Differences in emotion regulation difficulties among adults and adolescents across eating disorder diagnoses

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Abstract

Objective Although much empirical attention has been devoted to emotion regulation (ER) in individuals with eating disorders, little is known about ER across a wide age range and among different ED subtypes. The current study sought to examine ER in a sample of eating disorder patients.

Method A total of 364 adults and adolescents with anorexia nervosa restricting subtype (AN-R), anorexia nervosa binge/purge subtype (AN-BP), or bulimia nervosa (BN) were assessed with the Difficulties in Emotion Regulation Scale (DERS).

Results Older ages were associated with higher DERS total, nonacceptance, goals, and impulsivity scores. When controlling for age, patients with BN and AN-BP had higher overall DERS scores than those with AN, and there were some differences among diagnostic subtypes on specific facets of ER.

Conclusions These results indicate that treatments for emotion dysregulation may be applied across eating disorder diagnoses and ages, and inform how these strategies apply to different diagnostic groups.

KEYWORDS
anorexia nervosa, bulimia nervosa, DERS, eating disorders, emotion regulation

1 | INTRODUCTION

Despite decades of research, eating disorders (ED) remain poorly understood and difficult to treat. Recently, significant theoretical and empirical attention has been devoted to elucidating the link between ED and emotion regulation (ER),
as a means to better understand transdiagnostic factors across ED (Lavender, Engel, Gordon, Kaye, & Mitchell, 2015). ER has been defined as a complex set of abilities including (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control behavior when experiencing negative emotions, and (d) ability to use situationally appropriate ER strategies flexibly (Gratz & Roemer, 2004). Research indicates that individuals with ED typically demonstrate significant impairments in ER (Brockmeyer, et al., 2014; Harrison, Sullivan, Tchanturia, & Treasure, 2009; Harrison, Sullivan, Tchanturia, & Treasure, 2010; Lavender et al., 2015; Svaldi, Griepenstroh, Tuschen-Caffier, & Ehling, 2012; Whiteside, Chen, Neighbors, Hunger, Lo, & Larimer, 2007) and that a greater degree of emotion dysregulation is associated with more severe ED symptomatology in both anorexia nervosa (AN) and bulimia nervosa (BN) (Racine & Wildes, 2013). Thus, research to date suggests that ER may be an important assessment and intervention target in the treatment of ED.

A recent review shows that individuals with AN-restricting subtype (AN-R), AN-binge purge subtype (AN-BP), and BN have demonstrated similar levels of impairment in global emotion dysregulation, including a limited repertoire of ER skills, a tendency to utilize more maladaptive skills, reduced capacity for tolerating emotional distress, and a heightened tendency for avoiding emotion-eliciting situations (Lavender et al., 2015). However, individuals with AN may have reduced emotional self-awareness and greater emotion suppression and nonacceptance compared with BN (Lavender et al., 2015).

One important limitation to this literature is that studies have often failed to differentiate between AN-R and AN-BP. The few studies that have looked at AN subtypes suggest that there may be some differences in personality and behavioral features. Specifically, patients with AN-BP and BN exhibit more impulsivity and lower self-directedness compared to those with AN-R (Brockmeyer, et al., 2014; Farstad, McGeown, & von Ranson, 2016; Keel, Brown, Holland, & Bodell, 2012) and several studies have found lower levels of reward sensitivity/novelty seeking in AN-R compared to AN-BP (Harrison et al., 2010).

Another limitation of current research is that, to date, few ED studies have examined ER across a wide range of ages and only one study has examined ER in adolescents with ED (Segal & Golan, 2016). In this study, adolescents exhibited high levels of emotion dysregulation, but were not compared with adults. Compared to adolescents with AN-R, those with AN-BP reported higher ER deficits in general, as well as specific deficits in nonacceptance, clarity, and impulse control. Adolescent ED subtypes did not differ on goal-directed behavior, emotional awareness, or access to ER strategies. To our knowledge, no study has compared levels of emotion dysregulation between adults and adolescents across ED diagnoses. In non-ED samples, it appears that adolescents and young adults have lower levels of emotional stability than older adults (Zimmermann & Iwanski, 2014). However, it is also possible that chronic course of ED illness, which is more characteristic of older patients, might be associated with higher levels of emotion dysregulation (Harrison et al., 2009). More research is necessary to enhance our understanding of emotion dysregulation in patients with ED across a wide range of ages.

