Examining the Relationship Between Insomnia Symptoms and DBT Treatment Outcome in Binge Eating Disorder

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Who here has ever had difficulty falling asleep or staying asleep at night?

Who here has ever made a snack to eat when they had trouble falling asleep at night?

Study Background and Rationale

STUDY BACKGROUND

- **Binge Eating Disorder (BED):**
- An eating disorder characterized by recurring episodes of binge eating, without regular use of extreme compensatory behaviors
  - i.e., Purging or excessive exercise

- **Binge eating:** eating an amount of food considered to be much larger than the amount of food others would eat during the same period of time under similar circumstances
  - Experience a sense of loss of control

(APA, 2013a)

STUDY BACKGROUND

- **Insomnia:**
- A sleep-wake disorder where one is dissatisfied with their sleep quality or quantity
- It may include difficulty in maintaining or initiating sleep, and/or early-morning awakenings
- It is also accompanied by clinical distress and impairment of every day function
  - I.e., cognitive processes

(APA, 2013b)

STUDY BACKGROUND

- There is very little research studying the relationship between BED and insomnia
  - Two studies examined sleep difficulties in a clinical sample of BED, and reported contradictory findings (Tzinschiny, Latzer, Epstein, & Tov, 2000; Vardar, Caliyurt, Arikan, & Tugly ,2004)
- A more recent study revealed that individuals diagnosed with BED reported significantly more insomnia-related symptoms compared to individuals with no history of an eating disorder (Kenny, Van Wijk, Singleton, & Carter-Major, 2017)

STUDY BACKGROUND

- Kenny et al., (2018)
  - Relationship between insomnia symptom severity and a BED diagnosis
    - Partially mediated by anxiety
    - Fully mediated by depression
  - Relationship between insomnia symptom severity as a predictor for binge frequency
    - Fully mediated by depression

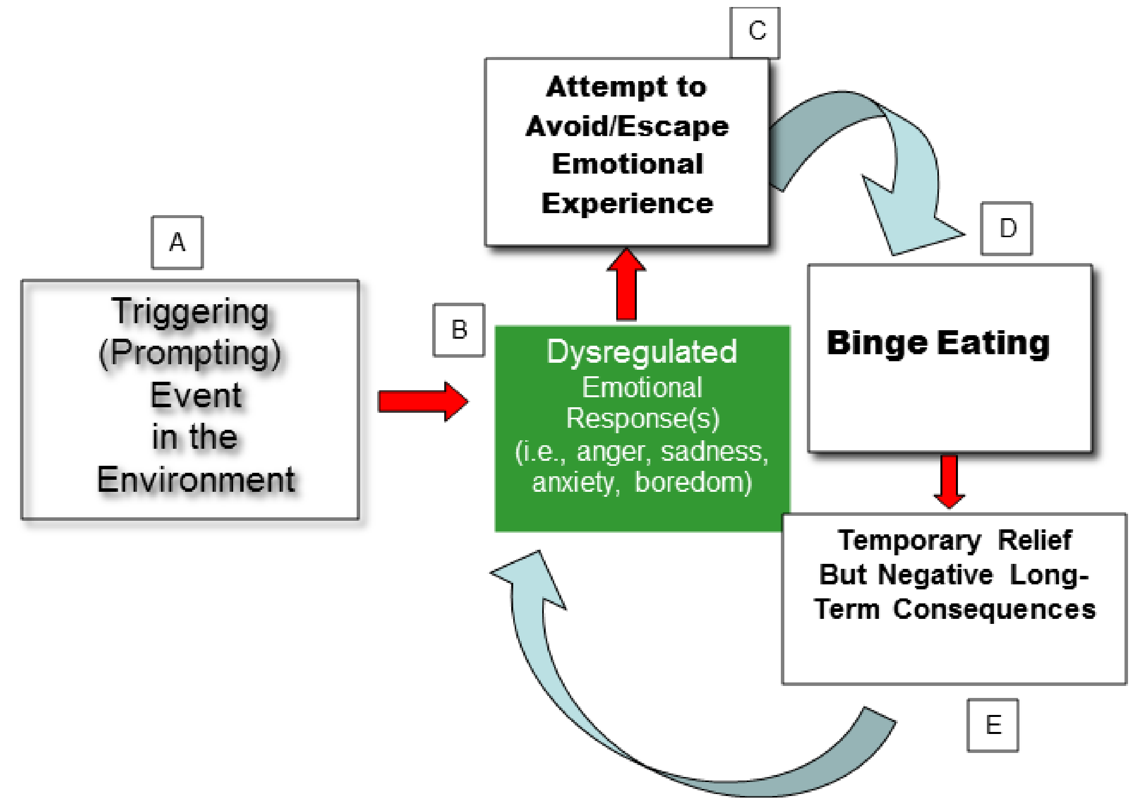
- These findings suggest the importance of addressing mood and anxiety disorders when looking at the development, maintenance and treatment for BED.

