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## Disordered Eating Habits, Emotion Regulation, and Theory of Mind in Undergraduate Students

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Director, Honors Program Date

**Disordered Eating Habits, Emotion Regulation, and Theory of Mind in Undergraduate  
Students**

A Thesis

Presented to the Department of Psychology

College of Liberal Arts and Sciences

And

The Honors Program

Of Butler University

In Partial Fulfillment

Of the Requirement for Graduation Honors

Brianna Borri

May 10, 2019

## Thesis Description

Theory of Mind (ToM), the ability to recognize and attribute mental states to oneself and others, has been found to be impaired in a number of different psychological disorders (Bora et al. 2009). Evaluating ToM in a population suffering from eating disorders, however, has proven less consistent; some Anorexia Nervosa patients show ToM deficits compared to healthy controls (Russell et al. 2009) and others perform similarly (Tchanturia et al. 2004). A common consensus not only seems to be lacking within the literature on ToM and Anorexia Nervosa, but within the broader family of eating disorders as well (e.g., Bulimia Nervosa; Medina-Pradas et al. 2012). Furthermore, due to a lack of research, it remains unclear how ToM relates to dysfunctional eating habits that don't meet DSM-5 criteria for an eating disorder. The role of emotion regulation (ER) appears promising in accounting for some of these discrepancies. The current thesis hypothesized first that ToM would be correlated with higher eating disorder symptomology and second that ER would mediate the relationship between ToM abilities and eating disorder symptomology. Neither of the current hypotheses were supported. However, an exploratory analysis revealed significant relationships between the eating disorder measures used and specific subscales of the DERS (between the RS and the lack of emotional awareness/limited access to strategies subscales and between the EA and nonacceptance of emotions subscale). Implications for future research and application to treatment are discussed.

## Background

### Eating Disorders

Eating disorders are mental illnesses in which individuals experience distinct disturbances in their eating behaviors and related thoughts/emotions (American Psychiatric Association, 2013). Specifically, Anorexia Nervosa (AN) is characterized by low body weight, a distorted body image, excessive dieting and restriction, and a pathological fear of weight gain. Bulimia Nervosa (BN) on the other hand, includes regular binge eating episodes, accompanied by inappropriate compensatory behaviors (e.g., self-induced vomiting) in attempts to lose weight. Further, individuals with Binge Eating Disorder (BED) experience regular episodes of consuming larger than average amounts of food but lack the compensatory behaviors found in BN (American Psychiatric Association, 2013).

While the lifetime prevalence of eating disorders in the United States remains at a relatively modest 5% (Le Grange et al. 2012), 65% of US women have reported having dysfunctional eating habits/behaviors (UNC Chapel Hill, 2008). These dysfunctional behaviors include behaviors shared with diagnosable eating disorders such as purging, skipping meals, cutting out food groups, and calorie counting (UNC Chapel Hill, 2008). Another study conducted by Kurth et al. (1995) found that 27% of college freshman reported dieting for weight control, 24% reported exercised daily for weight control, 10% reported 24 hour fasts and 5% used diet pills resulting in 21% of the non-bulimic subjects classifying as either “probable bulimics” or “at-risk dieters” (Kurth et al. 1995). It is for these reasons, as well as a range of fMRI and neuroimaging studies showing similarities between ED subtypes as well as between ED and

non-ED patients, that many researchers (e.g., Brooks et al. 2012) propose that instead of a dichotomous disease, eating disorders lie on a spectrum.

A multitude of risk factors exist, ranging from biological to social to psychological, when it comes to the development of an eating disorder. Recent findings have shown greater social skills to be an important protective factor against the development of an eating disorder (Uzarian & Souza Vitale, 2015). In line with this, recent models of eating disorders have highlighted the role of impaired social cognition, mental processes that underlie social interaction, as a predictive and maintaining factor of the disorders (Treasure et al. 2013). Impaired social cognition has also been found to have a detrimental impact on treatment outcomes for ED (Zipfel et al. 2000). This then highlights the importance of looking into the connection between eating disorders and social cognitive ability.