Refining our understanding of emotion dysregulation across diagnostic subgroups will help refine existing treatments and inform the development of new, evidence-based interventions. The present study assessed self-reported emotion dysregulation difficulties in a large sample of adolescents and adults presenting for partial hospitalization (PHP) or intensive outpatient treatment (IOP) at a university-based ED clinic. The first aim was to examine associations between age and level of emotion dysregulation. Given that younger age has been associated with less emotional stability (Zimmermann & Iwanski, 2014), but illness chronicity (a close correlate of age) might be associated with emotion dysregulation (Harrison et al., 2009), there were no specific hypotheses regarding the directionality of this relationship. The second aim was to examine differences in ER across ED diagnoses. In line with past studies, the prediction was that individuals with AN-R would report less emotional awareness, acceptance, and clarity than those with BN and that those with BN and AN-BP would demonstrate elevated impulse control difficulties compared to those with AN-R (Brockmeyer et al., 2014). Lastly, to assess whether Difficulties in Emotion Regulation Scale (DERS) scores were higher than nonclinical norms, the DERS scores of the current sample of ED patients were compared to previously published norms based on a sample of undergraduate women (Gratz & Roemer, 2004).
2 | METHOD

2.1 | Participants and procedure

Participants were 364 adults and adolescents with AN or BN (n_males = 21 and n_females = 343) who admitted to PHP or IOP at a university-based ED clinic. Half of participants were diagnosed as AN-R (49.2%, n = 179), 17.0% as AN-BP (n = 62), and 33.8% were diagnosed as BN (n = 123). The racial breakdown of participants was as follows: Caucasian (n = 265, 73.4%), Asian (n = 21; 5.8%), Black (n = 4, 1.1%), Native American/Alaskan Native (n = 2, 0.5%), and other (n = 69; 19.1%). Ethnically, 19.4% (n = 67) self-identified as Hispanic. The mean age was 21.71 years old (standard deviation [SD] = 9.25; range: 11–60).

Participants completed self-report measures upon admission to treatment. Semi-structured interviews administered by staff psychiatrists were used to determine whether patients met criteria for an AN or BN spectrum disorder using the 2010 draft criteria for the Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition (DSM-5; American Psychiatric Association, 2013). Only participants who met criteria for AN-R, AN-BP, and BN were included in the present analyses. As the reliability of these psychiatrist diagnoses has not been established, self-report items from the Eating Disorder Examination Questionnaire (EDE-Q) were used to help determine diagnostic reliability, similar to procedures described in previous studies (Berner, Shaw, Witt, & Lowe, 2013; Wolk, Loeb, & Walsh, 2005). Diagnostic confirmation analyses were run for participants who completed all necessary EDE-Q items to make a diagnosis. The following proportion of patients’ diagnoses was confirmed: 54.7% AN-R (n = 98/179), 74.2% AN-BP (n = 46/62), and 55.3% BN (n = 68/123). Given that all patients were admitted to a PHP for eating disorders, and thus likely represent a clinically relevant group, analyses were run in both the full sample and the confirmed subsample. An institutional review board approved this study, and all participants provided informed consent before study participation.