STUDY BACKGROUND

- **Evidence-based Treatment for BED:**
- BED consists of cognitive, emotional and behavioural symptoms
- Psychological treatment needs to address all of these areas (Grilo, 2017)

- The three main evidence-based psychological treatments for BED are:
  - Cognitive Behavioural Therapy **(CBT)**
  - Interpersonal Psychotherapy **(IPT)**
  - Dialectical Behavioural Therapy **(DBT)** (Iacovino, Gredysa, Altman & Wilfley, 2012)

- **DBT for BED:**
- Views binge eating as a maladaptive coping strategy to modulate intense emotions among individuals who have not developed healthy emotion regulation strategies (Wiser & Telch, 1999)
- Primary goal of DBT is to help individuals with BED develop adaptive skills for regulating their emotions instead of binge eating (Telch, Agras & Linehan, 2001)



Safer, Adler & Masson, 2018

Grilo, 2012; Iacovina et al., 2012

- **DBT approach helps to develop skills in four areas:**

MINDFULNESS

Grilo, 2012; Iacovina et al., 2012

EMOTION REGULATION

Grilo, 2012; Iacovina et al., 2012

- **<u>DBT approach helps to develop skills in four areas:</u>**

MINDFULNESS

EMOTION REGULATION

DISTRESS TOLERANCE

Grilo, 2012; Iacovina et al., 2012

- **<u>DBT approach helps to develop skills in four areas:</u>**

MINDFULNESS

EMOTION REGULATION

DISTRESS TOLERANCE

INTERPERSONAL EFFECTIVENESS

Grilo, 2012; Iacovina et al., 2012

STUDY RATIONALE

- **<u>Insomnia Symptoms and Treatment Outcome</u> :**
- Brower and Perron (2010), found that poor sleep quality negatively influenced treatment outcome for substance addiction, and increased the relapse potential
- Specifically, several studies revealed a strong relationship between:
  - Poor sleep quality
  - Poor treatment outcome
  - Increased relapse potential for alcohol dependent individuals (Brower, Aldrich & Hall, 1998; Brower, Aldrich, Robinson, Zucker & Greden, 2001; Conroy et al., 2011; Kolla & Bostwick, 2011)
- Davis and Carter (2014) have suggested that BED can be conceptualized from an addiction model viewpoint
- Based on the addiction model of BED, findings from Brower and Perron (2010) may also be relevant to individuals diagnosed with BED

STUDY RATIONALE

- **Insomnia Symptoms and Treatment Outcome:**
- Similar findings were found for mood disorder such as depression
  - Insomnia symptoms hinders the treatment outcome of depression
  - Predicted increased relapse potential during maintenance treatment for depression (Dombrovski et al., 2007; Manber et al., 2008; Troxel el at., 2012)

- Mood disorders, such as depressed mood, are commonly found to be associated with eating disorders such as BED (Aspen et al.,2014)
- Similar findings can be expected when examining the treatment outcome for individuals diagnosed with BED who experience insomnia symptoms

RESEARCH OBJECTIVES

- **<u>Three research objectives:</u>**
- 1) Does insomnia symptom severity at baseline (i.e., pre-treatment) predict change in binge eating frequency and eating disorder symptomology from pre- to post-treatment in the DBT condition only?
- 2) Is there a relationship between improvement in binge eating and improvement in insomnia symptoms in both the treatment (DBT) and control (SE) conditions?
- 3) Did individuals who were in complete remission from binge eating at post-treatment (i.e., no episodes of binge eating over the previous 28 days) report significantly different levels of insomnia symptom severity at baseline?

