rate their readiness to change four weeks into treatment, whereas the current study assessed readiness to change immediately at intake assessment, before patients began treatment. It is possible that participants have poor insight into their readiness to change early in treatment when the eating disorder is severe, but over the course of treatment, readiness to change may become a more reliable predictor of treatment engagement.

Limitations

The current paper should be interpreted in light of some limitations. Although the Readiness Ruler has been used with other populations, it has not been validated as a measure of readiness to change eating disorder behavior. Based on our results, we suspect that this tool may not be a reliable measure of readiness to change in adult outpatients with eating disorders. However, future research is needed that directly compares the Readiness Ruler to well-established measures of subjective readiness to change, and it may need to be modified for use with this population (e.g., St-Hilaire, Axelrode, Geller, Antunes, & Steiger, 2017). In addition, we investigated treatment engagement rather than symptom reduction. It is possible that higher Readiness Ruler scores may be associated with symptom reduction, rather than treatment engagement. Furthermore, none of the participants in the current study met criteria for binge eating disorder, and consequently, our results may not generalize to this population.

While the CBT group was the main component of treatment at this outpatient clinic, participants in this sample also had access to a number of adjunct group treatments. These adjunct groups are designed to treat comorbid difficulties patients with eating disorders often experience, such as rigid and detail-oriented thinking (Tchanturia et al., 2011). The adjunct

groups are not meant to be standalone treatments given that they are not designed to reduce core eating disorder symptomatology; however, approximately one quarter of the sample only participated in adjunct treatments. We were unable to prevent participants from attending these adjunct groups for ethical reasons, and as such, attendance in these groups may represent a confound variable in the current study. Nevertheless, it is important to note that engagement in *any* group was not associated with the Readiness Ruler in the current sample, $\chi^2(1) = 0.46$, $p = .50$, Nagelkerke $R^2 = .01$, which suggests that attending alternative groups may not have significantly influenced the results of the current study. Finally, all participants in the current sample were seeking treatment, which may have restricted the range in readiness to change. Future studies are encouraged to investigate readiness to change in a wider range of individuals (e.g., sample that includes individuals who are not seeking treatment).

Conclusion

Self-reported readiness to change at intake assessment for a specialized outpatient eating disorder program was not associated with treatment engagement in an outpatient sample of adults with eating disorders. While readiness to change is an important construct for clinicians to consider, future research is needed to create measures that are both valid and easy for clinicians to use in hospital-based settings.

Author Biographies

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