### **Theory of Mind (ToM)**

One such social cognitive ability is theory of mind (ToM), or the ability to attribute mental states to oneself and others and to use that knowledge to understand and predict others' behavior (Tager-Flusberg & Sullivan, 2000). Social cognition and ToM are sometimes used synonymously with phenomena such as mentalizing capacity and social intelligence (Frith et al. 1991). Further, ToM is thought to be made up of multiple components, namely a socio-perceptive and socio-cognitive component (Tager-Flusberg & Sullivan, 2000). The socio-perceptive component centers on person perception and is more closely connected to the affective system encompassing the ability to make quick judgments about others' mental states via observations of body language or physical characteristics. The socio-cognitive component, on the other hand, constitutes an individual's capacity to understand that others may have

different beliefs than oneself, interpret irony in conversation, and detect subtle hints in conversation.

Research involving ToM in eating disorders is relatively mixed. Looking specifically at Anorexia Nervosa patients compared to healthy controls, Russel et al. (2009) found significant ToM impairments on the Reading the Mind in the Eyes (RME) task. The RME task asks participants to look at a photograph of a person's eyes and determine the person's emotional state (thus, measuring the socio-perceptive component of ToM). Additionally, the study found significant impairments in the Happe cartoon task, which consists of single frame cartoons, and requires an understanding of the character's mental states/beliefs (measuring socio-cognitive ToM) (Russel et al. 2009). Conversely, Tchanturia et al.'s (2004) study of female AN patients found no impairments on the story comprehension ToM task in comparison with healthy controls. However, Tchanturia et al. acknowledged the ToM tasks utilized in their study were strictly socio-cognitive (nonemotional) and that it is possible that AN patients may be specifically impaired on socio-cognitive ToM tasks requiring emotional processing (such as the RME task). In line with Tchanturia's suggestion to specifically differentiate between ToM types, Brockmeyer et al.'s (2016) study of AN patients found no difference between AN patients and healthy controls in socio-cognitive ToM, but did however observe a difference between the groups in socio-perceptive ToM, with AN patients performing significantly worse. Additionally, Pereira de Sampaio et al. (2013) found that AN patients performed much worse than did healthy controls on the socio-perceptive RME task. Unfortunately, a very similar study (Adenzato et al. 2012) found no impairments on the socio-perceptive RME in AN patients when compared to healthy controls.

Comparably less research exists involving other eating disorder subtypes or subclinical populations, and the little that does exist uses measures that only look at the socio-perceptive component of ToM. Furthermore, findings are in conflict with one another. On the one hand, for example, Aloï et al. (2017) found no impairments on the RME task in binge eating disorder (BED) patients. Additionally, both Harrison et al. (2010) and Kenyon et al. (2011) found no evidence of impaired ToM on the affective RME tasks in adults with Bulimia Nervosa (BN) when compared with healthy controls. Conversely, Medina-Pradas et al. (2012) found that (BN) patients performed worse reading positive emotions than did healthy controls on the RME task.

### **Emotion Regulation (ER)**

The ability to identify and correctly label an emotion (as measured by the RME task) has been found to be crucial to emotion regulation (ER; Berking & Whitley, 2014), defined as the ability to manage emotions in the self or others (Mayer, 2001). Both Anorexia Nervosa (AN) and Bulimia Nervosa (BN) have been found to be associated with broad ER deficits in comparison with healthy controls (Lavender et al. 2015). Specifically, Svaldi et al. (2012) found AN, BN, and BED patients reported significantly higher levels of emotion intensity, lower acceptance of emotions, less emotional awareness and clarity, more self-reported ER problems and decreased use of functional as well as increased use of dysfunctional emotion regulation strategies in comparison with healthy controls. Additionally, in Lavender & Anderson (2010)'s study of non-treatment seeking undergraduate men, deficits in adaptive emotion regulation correlated with a greater likeliness to engage in disordered eating behaviors.

The literature looking at the interaction between ToM and emotion regulation in ED is extremely limited. However, recently a connection between the two has been observed in a

study on female AN patients conducted by Harrison et al. (2009). The study found that performance on the RME task was significantly negatively correlated with emotion dysregulation. A commonly used measure of emotion regulation is the Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004). The DERS is valid and reliable 36-item self-report questionnaire developed to assess multiple aspects of emotion dysregulation on one of six subscales (Gratz & Roemer, 2004), where higher scores mean worse emotion regulation. Harrison et al. (2009), found a significant negative correlation between RME scores and the specific DERS subscales: non-acceptance of emotion responses, and limited access to emotion regulation strategies. Thus, preliminary evidence exists for the connection between affective ToM deficits and worse emotion regulation capabilities in ED patients. However, Harrison et al. (2009)'s study focused only on fully clinical AN patients, and thus fails to offer insight as to how ToM and ER deficits relate to the full spectrum of ED symptoms.

