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OF EATING DISORDER AND SYMPTOM SEVERITY OF ITS SUBTYPES?

Can emotion regulation variables predict the presence of eating disorder and symptom severity  
of its subtypes?

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## CAN EMOTION REGULATION VARIABLES PREDICT THE PRESENCE OF EATING DISORDER AND SYMPTOM SEVERITY OF ITS SUBTYPES?

Despite consensus on the relationship between Eating Disorder (ED) and Emotion Regulation (ER), limited research exists on understanding the facets of this association. This discussion firstly presents the key findings supporting the general role of ER in ED symptom development within the context of major theoretical models. It then outlines the specific facets of ER within the multidimensional framework along with its popular measurements. Studies comparing ER profiles, and their contribution to symptom severity across ED subtypes are then evaluated. Finally, it clarifies the research gaps that will be addressed by the current study.

The term emotion regulation refers to the ability to modulate the intensity and/or the duration of emotional experience according to situations (Gratz & Roemer, 2004). The eating disorder (ED) include three subtypes: Anorexia (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED) which are respectively characterised as excessive body image concerns resulted from restricted energy intake, unrestrained food consumption with, and without compensatory behaviours (American Psychiatric Association, 2013).

### **The General Relationship between ER and ED**

The relationship between emotion regulation and symptoms of BN and BED has been conceptualised differently by three major theoretical models: Escape Theory (Heatherton & Baumeister, 1991), Restraint Theory (Polivy & Herman, 1985) and Affect Regulation Theory (Hawkins & Clement, 1984) specifically regarding the role of ER in maintaining disordered eating behaviour. Despite such disagreement, all three models posited that unregulated negative emotion serves as a trigger for binge eating episodes. Such a proposition has been widely supported by methodologically diverse research paradigms. A meta-analysis of naturalistic observation studies suggested that compared to their average level, both BN and BED patients showed elevated level of negative affect prior to binge eating (Haedt-Matt & Keel, 2011). This

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finding was corroborated by Leehr and colleagues (2015) who conducted a systematic review of experimental findings on BED patients, highlighting patients' tendency to engage in binge eating in response to experimentally induced negative emotion. Regarding AN, the transactional model proposed by Haynos and Fruzzetti (2011) postulates that engagement in eating-disordered behaviour is negatively reinforced by its resulting brief escape from aversive emotional experience. This model has received preliminary empirical support. In a naturalistic observation study, AN patients were found to experience significant increase in the level of negative affect prior to losing control of eating; thus suggesting the crucial role of unregulated negative emotion in triggering disordered eating behaviours among AN patients (Engel et al., 2013). Taken together, evidence from both naturalistic and experimental studies have demonstrated the critical role of ER in developing disordered eating behaviours among AN, BN and BED patients. This emphasises the importance of examining ER factors in all ED subtypes. The following section discusses the specific facets of ER and its relationship to each ED subtype in the context of the multidimensional framework proposed by Gratz and Roemer (2004).

### **Multidimensional Frameworks of Emotion Regulation**

Within the multidimensional framework, ER is categorised into four dimensions: Understanding and Awareness of Emotions; Ability to Maintain Goal-directed Behaviours; Emotional Acceptance; and, Access to Situationally Appropriate ER Strategies. The first dimension is often discussed under the term Alexithymia, the impaired ability to identify and describe one's emotional states (Taylor, Bagby & Parker, 1992). Such a construct is directly measured using the Toronto Alexithymia Scale (TAS; Taylor et al., 1992). Other closely related measures include the Awareness and Clarity subscale of Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Findings of self-report studies uniformly demonstrated

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more significant deficits in emotional awareness among AN, BN (Bydlowski et al., 2005; Harrison et al., 2010) and BED (Svaldi et al., 2010) compared to Healthy Controls (HC). Studies on the second dimension primarily focus on the concept of impulse control - often measured using the DERS Impulse and Goal subscales, and the UPPS Impulsive Behaviour Scale (UPPS, Whiteside & Lynam, 2001). Similarly, compared to HC, all ED subtypes have reported significantly higher levels of impulsivity and disturbances in goal-directed activities (Harrison et al., 2010; Schag et al., 2013). For the third dimension, the lack of emotional acceptance is intrinsically linked to maladaptive ER strategies, emotion avoidance and suppression. This dimension is frequently measured using the DERS Non-acceptance subscale and the Suppression subscale of Emotion Regulation Questionnaire (ERQ, Gross & John, 2003). Greater difficulties in Emotional Acceptance have been reported for AN, BN (Harrison et al., 2009; Oldershaw et al., 2012) and BED (Brockmeyer et al., 2013) when compared to HC. The final dimension directly relates to the adaptive element of ER. This is often measured by the DERS Limited Access to Effective Strategies subscale, and the ERQ Cognitive Reappraisal subscale. Similar to the maladaptive ER component, previous studies using these two scales show increased deficits in adaptive strategies among all ED subtypes (Harrison et al., 2010; Svaldi et al., 2012). Taken together, AN, BN and BED patients all demonstrate elevated difficulties across all four domains within the multidimensional ER framework. Despite such consensus, in-depth understanding is significantly limited, since it remains poorly understood whether and how such ER functioning profiles differ across ED subtypes. The next section provides a synthesis of existing research on this issue and clarifies the gaps in understanding that the current research aims to address.

