

WORDS MATTER: IMPACTS OF FAMILY WEIGHT TEASING, PARENTAL  
ENCOURAGEMENT TO DIET, AND BODY WEIGHT PERCEPTION ON ANXIETY AND  
DEPRESSION

by

Margaret “Maggie” Smith

April, 2019

Director of Thesis: Andrew Brimhall, PhD

Major Department: Human Development and Family Science

Family weight teasing and parental encouragement to diet has been linked to numerous adverse outcomes such as anxiety, depression, low self-esteem, and unhealthy weight control behaviors (UWCBs) which has also been linked to negative mental health outcomes—may also shape this relationship in significant ways. This paper explored the relationship between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and levels of anxiety and depression in a sample of emerging adults. It also examined BWP as a potential moderating variable in these relationships. Family weight teasing was found to be significantly associated with anxiety and depression when controlling for all other variables. Paternal encouragement to diet was linked to depression in correlational analyses. BWP was not found to moderate any of the relationships. Clinical implications and future research directions are discussed.



WORDS MATTER: IMPACTS OF FAMILY WEIGHT TEASING, PARENTAL  
ENCOURAGEMENT TO DIET, AND BODY WEIGHT PERCEPTION ON ANXIETY AND  
DEPRESSION

A Thesis

Presented to the Faculty of the Department of Human Development and Family Science  
East Carolina University

In Partial Fulfillment of the Requirements for the Degree  
Master of Science in Marriage and Family Therapy

by

Margaret "Maggie" Smith

April, 2019

© Margaret “Maggie” Smith, 2019

WORDS MATTER: IMPACTS OF FAMILY WEIGHT TEASING, PARENTAL  
ENCOURAGEMENT TO DIET, AND BODY WEIGHT PERCEPTION ON ANXIETY AND  
DEPRESSION

by

Maggie Smith

April 2019

APPROVED BY:

DIRECTOR OF THESIS: \_\_\_\_\_

Andrew Brimhall, Ph. D

COMMITTEE MEMBER: \_\_\_\_\_

Katharine Didericksen, Ph. D

COMMITTEE MEMBER: \_\_\_\_\_

Jakob Jensen, Ph. D

CHAIR OF THE DEPARTMENT OF HUMAN DEVELOPMENT AND FAMILY SCIENCE:

\_\_\_\_\_

Sharon Ballard, Ph. D

DEAN OF THE GRADUATE SCHOOL:

\_\_\_\_\_

Paul J. Gemperline, Ph. D

## ACKNOWLEDGEMENTS

My thesis journey would not have been possible without many fantastic people. First, I would like to thank my cohort and roommate who have supported me, encouraged me, and stood by my side throughout this entire process. I am also incredibly grateful for Dr. Andrew Brimhall, my thesis chair, for his kindness, diligence, and endless support. You have taught me that my needs and my gifts are worthy of space and attention while also instilling in me the importance of humility and constant growth. Thank you for all that you have done and continue to do for me. Next, I would like to thank my committee members, Dr. Katharine Didericksen and Dr. Jakob Jensen— your guidance and wisdom have allowed me to grow and learn in profound ways throughout this process. I am thankful to learn from such insightful and compassionate people.

I am also abundantly grateful for my parents -- you have both supported and loved me unconditionally since the day I was born and you have always believed in me, even on the days when I did not believe in myself. And to my sister, thank you for being my rock, my best friend, and my biggest cheerleader. I could not have done this without you. Lastly, I am immensely grateful for God. His peace has steadied me and His love has grounded me, reminding me of why I do this work in the first place.

## TABLE OF CONTENTS

TITLE PAGE .....	i
COPYRIGHT .....	ii
SIGNATURE PAGE .....	iii
ACKNOWLEDGEMENTS .....	iv
LIST OF TABLES .....	viii
LIST OF FIGURES .....	ix
CHAPTER 1: INTRODUCTION .....	1
Limitations of Obesity Literature .....	1
Weight Teasing and Encouragement to Diet: Societal Factors and Outcomes .....	2
Body Weight Perception (BWP) .....	3
Attachment Theory .....	4
Purpose .....	5
CHAPTER 2: LITERATURE REVIEW .....	6
Obesity .....	7
Limitations of Obesity/Body Weight Status and Mental Health Literature .....	7
Weight Bias and the Thin Ideal: Societal Perpetuators of Weight Teasing and Encouragement to Diet .....	9
Weight Teasing and Encouragement to Diet .....	10
Weight Teasing .....	10
Encouragement to Diet .....	12
Gender Differences .....	12
The Role of Body Weight Perception (BWP) .....	13