Aside from Harrison et al. (2009), there remain very few studies on ToM and ER and no studies to date that consider the subclinical spectra of dysfunctional attitudes and behaviors towards food. However, some research examines the relationship between ToM and ER in individuals with Borderline Personality Disorder (BPD), which is characterized by patterns of instability in personal relationships, emotional response, self image, and marked by impulsivity (American Psychiatric Association, 2013). Rates of personality disorders in individuals with eating disorders have been reported to be much higher than in the general population (Sansone & Sansone, 2011). When looking at BPD specifically, one study found 62% of female inpatients with BPD also met the criteria for an eating disorder (Zanarini et al. 1998). When distinguishing between ED subtypes, BPD and BN have consistently shown the highest

comorbidity rates amongst the eating disorder subtypes (O'Brien & Vincent, 2003). Using a "continuum" approach to examine the association between borderline personality disorder and eating disorders, Davis et al. (1997) found borderline personality traits to be the greatest predictor of weight preoccupation in general.

Sharp et al. (2011) examined adolescents with borderline personality disorder (BPD) and found the relationship between ToM deficits (as measured by the MASC, a measure of both socio-perceptive and socio-cognitive ToM) and BPD symptoms to be mediated, at least in part, by difficulties with emotion regulation (as measured by the DERS). Put more simply, ToM deficits may result in difficulties in emotion regulation, which in turn leads to the emergence and maintenance of borderline personality disorder.

Considering the comorbidity between BPD and dysfunctional eating attitudes/behavior, it is conceivable that the relationship between ToM and ER found in those with BPD by Sharp et al. (2011) may also be found in those exhibiting eating disorder symptomology. Thus, I hypothesize that those with greater deficits in ToM will also exhibit more eating disorder symptomology and that relationship will be mediated by less emotion regulation skills.

## **Method**

### **Participants**

Participants included 33 male and female undergraduate students ranging from 18-23 years old at Butler University. The majority of the sample (N=29) identified as Caucasian and 78.7% identified with a specific religion. 5 participants also reported specific psychological/learning disorders. All participants were recruited through the Psychology department's online participant management system.

## **Measures**

### *Hinting Task*

The Hinting Task is a widely used Theory of Mind Measure (Bora et al. 2009) that was first developed by Corcoran, Mercer, & Frith (1995) and adapted by Greig et al. (2004) for North American use. Assessing an individual's ability to make inferences about someone else's meaning, the Hinting Task measures the socio-cognitive aspect of ToM (Tager-Flusberg & Sullivan, 2009). The original version of the Hinting Task consisted of 10 vignettes detailing the interaction between two characters in which one of the characters provides a relatively obvious hint to the other character. The experimenter then asked the participant what the main character "really means" after hearing the vignette. The participant received a score of 2 for a correct answer. When a participant offered an answer other than the correct answer, the experimenter followed up with a second prompt to which the correct answer received a score of 1. At this junction, an incorrect answer receives a score of 0. The hinting task utilized in the present study was adapted from the original version in order to better assess members of a healthy population (Martin et al. 2016). The first 10 items came from the original Corcoran/Greig Hinting task and the remaining items were either created by our research team or adapted from other items researchers have appended to the original hinting task. The new Hinting Task was made up of 42 items and has shown good internal consistency ( $\alpha = .73$ , Martin et al. 2016).