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### **Specificity of Emotion Regulation Difficulties across Eating Disorder Subtypes**

Within the multidimensional framework, the few studies simultaneously comparing the presence of ER difficulties across subtypes yielded mixed findings. Regarding the Emotional Awareness dimension, no statistically significant difference was found between AN and BN patients when treating Alexithymia as a categorical variable (Corcos et al., 2000). However, when treated as a continuous variable using total TAS scores, AN diagnosis was significantly associated with higher levels of Alexithymia. Nevertheless, this relationship disappeared after controlling for depression. Such a confounding effect was replicated by Eizaguirre et al. (2004) who found that when adjusting for comorbid depression and anxiety levels, differences among ED subtypes and HC failed to remain significant. However, when using a different controlling method involving participants without clinical depression and anxiety, the Alexithymia rate appeared higher in the ED group. Thus, the results might be partly attributed to the different methods of covariate adjustments. Nonetheless, such influences were not specified regarding the potentially differential Alexithymia level among ED subtypes - leaving the specificity of their emotional functioning profile of the first dimension under-examined. Regarding the impulse control dimension, a study which used neuropsychological tests found inhibitory control impairment and elevated impulsive decision-making in BN (Kemps & Wildon, 2010) but not in BED (Duchesne et al., 2010). This difference was not, however, replicated in a self-report study where no significant difference in DERS impulsivity subscale scores was found among ED subtypes (Svaldi et al., 2012). Compared to the emotional awareness, differences in impulse control ability among ED subtypes were even less investigated. This is largely due to the failure to include such a variable in between-group comparison studies. Regarding the Emotional Acceptance dimension, no significant differences in scores on the DERS Emotional Acceptance

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subscale were found among AN, BN and BED (Svaldi et al., 2012; Brockmeyer et al., 2014). This contrasts with the difference found by Danner et al. (2014) when using the ERQ Emotion Suppression subscale. AN patients reported more frequent use of emotion suppression than those with BN and BED, indicating lower levels of Emotional Acceptance. Therefore, different measurements of the same construct might lead to differing results. It is worth noticing, however, that in this study, AN patients were also associated with higher depression levels. This raises the possibility of such differences being partly attributed to the effect of uncontrolled depression covariate. Similarly, for the last dimension on access to adaptive ER strategies, failure to replicate the finding of Svaldi et al. (2012) on more adaptive patterns among BED patients may also be attributed to the confounding effect of different levels of co-occurring depression and anxiety among ED subtypes (Danner et al., 2014; Brockmeyer et al., 2014). This might be due to the inherent difficulties in controlling for covariate in between-group comparison studies. As raised by Miller and Chapman (2001), the use of analysis of covariance is only legitimate when the mean for covariance is identical across comparison groups. However, this does not hold true for the varying depression and anxiety levels among ED subtypes, thus leaving its confounding effects unclear.

### **Emotion Regulation and Symptom Severity across Subtypes**

It should be noted that the above studies only treated ED subtypes as group variables. This inevitably overlooked how their symptom severity might be differentially influenced by each ER variable. Identifying ER variables with most predictive values for each ED subtype could have significant implications in informing clinical treatment development. Yet, as shown in the following paragraph, only a limited number of studies have examined such an issue. As shown in Racine and Wildes' (2013) study, although all DERS subscales were significantly

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associated with AN symptom severity, when examined in a hierarchical regression model, the Emotional Awareness dimension subsumed all variances explained by the remaining subscales. This indicates a degree of intercorrelations among ER variables. However, when symptom severity was operationalised differently according to the presence of recurrent binge and purging episodes, the DERS Impulse subscale, a differing ER dimension, was shown to be a significant predictor. The varying patterns of association resulting from different operationalisations of symptom severity were also found among BN patients. In the Lavender et al. (2014) study, although no DERS subscales were significantly associated with general symptom severity, the DERS Goals subscale emerged as a significant predictor when BN symptoms were narrowly operationalised as binge eating frequency. This raises the possibility that certain ER variables might only be related to specific facets of ED symptoms. Interestingly, when measured using UPPS, the same ER dimension (impulse control ability) also predicted the general symptom severity among BN - even when the level of depression and anxiety were controlled (Anestis et al, 2009). Compared to AN and BN, no study has investigated the independent contribution of each ER dimension to BED symptoms. The only related study focused on the sum DERS score without specifying its subscales (Whiteside et al. 2007). In spite of this, the study did provide strong evidence for the predictive utility of the multidimensional framework from which DERS was derived, since the total DERS score predicted BED symptom severity above and beyond the effect of gender and negative affect.

From the above findings, one could easily capture the complexity associated with attempts to understand the contribution of different ER variables to symptom severity of different ED subtypes. Firstly, symptom severity of AN and BN is influenced by different ER dimensions, and such patterns of association might vary depending on how symptom severity is

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operationalised. Secondly, despite the abundant empirical support received by the four ER facets in the multidimensional framework, the scales that Lavender et al. (2015) considered to measure the same dimension instead yielded different predictive strength. Such inconsistency casts doubt on the extent to which the measurements and the four ER dimensions are linked as suggested. Given such complexity, the few studies on this topic have yet to yield consistent findings, especially for BED patients. Combined with previous discussions, due to the failure to include a complete range of ER variables while controlling for levels of depression and anxiety, little is known about whether and how each ED subtype might differ in their ER functioning profile.

To address the above limitations, the current research aims to extend the literature in three ways. First, the study aims to understand whether the factor structure of the variables measured in ERQ, DERS, TAS and UPPS align with the multidimensional ER framework in the manner suggested by Lavender et al (2015). Second, based on the factor structure identified, the study aims to provide a more comprehensive account of ER variables in people with ED by examining how each of the ER components uniquely, as well as collectively contribute to the presence of ED symptoms. Finally, the study aims to examine whether this model equally explains both the general and specific facets of symptom severity across AN, BN and BED.



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