2.2 | Measures

The DERS (Gratz & Roemer, 2004) is a 36-item self-report measure that provides a total score of ER difficulties, as well as scores for the following six subscales: (1) nonacceptance: nonacceptance of emotional responses, e.g., “When I’m upset, I feel guilty for feeling that way”; (2) goals: difficulties engaging in goal-directed behavior, e.g., “When I’m upset, I have difficulty concentrating”; (3) impulse: impulse control difficulties, e.g., “When I’m upset, I lose control over my feelings”; (4) awareness: lack of emotional awareness, e.g., “I am attentive to my feelings”; (5) strategies: limited access to ER strategies, e.g., “When I’m upset, I’m afraid that I’ll end up feeling very depressed”; and (6) clarity: lack of emotional clarity e.g., “I have difficulty making sense out of my feelings.” Each item is rated on a scale of 1–5, with higher scores indicating greater difficulty with ER. Previous research indicates this measure has sound psychometric properties in samples of both adults and adolescents (Gratz & Roemer, 2004, Neumann, van Lier, Gratz & Hoot, 2010). Internal consistency in the present study was good (DERS total α = .88; subscales α = .86–.91).

2.3 | Statistical analyses

Data were analyzed in IBM Statistical Packages for the Social Sciences (SPSS, Version 24). Multivariate analyses of covariance (MANCOVA) were run to compare DERS total and subscale scores (dependent variables) by diagnosis (independent variable), controlling for age. Power analyses supported that the present sample size exceeds the minimum number of participants required to detect a medium effect (n = 153; G*Power 3; Faul, Erdfelder, Lang, & Buchner, 2007).

Additionally, independent samples t-tests were calculated on group means to compare DERS scores within the present study to a normative sample of women from the original validation of the DERS (Gratz & Roemer, 2004). This comparison sample was composed of 260 undergraduate college women with a mean (SD) age of 23.10 (5.67); see Gratz and Roemer (2004) for more details.
3 | RESULTS

Descriptive analyses indicated that the mean value on DERS total score for the sample as a whole was 108.70 (SD = 29.55). Results from the MANCOVA indicated a significant main effect of diagnosis on emotion dysregulation (Wilks’ Lambda = .88, F(2,364) = 3.17, $\eta^2_p = .06$, $p < .001$). Age was not significantly associated with DERS scores. One-way ANCOVAs and post hoc comparisons with Bonferroni corrections were then conducted to examine specific group differences, controlling for age (see Table 1). Results indicated that patients with BN and AN-BP reported significantly higher scores on DERS total, and nonacceptance, impulsivity, and clarity scales, than patients with AN-R. Patients with BN also reported significantly higher goals and strategies scores than patients with AN-R. Finally, patients with AN-BP reported significantly higher awareness scores than patients with AN-R. All significant differences had small effect sizes. Analyses were also run in the diagnostic-confirmed subsample and the pattern of results was consistent (see Table 2).

Results from t-tests comparing the present sample to the normative sample from Gratz and Roemer (2004) indicated that all diagnoses demonstrated higher DERS total ($t_{AN} [435] = 9.29, p < .001$, $t_{AN-BP} [321] = 9.55, p < .001$), strategies ($t_{AN} [435] = 9.25, p < .001$, $t_{AN-BP} [321] = 8.25, p < .001$, $t_{BN} [380] = 12.16, p < .001$); nonacceptance ($t_{AN} [435] = 7.19, p < .001$, $t_{AN-BP} [321] = 7.26, p < .001$, $t_{BN} [380] = 9.63, p < .001$); clarity ($t_{AN} [435] = 6.92, p < .001$, $t_{AN-BP} [321] = 7.42, p < .001$, $t_{BN} [380] = 9.34, p < .001$); awareness ($t_{AN} [435] = 6.94, p < .001$, $t_{AN-BP} [321] = 8.03, p < .001$, $t_{BN} [380] = 8.66, p < .001$); goals ($t_{AN} [435] = 3.66, p < .001$, $t_{AN-BP} [321] = 4.59, p < .001$, $t_{BN} [380] = 7.90, p < .001$); and impulsivity scores ($t_{AN} [435] = 7.11, p < .001$, $t_{AN-BP} [321] = 7.61, p < .001$, $t_{BN} [380] = 12.60, p < .001$) than the normative group.

4 | DISCUSSION

The aims of the present study were to examine emotion dysregulation across ED diagnostic groups in a sample of adolescents and adults in an intensive treatment setting. Older patients tended to have modestly higher DERS total, nonacceptance, goals, and impulsivity scores. Across ages, patients with AN-R, AN-BP, and BN displayed levels of emotion dysregulation that were higher than what has typically been observed in nonclinical samples.