Attachment Theory: A Theoretical Understanding .....	14
Gaps in the Literature .....	16
Emerging Adulthood .....	16
Multiple Variables .....	18
Purpose and Hypotheses .....	18
CHAPTER 3: METHODS .....	20
Methodology .....	20
Sample and Procedure .....	20
Demographic Information .....	21
Data Collection .....	21
Measures .....	22
Family Weight Teasing .....	22
Parental Encouragement to Diet .....	23
Body Weigh Perception (BWP) .....	23
Anxiety .....	23
Depression .....	24
Analytic Plan .....	25
CHAPTER 4: RESULTS .....	27
CHAPTER 5: DISCUSSION .....	33
Family Weight Teasing .....	33
Encouragement to Diet .....	36
Body Weight Perception (BWP) .....	38
Interaction of Family Weight Teasing, Paternal and Maternal Encouragement to	



Diet, and BWP .....	40
Implications for Emerging Adults .....	42
Clinical Implications .....	43
Assessment .....	43
Intervention .....	44
Limitations and Future Research .....	46
Conclusion .....	47
REFERENCES .....	49
APPENDIX A: ILLUSTRATION OF MODEL .....	64

## LIST OF TABLES

1. Descriptives and Correlations .....	27
1. ANOVA Table .....	29
2. Linear Regressions Table .....	30

## LIST OF FIGURES

1. Path Model .....	32
---------------------	----

## CHAPTER 1: INTRODUCTION

The prevalence of obesity has consistently increased over the past few decades. Based on data from 2011-2017, the most recent estimate of obesity in childhood and adolescence is 17%—almost triple the amount in the 1980s (Ogden, Carroll, Fryar, & Flegal, 2015). There are multiple possible explanations for obesity, including genetics and health behaviors (although only a few studies exist that have confirmed a relationship between health behaviors and obesity; Barlow & Committee, 2007). While possible explanations for obesity vary, the adverse outcomes associated with obesity are clear. Physical outcomes include heart disease, high blood pressure, and high cholesterol (Ogden et al., 2015). Not only does obesity have negative physical outcomes but some studies have also found a relationship between obesity and adverse mental health outcomes like depression (Sachs-Ericcson et al., 2007; Strawbridge, Deleger, Roberts, & Kaplan, 2002). While the connection between adverse physical outcomes and obesity is clear, there is some conflicting findings on whether the relationship between obesity and mental health outcomes (such as depression/anxiety) actually exists (Brewis, 2003; Eisenberg, Neumark-Sztainer, & Story., 2003; Kim & Kim, 2001; Ozmen et al., 2007). The following section will explore some of the discrepancies and review the limitations of the obesity literature.

### **Limitations of Obesity Literature**

Many limitations exist in the obesity and mental health literature. First of all, most of the research focuses on children and adolescence; very few address the unique implications for other populations such as emerging adults. Most studies have been cross-sectional in design thus limiting the generalizability of the findings (Al Mamun et al., 2007). This lack of longitudinal studies also inhibits the establishment of a causal relationship between a person's weight status and depression and anxiety. In addition, most of the studies that have found a relationship

between these variables have used clinical samples (Wardle & Cooke, 2005). The studies that have used community-based samples have not found the same results, thus limiting the external validity of the clinical sample findings. In addition, when examining the relationship between depression/anxiety and weight status, many studies have found either no relationship or a partial relationship between the two variables (Al Mamun et al., 2007; Atlantis & Ball, 2008; Jansen, van de Looij-Jansen, de Wilde, & Brug, 2008; Mond, Van den Berg, Boutelle, Hannan, & Neumark-Sztainer, 2011; Roberts & Duong, 2013; Roberts & Duong, 2015; Ter Bogt et al., 2006). Therefore, many researchers have begun to argue that other variables besides body weight status have a much stronger relationship with depression and anxiety. These variables include weight-based commentary such as weight teasing and encouragement to diet and body weight perception (BWP).