### *Reading the Mind in the Eyes Test - Revised (RME)*

The RME was developed by Baron-Cohen et al. (1997) and revised by Baron-Cohen et al. (2001) and is currently one of the most commonly used Theory of Mind tasks (Bora et al. 2009)

requiring participants to decode others complex mental states. The RME specifically measures the socio-perceptual aspect of ToM (Tager-Flusberg & Sullivan, 2000) including 36 photographs cropped to include only a person's eyes. Participants were given four adjectives from which to choose to best describe the mental state of the person in the photograph. Correct answers were coded as 1 and incorrect answers were coded as 0, resulting in a possible range of 0-36. The RME task has good reliability (KR-20 = .55 [Baron-Cohen et al. 2001]), test-retest  $r=.60$ , [Hallerback, Lugnegard, Hjarthag, & Gillberg, 2009] and validity (Cohen's  $d$  distinguishing autistic patients from controls = .90 [Bora et al., 2009]; correlation with autism questionnaire scores =  $-.53$  [Baron-Cohen et al., 2001])

#### *Story Comprehension Task (SCT)*

The SCT measures perception of indirect (ironic or metaphorical) communication. It is made up of 96 short vignettes in which the participant is asked to determine whether or not what the character in the vignette said is "something that a person might say in that situation". Responses in which the answer is "yes" may be appropriate in the literal sense, as a figure of speech, or ironically. The number of correct responses were summed to yield both a total score (anywhere from 0-96) and scores on each of the specific dimensions: ironic, metaphor, and literal (each of which could range from 0-16) and nonsense (which could range from 0-48).

#### *Eating Attitudes Task (EA)*

The EA is a 40 item scale developed by Garner & Garfinkel (1979) to assess behaviors and attitudes that are characteristic of eating disorders. Specifically, it is used to measure an individual's negative attitudes towards food and eating. Participants rated how regularly a

statement surrounding a variety of eating attitudes and behaviors applies to them on a scale of 1 *Always* to 6 *Never*. The EAT has high reliability ( $\alpha = 0.94$ ).

#### *Restraint Scale (RS)*

The RS was developed by Herman in (1978) to measure an individual's behavioral efforts to control eating. Some questions look at how often the participants feel, think, or act in relation to specific eating situations measuring their responses on a scale of 0 (never) to 3 (always) (e.g. "Do you eat sensibly in front of others and splurge alone?"). While other questions require participants to select a number range gaging their weight loss or gain (e.g., "What is your maximum weight gain within a week?"). This measure was chosen because it looks specifically at elements of controlling and restraining eating, which may serve as an indicator of dysfunctional attitudes toward food.

#### *Difficulties in Emotion Regulation Scale (DERS)*

The DERS is a 36 item scale developed to assess clinically relevant difficulties in emotion regulation (Gratz & Roemer 2004). The measure yields a total score as well as six different subscales: nonacceptance of emotional responses, difficulties engaging in goal directed behavior, Impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. Participants scored each item (statements like "when I am upset, I acknowledge my emotions") on a five-point scale ranging from 1 *almost never* to 5 *almost always*. The DERS has been found to have good test-retest reliability ( $\alpha = .88$ ; Gratz & Roemer, 2004). Additionally, the DERS has been found to have high overall internal consistency ( $\alpha = .93$ ), as well as adequate internal consistency for each DERS subscale ( $\alpha > .80$ ) (Gratz & Roemer, 2004).

### *Demographic Questionnaire*

Participants were asked to fill out a demographic questionnaire looking at gender, race, age, and psychiatric history, amongst other variables.

### **Procedure**

After informed consent, participants completed the ToM measures (Hinting Task, SCT, RME) and the self-report measures of disordered eating (EA, RS, & DERS). Following this, participants were thanked for their time and any questions about the procedure they may have had were answered. The study took approximately 90 minutes in total to complete.

## **Results**

### **Preliminary Analyses**

A series of oneway ANOVA and correlation analyses were conducted to determine whether any demographic variables related to the main IVs and DVs. As shown in Table 1, these analyses revealed that the participant's year in school was significantly negatively correlated with the ability to comprehend sarcasm, as measured by the Story Comprehension Task's (SCT) sarcasm subscale. Thus, participants who were closer to graduation were significantly less able to successfully detect sarcastic communication. Furthermore, participants who reported a history of a psychological/learning disorder were significantly more likely to successfully understand metaphorical communication, as measured by the Story Comprehension Task's Metaphor Subscale as well as the ability to detect/recognize nonsense as measured by the Story Comprehension Task's Nonsense subscale. Additionally, participants' reported sleep last night was significantly negatively correlated with total score on the Story Comprehension Task. Lastly, participant's reported usual amount of sleep was found to be

significantly negatively correlated with difficulty engaging in goal directed behavior as measured by the Difficulty in Emotion Regulation (DERS) goals subscale suggesting that as usual sleep decreases, problems effecting goal directed behavior increase. Given these findings, year in school, disorder history, amount of sleep last night, and amount of sleep on a usual night were entered as covariates in subsequent main analyses.