In line with our hypothesized differences among diagnostic subtypes, controlling for age, patients with BN and AN-BP reported significantly greater difficulty with ER overall, compared with patients with AN-R. Patients with BN and AN-BP reported more difficulty than those with AN-R in terms of acceptance of emotional responses, impulsivity, ER strategies, and clarity. Patients with BN had more difficulty with goal-directed behaviors when in distress than those with AN-R, and patients with AN-BP had more difficulty with awareness of emotions than AN-R patients. Because many past studies examined AN-R and AN-BP together (as one subgroup), the differences in ER deficits we found seem to suggest that the presence of binge-purge behaviors may be reflective of greater ER difficulties. This is also consistent with taxometric and latent class analyses demonstrating that AN-BP and BN presentations typically fall into the same cluster (Keel et al., 2004; Williamson et al., 2002) and personality research demonstrating increased negative urgency in AN-BP and BN compared to AN-R (Farstad et al., 2016). Given our results and the close link between DERS impulsivity and negative urgency, it may be that patients with binge-purge behaviors have greater difficulties with controlling their behaviors in response to affective states (e.g., strong negative emotions) than patients with AN-R.

4.1 | Limitations

There are several limitations to the present study that are important to consider. The study sample consisted predominantly of female patients, which limits the generalizability of findings to male patients. Emotion dysregulation was assessed using self-report, which is subject to memory biases, demand characteristics, and requires a certain level of insight. The reliability of initial psychiatry diagnoses has not been previously established; however, the comparable pattern of results in the diagnostic confirmed subsample helps mitigate these concerns. Although this study demonstrated...
### TABLE 1  Results from analyses examining DERS subscales by diagnosis controlling for age

<table>
<thead>
<tr>
<th></th>
<th>AN-R (n = 176)</th>
<th>AN-BP (n = 62)</th>
<th>BN (n = 121)</th>
<th>F</th>
<th>p</th>
<th>$\eta^2$</th>
<th>Gratz &amp; Roemer sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SE)</td>
<td>Mean (SE)</td>
<td>Mean (SE)</td>
<td></td>
<td></td>
<td></td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>DERS-Total</td>
<td>101.40 (2.22)</td>
<td>115.91 (3.65)</td>
<td>115.62 (2.68)</td>
<td>10.05</td>
<td>&lt;.001</td>
<td>.05</td>
<td>77.99 (20.72)</td>
</tr>
<tr>
<td>DERS-Strategies</td>
<td>22.66 (0.66)</td>
<td>25.45 (1.08)</td>
<td>25.46 (0.79)</td>
<td>4.36</td>
<td>.014</td>
<td>.02</td>
<td>16.16 (6.19)</td>
</tr>
<tr>
<td>DERS-Non-acceptance</td>
<td>15.92 (0.53)</td>
<td>18.79 (0.88)</td>
<td>18.38 (0.64)</td>
<td>5.83</td>
<td>.003</td>
<td>.03</td>
<td>11.65 (4.72)</td>
</tr>
<tr>
<td>DERS-Clarity</td>
<td>13.44 (0.36)</td>
<td>15.52 (0.59)</td>
<td>15.20 (0.43)</td>
<td>6.68</td>
<td>.001</td>
<td>.04</td>
<td>10.61 (3.80)</td>
</tr>
<tr>
<td>DERS-Awareness</td>
<td>18.09 (0.46)</td>
<td>20.58 (0.75)</td>
<td>19.37 (0.55)</td>
<td>4.29</td>
<td>.014</td>
<td>.02</td>
<td>14.34 (4.60)</td>
</tr>
<tr>
<td>DERS-Goals</td>
<td>16.37 (0.41)</td>
<td>17.80 (0.67)</td>
<td>18.58 (0.49)</td>
<td>5.78</td>
<td>.003</td>
<td>.03</td>
<td>14.41 (4.95)</td>
</tr>
<tr>
<td>DERS-Impulsivity</td>
<td>14.94 (0.48)</td>
<td>17.89 (0.79)</td>
<td>18.61 (0.58)</td>
<td>12.34</td>
<td>&lt;.001</td>
<td>.07</td>
<td>10.82 (4.41)</td>
</tr>
</tbody>
</table>