Method

PARTICIPANTS

- The current study is a secondary analysis from a larger Randomized Controlled Trial (RCT) that examined the efficacy of Dialectical Behaviour Therapy self-help program as treatment for BED (Carter et al., 2018)

- **Recruitment:**
- Participants were recruited from communities across Newfoundland and Labrador
- Via posters and brochures posted in universities, hospitals, public buildings (e.g., coffee shops), and local doctor's offices
- Local VOCM and CBC radio stations
- VOCM website
- Advertisements in rural church bulletins

PARTICIPANTS

- The sample contained a total of 71 participants
- Participants were male and female aged 19-65 years old who meet the DSM 5 diagnostic criteria for BED

- **Inclusion Criteria:**
- 1) Minimum BMI of 18.5
- 2) Ability to read English
- 3) High school graduate or equivalent
- 4) Access to a computer or tablet with Wi-Fi (necessary for the RCT)
  - Individuals on a stable dose of antidepressant medication and/or sleep medication for at least three months were also eligible to take part.

PARTICIPANTS

- **Exclusion Criteria:**
- 1) Current psychological treatment for BED
- 2) Major medical illness known to influence eating behavior that could interfere with treatment (e.g., cancer, hypothyroidism, Type II diabetes)
- 3) Current pregnancy
- 4) Scoring above the cut-off on the DAST or the AUDIT
  - substance use screening measures
- 5) Methylphenidate (e.g., Ritalin) or stimulant use

PROCEDURE

- Interested participants were asked to complete a screening questionnaire via Qualtrics
- Eligible participants were asked to complete a telephone interview to confirm the diagnosis of BED using the Eating Disorder Examination (EDE) Interview (Fairburn, Cooper, & O'Connor, 2014)
- After BED diagnosis was confirmed, participants were contacted and sent an informed consent form for the study
  - Participants were randomized to one of three conditions: 1) Unguided DBT self-help (USH-DBT), 2) Guided DBT self-help (GSH-DBT) or 3) Unguided Self-Esteem self-help (SE; active comparison group).

PROCEDURE

- Participants were asked to complete a series of questionnaires at three time points:
  - 1) First week – Baseline measures
  - 2) 12 weeks after baseline – Post treatment measures
  - 3) 24 weeks after baseline – Follow-up measures
- Telephone EDE interviews were completed at baseline, post-treatment and follow-up, in order to assess binge frequency.

MEASURES

- **Screening Measures:**
  - Demographics questionnaire
  - SCOFF questionnaire (Luck et al., 2002)
  - Eating Disorder Examination Interview version 17 (EDE-17) (Fairburn et al., 2014)
  - Alcohol Use Disorders Identification Test (AUDIT) (Reinert & Allen, 2002)
  - Drug Abuse Screening Test version 10 (DAST-10) (Maisto et al., 2000)

MEASURES

- **Assessment Measures:**
  - Insomnia Severity Index (ISI) (Bastien, Vallieres, & Morin, 2001): A brief self-report measure that assesses an individual's perception of sleep quality.
  - Eating Disorder Examination – Questionnaire (EDE-Q) (Fairburn, 2008): A self-report questionnaire used to assess eating disorder psychopathology.
  - EDE-17 (Fairburn et al., 2014): Assess binge eating frequency and measured treatment outcome.
  - Brief Symptom Inventory (BSI) (Derogatis & Melisaratos, 1983): self-report questionnaire that assesses nine clinically relevant psychological symptoms.