	Year in School	Presence of Disorder	Sleep Last Night	Sleep Usual
SCT Sarcasm Score	Correlation: R = <b>-.359**</b> Significance: p = <b>.043</b>			
SCT Metaphor Score		F(1,30) = <b>5.225**</b> Significance: p = <b>.030</b>		
SCT Nonsense Score		F(1,30) = <b>8.215**</b> Significance: p = <b>.008</b>		
SCT Total Score			Correlation: R = <b>-.451**</b> Significance: p = <b>.010</b>	
DERS Goals subscale				Correlation: R = <b>-.484**</b> Significance: p = <b>.012</b>

Table 1: A series of oneway ANOVAs and correlations found the scores and demographics listed above to be significantly correlated in the preliminary analysis.

**Main Analyses**

To examine the main hypotheses of this study and given the findings that arose in the preliminary analyses, I conducted a series of hierarchical linear regressions, one for each eating symptom measure (EA and RS) and emotion regulation (DERS) as the DVs. In each regression, the 4 covariates identified in the preliminary analyses were entered in the first block, followed by the 3 ToM variables (Hinting, Story Comprehension, and Eyes). The model revealed the EA and ToM measures correlated at R = .344 with results proving to be nonsignificant F (3,28) = 1.255, p = .309. Furthermore, the RS and ToM tasks showed a positive correlation of R = .280

with results also proving nonsignificant  $F(3, 28) = .795, p = .507$ . Finally, the DERS and ToM tasks revealed a correlation of  $R = .283$ , with results proving to be nonsignificant  $F(3, 28) = .811, p = .498$ . Since all results were found to be nonsignificant, none of the hypotheses were supported.

### **Exploratory Analyses**

While none of the predicted relationships developed, I pursued some additional analyses to explore the data further. A partial correlation removing the DERS revealed the EA to be significantly positively correlated with the Metaphor subscale of the SCT ( $r = .394, p = .028$ ) as well as significantly negatively correlated with the Nonsense subscale of the SCT ( $r = -.470, p = .008$ ). These results suggest that the more negative attitudes the participant endorsed surrounding eating (as measured by the EA), the less one was able to accept their emotions and the less one believed that they would be able to effectively cope and deal with negative emotions in a healthy way. The more a participant displayed problematic behavioral control efforts to deal with their eating (as measured by the RS), the less they were aware of or able to recognize their own emotions.

I also conducted hierarchical regressions to look specifically at the relationships between each of the different subscales of the DERS and the EA and RS in order to determine the presence of any significant relationships. The analysis revealed the RS to be significantly positively correlated with the lack of emotional awareness subscale ( $r = .364$ ) as well as the limited access to strategies subscale ( $R = .325, F(2, 30) = 6.152, p = .006$ ) whereas the EA was only significantly positively correlated with the nonacceptance subscale ( $R = .603, F(1, 31) = 17.669, p = .000$ ). These results suggest that the more a participant displayed problematic

behavioral control efforts to deal with their eating (as measured by the RS), the less one was able to recognize their own emotions as well as the less one believed they would be able to effectively cope and deal with negative emotions in a healthy way. The more negative attitudes the participant endorsed surrounding eating (as measured by the EA), the less one was able to accept their emotions.

### **Discussion**

Existing research on the relationship between theory of mind and eating disorders is mixed. Furthermore, there remains a relative lack of research regarding theory of mind and subclinical eating disorder symptomology regardless of findings in support of eating disorders lying on a spectrum rather than being dichotomous in nature. The current study attempted to clear up these discrepancies by looking at the possible mediational role of a related concept that is currently gaining much attention in the eating disorder field: emotion regulation. Hypothesis 1, that those with greater deficits in ToM will also exhibit more eating disorder symptomology as well as hypothesis 2, that the relationship would be mediated by less emotion regulation skills, however, were not supported.