### TABLE 2  Results from analyses examining DERS subscales by diagnosis controlling for age in the diagnostic confirmed subsample

<table>
<thead>
<tr>
<th></th>
<th>AN-R (n = 97) Mean (SE)</th>
<th>AN-BP (n = 46) Mean (SE)</th>
<th>BN (n = 66) Mean (SE)</th>
<th>F</th>
<th>p</th>
<th>$\eta_p^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>DERS-Total</td>
<td>105.34 (2.81)</td>
<td>120.41 (3.99)</td>
<td>125.01 (3.38)</td>
<td>10.47</td>
<td>&lt;.001</td>
<td>.09</td>
</tr>
<tr>
<td>DERS-Strategies</td>
<td>24.01 (0.85)</td>
<td>26.92 (1.19)</td>
<td>27.65 (1.01)</td>
<td>4.05</td>
<td>.02</td>
<td>.04</td>
</tr>
<tr>
<td>DERS-Non-acceptance</td>
<td>16.82 (0.69)</td>
<td>20.01 (0.97)</td>
<td>20.29 (0.82)</td>
<td>6.10</td>
<td>.003</td>
<td>.06</td>
</tr>
<tr>
<td>DERS-Clarity</td>
<td>13.65 (0.49)</td>
<td>15.90 (0.69)</td>
<td>16.46 (0.58)</td>
<td>7.33</td>
<td>.001</td>
<td>.07</td>
</tr>
<tr>
<td>DERS-Awareness</td>
<td>18.56 (0.59)</td>
<td>20.75 (0.84)</td>
<td>20.44 (0.71)</td>
<td>2.99</td>
<td>.05</td>
<td>.03</td>
</tr>
<tr>
<td>DERS-Goals</td>
<td>17.22 (0.56)</td>
<td>18.23 (0.79)</td>
<td>19.44 (0.67)</td>
<td>3.13</td>
<td>.05</td>
<td>.03</td>
</tr>
<tr>
<td>DERS-Impulsivity</td>
<td>15.12 (0.66)</td>
<td>18.74 (0.93)</td>
<td>20.70 (0.79)</td>
<td>14.57</td>
<td>&lt;.001</td>
<td>.12</td>
</tr>
</tbody>
</table>

Note. DERS = Difficulties in emotion regulation scale, AN-R = anorexia nervosa restricting subtype, AN-BP = anorexia, binge-purge type, BN = bulimia nervosa, and SE = standard error. Means represent estimated marginal means, adjusted for age (Age = 22.36).

Subscripts that differ across rows indicate differences between diagnostic groups.

4.2 Clinical implications

Historically, treatments that teach skills for improving ER, such as dialectical behavior therapy (DBT; Linehan, 1993), have been studied primarily for adults with BN or binge eating disorder. Taken together with previous research, the results of the current study suggest that, regardless of age, patients with AN-R and AN-BP also have difficulties with ER, although those with BN and AN-BP have more pronounced difficulties than those with AN-R. It has been theorized that individuals with ED use ED behaviors as a way to cope with their dysregulated emotions (Wisniewski, Safer, & Chen, 2007). Given this information, teaching skills for ER may be crucial for achieving long-term recovery, and specific ER skills may be taught depending on the area of deficit. For example, this study demonstrates that patients who binge and/or purge need skills to help with impulsivity, emotional clarity, and acceptance of emotional responses (such as DBT radical acceptance and mindfulness of emotion), while emotional awareness skills (such as the DBT model of emotions) may be particularly useful for AN-BP patients. Continuing research to elucidate these difficulties in emotion regulation will help refine and improve the treatment of eating disorders.

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