### **Weight Teasing and Encouragement to Diet: Societal Factors and Outcomes**

Weight teasing and encouragement to diet are largely perpetuated by weight bias and the thin ideal (Puhl & Heuer, 2009; Stice & Shaw, 2002). The thin ideal is the idea that thinness is the gold standard of body type and that those who do not fit within the often unattainable standards of the thin ideal are less worthy and desirable (Stice & Shaw, 2002). This belief, therefore, contributes to negative attitudes and beliefs about larger bodies – often manifested through prejudiced thoughts and discriminatory actions – known as weight bias (Puhl & Heuer, 2009). The thin ideal is perpetuated through many sources such as peers, the media, and family members (Puhl & King, 2013). However, the most frequently noted common source of this thin ideal promotion is the family—usually through weight teasing (Puhl & King, 2013). Despite being reported as a common source of weight teasing (Puhl & King, 2013), weight-based teasing in the family has been one of the least researched. However, the literature that does exist links

family teasing to many numerous adverse outcomes such as anxiety, depression, low self-esteem, and UWCBs (Fulkerson, Strauss, Neumark-Sztainer, Story, & Boutelle, 2007; Libbey, Story, Neumark-Sztainer, & Boutelle, 2008; Keery, Boutelle, van den Berg, & Thompson, 2005). Encouragement to diet – another form of weight-based commentary shaped by weight bias and the thin ideal—has also been linked to many adverse outcomes such as UWCBs, low self-esteem, and depression (Fulkerson et al., 2007; Neumark-Sztainer et al., 2010). However, much less is known about the effects of encouragement to diet, especially as it relates to depression and anxiety levels. This paper aims to help fill this gap in the literature. Finally, some literature has found differences in effects of both teasing and encouragement to diet based on gender of parent. This paper aims to fill this gap by exploring the participants perception of both maternal and paternal encouragement to diet as it relates to BWP and anxiety, and depression.

### **Body Weight Perception (BWP)**

BWP—how one perceives their weight in relation to their weight status (Frank, Claumann, Felden, Silva, & Pelegrini, 2018)—has also been linked to depression and furthermore has been shown to fully or partially mediate the relationship between weight status and mental health in many instances (Al Mamun et al., 2007; Atlantis & Ball, 2008; Jansen et al., 2008; Mond et al., 2011; Roberts & Duong; 2013; Roberts & Duong, 2015; Ter Bogt et al., 2006). Some have found BWP to mediate the relationship between weight status and depression specifically (Erickson, Robinson, Haydel, & Killen, 2000; Robert & Duong, 2015). This relationship between adverse mental health outcomes and BWP is strongest in individuals who perceive themselves to be outside of the cultural ideals of thinness (Atlantis & Ball 2008; Jansen et al, 2008). This finding further indicates the need to also explore psychosocial explanations when considering weight status instead of focusing primarily on biological explanations. This

study will examine BWP as a moderating variable in the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression.

### **Attachment Theory**

Established by John Bowlby, attachment theory asserts that individuals use their relationship with their caregiver to create a framework in which they understand the world around them (Bowlby, 1982). In secure attachments, individuals have the freedom to explore the world knowing that their primary attachment figure is a trustworthy and safe haven in times of threat or uncertainty (Holmes & Farnfield, 2014). This view contributes to a strong sense of worthiness. However, in insecure attachments, individuals may view the world as dangerous and untrustworthy due to a lack of availability of their primary attachment figure. This type of attachment can be caused by events of rejection or abandonment (Holmes & Farnfield, 2014). This framework can be used to understand the impacts of family weight teasing, parental encouragement to diet, and BWP on anxiety and depression. If one has a secure relationship with others as a result of a secure attachment, they are able to see themselves as worthy of love and their family serves as a secure base and safe haven in times of threat. Therefore, if they receive negative or hurtful comments about their weight, they can filter these comments through this sense of worthiness and also turn to their family for support and reassurance. However, if an individual receives hurtful comments about their weight from their family who is supposed to be their safe haven, they may internalize these comments as rejection and abandonment leading to a sense of inadequacy. These feelings of rejection, abandonment, and inadequacy may then contribute to feelings of anxiety and depression. This anxiety and depression may then be further

impacted by an individual's BWP. If they perceive themselves to be outside of the thin ideal, this may exacerbate the feelings of anxiety and depression.