It is conceivable that although patients with eating disorders have repeatedly been found to demonstrate alexithymia or the inability to identify and properly describe emotions, that this is limited to the self-recognition and does not extend to the appraisal of other's mental states (Aloi et al., 2017). In line with this, the current study found a significant positive correlation between the RS and the DERS lack of emotional awareness subscale (meaning participants who displayed higher levels of eating disorder symptomology were also less aware of their own emotions), but did not find significant ToM impairments. As suggested by Harrison

et al. (2010), previous findings of impairments in ToM amongst ED patients may simply be secondary to starvation effects connected with the severe weight loss associated with AN - many overall cognitive abilities begin to be impaired simply due to malnourishment. This of course would explain why no significant associations were found in the current sample which displayed little eating disorder symptomology in general. However, it is important to tread lightly when looking at the results of the current study as there are a number of associated limitations.

First, it is important to keep in mind that the current sample size ( $N = 33$ ) is relatively small especially when assessing subclinical levels of eating disorder symptomology and therefore may not yield enough power to detect a relationship if one truly exists in the population. Furthermore, the current sample was extremely homogenous with 87.9% of participants identifying as white, 93.9% identifying as female, and 78.7% identifying with a specific religion and thus may not be entirely representative of the general population for which subclinical levels of disordered eating is exhibited. It is also important to note that the age of participants varied from 18-23, which is close to typical age of onset for bulimia nervosa but quite a bit later than the typical age of onset for anorexia nervosa and quite a bit earlier than typical age of onset for binge eating disorder. Thus, it is highly possible that symptoms commonly associated with BED were not commonly observed in the study as the individuals in the sample were far younger than the typical age of onset. Furthermore, it is possible that symptoms of AN were not commonly reported because the age of participants in the study were years later than when peak levels of AN are typically observed. Perhaps most noteworthy however is the extremely low level of eating disorder symptomology found in the sample, thus

representing a very small portion of the spectrum of disordered eating habits and attitudes as compared to other recent studies of college students which found 32.6% of women endorsing disordered eating habits/thoughts (White et al. 2011).

Another limitation of the present study is its reliance on self-report measures (with exception of the Hinting Task, which was an interview). The eating disorder measures (EA, RS) utilized in the study were relatively easy to recognize what they were measuring and thus participants' responses could have been biased. As participants were not patients seeking treatment but rather college students, they may more easily downplay certain symptomology. This limitation is especially salient as Butler's campus is very small and although careful measures were taken as to avoid known associations between the researcher running the study and the participant, participants could have still known of the researcher or other members of the research team.

While none of the original hypotheses were supported, a few relationships of interest were discovered in an exploratory analysis. First, after controlling for emotion regulation, dysfunctional eating attitudes were found to be negatively correlated with the Nonsense subscale of the SCT, meaning that those who displayed more negative attitudes about eating also overinterpreted meaning in situations where there really was none. Current literature has found greater interpersonal sensitivity and sensitivity to criticism to be correlated with higher amounts of eating disorder symptomology/concerns about eating (Atlas, 2004). Furthermore, individuals with eating disorders have shown larger increases in self-criticism following negative social interactions than healthy controls (Steiger et al. 1999). Therefore, it is conceivable that this higher amount of interpersonal sensitivity/sensitivity to (and fear of) being criticized leads

individuals to “overthink” or read too far into situations in attempt to avoid criticism thus resulting in an overvaluation of meaning. However, more research is needed in order test this hypothesis.

Additionally, after controlling for emotion regulation, dysfunctional eating attitudes found to be positively correlated with the Metaphor subscale of the SCT, meaning that individuals who endorse more negative attitudes about eating/greater eating disorder symptomology are better at recognizing and understanding metaphors. Recent research has found high levels of expressed emotion (EE; high amounts of critical comments, hostility, and emotional overinvolvement in the patient’s family of origin) to not only be correlated with eating disorders but to serve as a maintaining factor for the disorder (Rienecke, 2018). Connected with expressed emotion is the presence of what is termed “double-bind communication” which is an emotionally distressing situation in which an individual receives two or more conflicting messages, with one negating the other (Bateson et al. 1956). Having spent years growing up in a household or surrounded by individuals who utilize double-blind communication, it is possible that individuals grow more adept to reading into what people say versus simply accepting meaning at face value which could explain why individuals exhibiting higher levels of eating disorder symptomology are better able to decipher metaphors. However, if this were the case one would have also expected participants to have performed better on the Hinting task, which was not the case in the present study. Thus, further research is still needed at this time.