Results

RESULTS

- **Descriptive Statistics:**
- Majority of the sample were:
- Female
- Caucasian
- Single or Married/common law
- Bachelor's degree or College diploma

	BED (n=71) Mean (SD) or n (%)
BMI	37.3 (9.5)
Age	40.7 (11.5)
Biological Sex	
Male	5 (7%)
Female	66 (93%)
Marital Status	
Single	24 (34%)
Married/Common Law	42 (59%)
Divorced	3 (4%)
Widowed	0 (0%)
Separated	2 (3%)
Ethnicity	
Caucasian/White	69 (97%)
Hispanic	0 (0%)
Black	0 (0%)
Asian	0 (0%)
Other	2 (3%)
Highest level of Education	
High School Diploma or Equivalent	6 (8%)
College Diploma	28 (39%)
Bachelor's Degree	26 (37%)
Graduate Degree	11 (16%)

	BED (n=71) Mean (SD)
Binge Episodes	17.1 (17.0)
EDE-Q	
Restraint	3.3 (2.1)
Overvaluation	4.6 (1.5)
Dissatisfaction	5.4 (0.9)
Global	4.4 (0.9)
BSI	
Depression	1.3 (0.8)
Anxiety	1.1 (0.8)

RESULTS

- **First Research Objective:**
- Insomnia symptom severity as baseline was not a significant predictor of change in binge frequency from pre- to post-treatment.
- $R^2 change$ = .005, F (4, 42) = 1.314, p = .280

Change in Binge Frequency	R^2	Unstandardized coefficients B	Unstandardized coefficients Standard Error	Standardized coefficients β	Standardized coefficients t
Block					
1					
BMI		-0.01	0.01	-0.28	-1.34
Anxiety		-0.01	0.14	0.05	-0.10
Depression		-0.07	0.15	-0.18	-0.45
Total Model	.107				
2					
BMI		-0.01	0.01	-0.27	-1.31
Anxiety		-0.01	0.14	0.06	-0.07
Depression		-0.06	0.14	-0.17	-0.42
Insomnia Symptoms		-0.00	0.01	-0.07	-0.19
Total Model	.111				