Finally, the exploratory analysis revealed the EA and RS to be correlated with distinct (and different) subscales of the DERS. First, the EA was observed to be positively correlated

with the nonacceptance of emotions. This finding is in line with current research which has argued that “secondary” emotions (such as feeling guilty over being sad) play a prominent role in the distress experienced by individuals with eating disorders (Racine & Wildes, 2013). Many individuals with eating disorders have been found to hold maladaptive beliefs about the value of emotions (i.e., emotional expression has aversive consequences) which are likely to contribute to a perceived need to avoid or modulate negative emotions (Leung et al. 1999).

Where the EA focuses mainly (although not entirely) on an individual’s negatives attitudes and cognitions revolving around food and eating, the main focus of the RS is an individual’s behavioral efforts used to control their eating. Thus, it is not surprising that it correlated significantly with different subscales, namely the lack of emotional awareness subscale and the limited access to strategies subscale of the DERS. Research has shown individuals with eating disorders (particularly those with AN) to pay less attention to, and thus are less aware of, their emotions when compared to healthy controls (Harrison et al. 2010). It is possible this occurs because they regularly engage in dysfunctional behaviors allowing them to avoid acknowledgment of emotional experiences that, over time, result in a vicious cycle. On the other hand, with regards to the limited access to adaptive emotion regulation strategies subscale, individuals with eating disorders have been shown to exhibit a general expectation that they will be unable to use strategies to effectively deal with and improve their emotional state when upset (Harrison et al. 2010). This belief that one will be unable to effectively cope with negative emotional experiences may then lead an individual to attempt to control their emotions via harmful behavioral efforts surrounding eating.

When considering the findings of the current study, it is interesting to look at a few recent studies concerning the connection between specific eating disorder symptoms and specific emotion regulation abilities in individuals with AN (Racine & Wildes, 2013) and BN (Lavender et al. 2014). Racine & Wildes's study found a specific correlation between eating disorder cognitions and the lack of emotional awareness subscale of the DERS as well as between recurrent objective binge eating episodes /recurrent purging episodes and the impulse control difficulties when upset subscale of the DERS (Racine & Wildes, 2013). Unlike Racine & Wildes, Lavender et al.'s study found only the impulse control difficulties when upset subscale to be uniquely associated with ED symptoms highlighting the potential stronger role of difficulties with emotional awareness in AN compared with BN (Lavender et al. 2014). Thus, what becomes interesting is that the same lack of emotional awareness subscale of the DERS that correlated with eating disorder cognitions in Racine & Wildes's study was correlated with the more behavioral aspects of eating disorder symptomology (as measured by the RS) in the current study. It is important to keep in mind however, that the RS does include a few questions regarding how participants not only act but feel/think regarding specific eating situations. In a sample that endorsed very few behavioral efforts (such as purging and bingeing) to control eating, this more cognitive side of behavioral control efforts may have been what was reflected more heavily in the current findings. This same lack of individuals who exhibited purging/bingeing behavior in the current study could perhaps explain why a significant relationship to the impulse subscale of the DERS was not found like in Racine & Wildes and Lavender et al.'s studies. However, the discrepancies could also be due to the fact that the current sample was subclinical whereas the other two studies included fully clinical ED patients.

Thus, future research is needed in order to determine whether or not specific symptomology in subclinical samples differs within specific elements of emotion regulation. Furthermore, research on this topic should be extended to look at individuals with Binge Eating Disorder, as such research does not currently exist. BED research could potentially aid in developing treatments targeting specific (and different) emotion regulation skills dependent on the symptoms an individual is experiencing at a given time.

While the current study failed to support either of the original hypotheses, it has led to interesting paths for future research. Future research should look at these potential avenues and their practical applications for treatment. Given the limitations of the current study, future studies should attempt to look at the relationship between Theory of Mind, Emotion regulation, and Eating Disorder symptomology in both larger and more diverse subclinical samples as well as fully clinical samples spanning across various diagnoses (i.e. BN, AN, BED).

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