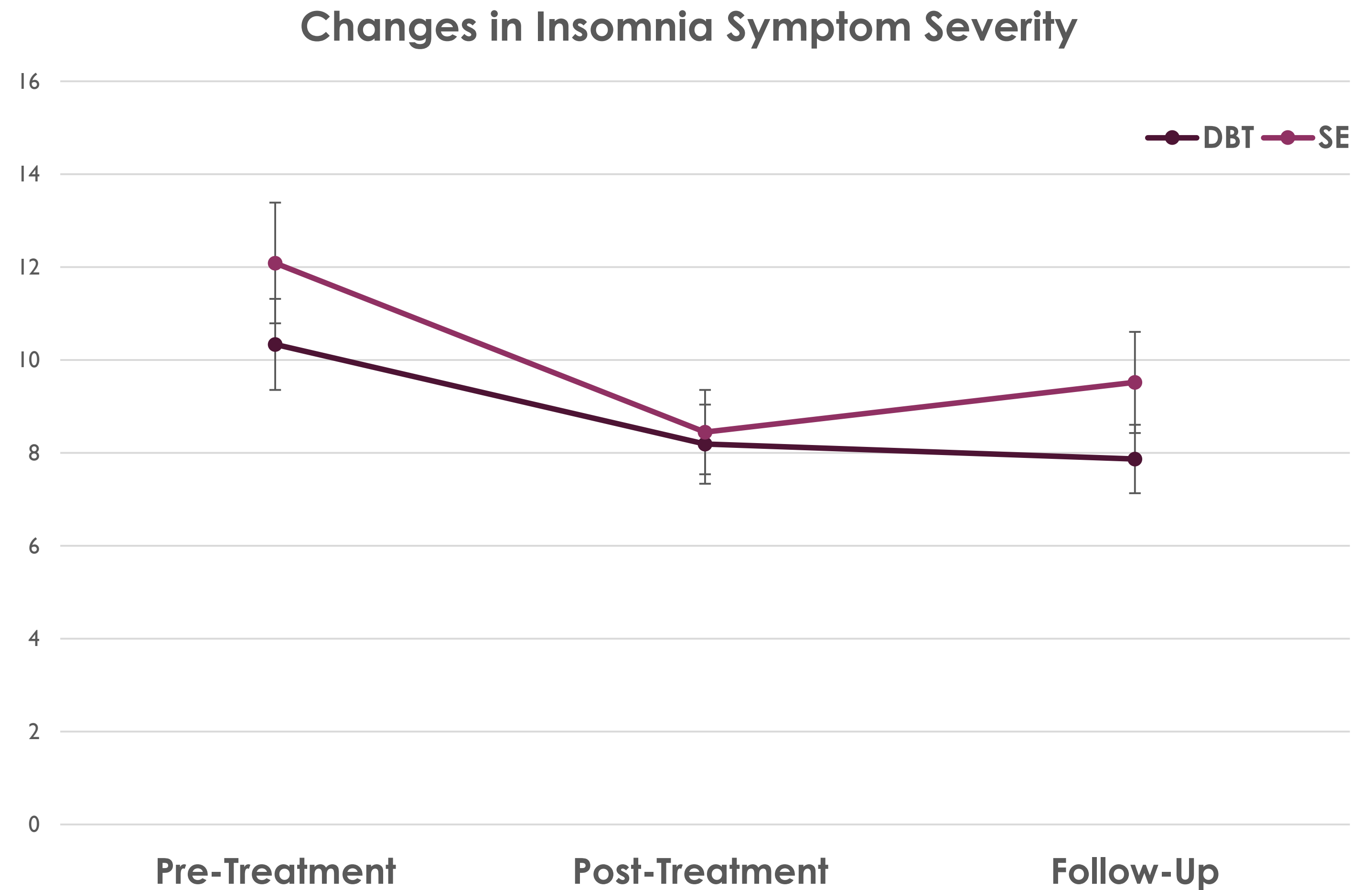
RESULTS

- **First Research Objective:**
- Insomnia symptom severity at baseline was not a significant predictor of change in eating disorder symptomology from pre- to post-treatment.
- $R^2 change = .036, F\ (4, 42) = 2.00, p = .112$.

Change in EDEQ Global	R^2	Unstandardized coefficients		Standardized coefficients	
		B	Standard Error	β	t
Block					
1					
BMI		-0.03	0.02	-0.21	-1.11
Anxiety		0.38	0.34	0.36	1.11
Depression		-0.45	0.36	-0.36	-1.25
Total Model	.124				
2					
BMI		-0.03	0.02	-0.23	-1.18
Anxiety		0.34	0.34	0.32	1.00
Depression		-0.50	0.37	-0.40	-1.35
Insomnia Symptoms		0.03	0.03	0.20	0.84
Total Model	.160				

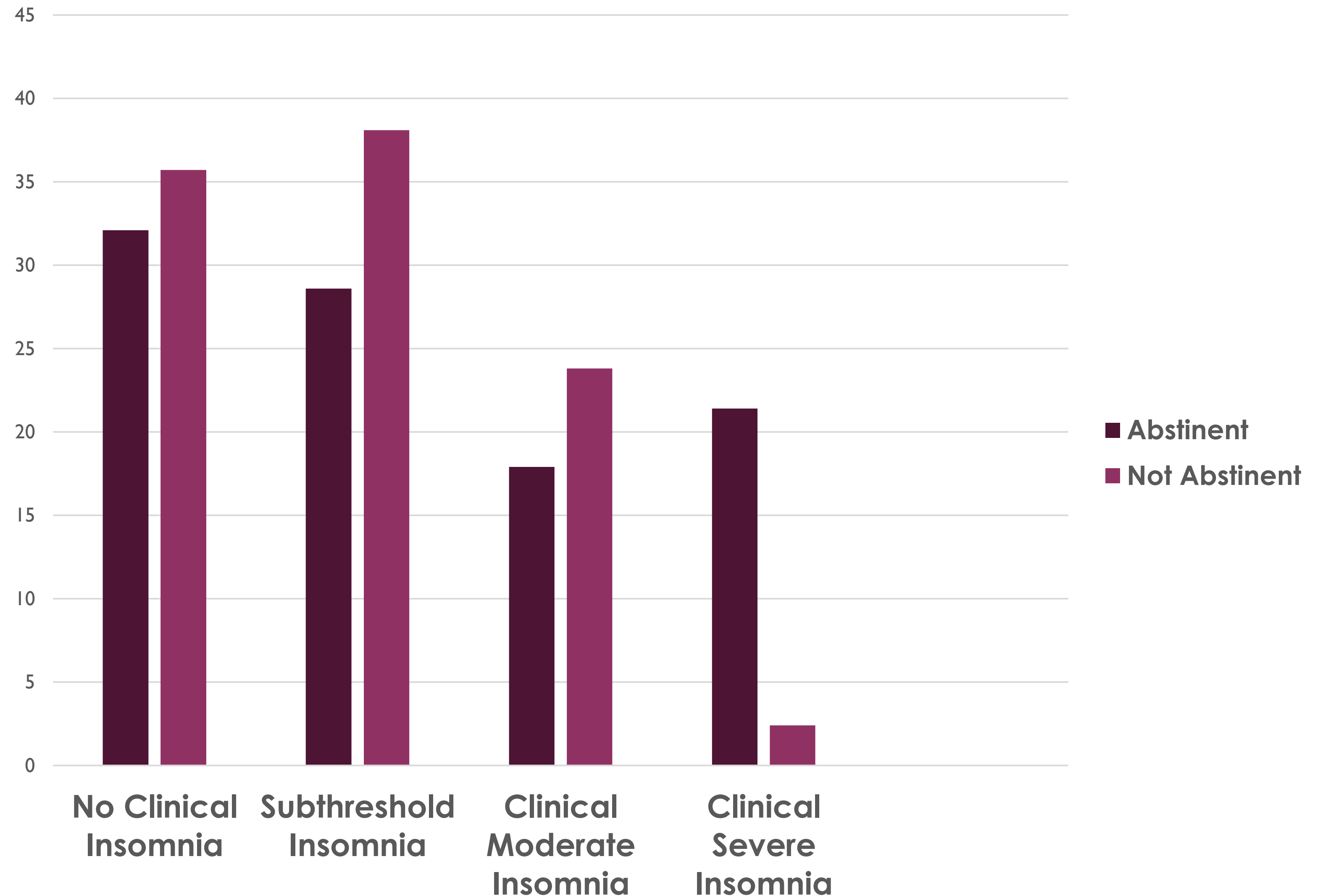
RESULTS

- **Second Research Objective:**
- Significant improvement in insomnia symptom severity, determined as a decrease in ISI total scores, from pre-treatment to post-treatment
- $p = .020$
- Cohen's $d = 2.34$
- Maintained at three-month follow-up



RESULTS

- **Third Research Objective:**
- Independent Samples t-test: No significant differences on insomnia symptom severity total scores $t(185.131) = -0.238$, $p = .812$
- Chi-Squared analysis: Proportion of the individuals did not differ significantly across the two groups $\chi^2(3, n=70) = 6.880$, $p = .076$



Discussion

DISCUSSION

1) It was hypothesized that insomnia symptom severity at baseline would be a significant predictor of change in binge eating frequency and symptomology (decreased binge frequency and EDE-Q Global scores) from baseline to post-treatment.

2) It was hypothesized that there would be a significant relationship between the improvement of binge eating (decreased binge frequency) and improvement in insomnia symptom severity (decreased ISI scores).

3) It was hypothesized that individuals who were abstinent at post-treatment had lower ISI scores than those who were not abstinent.

LIMITATIONS

- Correlational study
- High attrition rate
- Self-report measures
- Newfoundland residents only – may not generalize across Canada

CONCLUSION

- First study to examine the association between insomnia symptom severity and treatment outcome in BED.
- While insomnia symptoms improved with improvements in binge eating, additional research is needed to determine the prognostic significance of sleep disturbance in BED.

ACKNOWLEDGMENTS

- **Thank you:**
- My supervisor, Dr. J. Carter-Major
- My lab mates in the MUN Eating Behaviours Lab:
  - Chris Singleton, Marsha Rowsell, Kayla Hollett
- Lab alumni:
  - Therese Kenny

Newfoundland & Labrador Centre for

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Annual Report | April 2012 to March 2013

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