### **Purpose**

The purpose of this article is to explore the relationship between family weight teasing and paternal and maternal encouragement to diet and levels of anxiety and depression in the emerging adult population as well as examine BWP as a moderating variable in this relationship. This study uses an emerging adult population. Emerging adulthood is a newly defined developmental period occurring from the late teenage years to the late twenties characterized by five stages: the age of identity explorations, the age of instability, the self-focused age, the age of feeling in-between, and the age of possibilities (Arnett, 2004). In doing so, we hope to provide more insight into the unique impacts and implications for this population as most of the current literature focuses on childhood and adolescence. It is anticipated that a strong relationship will exist between family weight teasing, paternal and maternal encouragement to diet, and anxiety and depression as well as that BWP will act as a moderating variable



## CHAPTER 2: LITERATURE REVIEW

Given the increase in prevalence, the health implications of obesity have become a major topic of conversation by researchers, health professionals, and policy makers in recent years (Puhl & King, 2013). Obesity is associated with many adverse outcomes (Ogden et al., 2016) leading researchers to explore the relationship between BMI/weight status and health indicators. However, a common missing piece in the obesity conversation is the contributions of other variables besides weight status to adverse health outcomes—particularly in the realm of mental health (Luppino et al., 2010).

While some researchers have found a strong relationship between BMI and depression and anxiety, others assert that this relationship is more indirect, suggesting that other variables may have a stronger impact (Chen et al., 2007; Hunger & Major, 2015; Mond et al., 2011; Roberts & Duong, 2013). These variables include actions resulting from weight bias such as weight teasing and encouragement to diet as well as body weight perception (BWP). Many studies have found that weight-based commentary such as teasing and encouragement to diet leads to higher levels of unhealthy eating behaviors and obesity indicating that some tactics currently used to decrease obesity are actually having the opposite effect (Puhl & Suh, 2015; Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006). Furthermore, research has indicated a link between weight teasing and depression (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006; Madowitz, Knatz, Maginot, Crow, & Boutelle, 2012). Therefore, based on negative and stigmatizing societal messages about weight, individuals experiencing weight-based commentary in the forms of teasing or encouragement to diet may be at increased risk for depression and anxiety (Chen et al., 2007; Eisenberg et al., 2006; Hunger & Major, 2015; Wott & Carels, 2010).

However, while the weight teasing and encouragement to diet literature is growing, few studies have examined the mental health implications of these experiences specifically within the family. The purpose of this article is to explore the relationship between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and levels of anxiety and depression in the emerging adult population as well as examine body weight perception (BWP) as a moderating variable.

## **Obesity**

Obesity has nearly tripled since the year 1980 making it an important topic of discussion (Ogden, Carroll, Kit, & Flegal, 2012). While childhood obesity has been associated with many unique adverse outcomes, some argue the indication that these individuals are five times more likely to remain obese as adults may be of greatest concern (Ogden et al., 2015). These adverse outcomes may worsen over time as well as develop into additional issues exposing individuals to increased risk as adults (i.e., heart disease, type-two diabetes, high blood pressure, and high cholesterol; Ogden et al., 2015). However, these impacts are not limited to physical health. Body weight has also been linked to mental health implications such as depression and anxiety (Sachs-Ericsson et al., 2007; Strawbridge et al., 2002). BMI has been found to be a predictor of depression (Sachs-Ericsson et al., 2007) and those with obesity were shown to be at an increased risk of depression (Strawbridge et al., 2002). In addition, one study found that women with higher weights were more likely to report depressive symptoms over the course of three years (Ball, Crawford, & Kenardi, 2004).

**Limitations of Obesity/Body Weight Status and Mental Health Literature.** However, despite these potential links, a growing body of research has revealed that body weight status may have less of an impact on depression and anxiety than originally thought pointing out many

limitations in the weight status and mental health literature. An important limitation is that most studies have been cross-sectional in design (Al Manum et al., 2007). The lack of longitudinal designs across the literature greatly limits the generalizability of findings as well as inhibits the establishment of causation. Therefore, without more longitudinal designs, it is impossible to determine whether weight status and mental health have a causal relationship. It should also be noted that many studies reflecting a link between weight status and depression/anxiety use clinical samples. In fact, this association between weight status and depression and anxiety does not persist within studies using community-based samples – indicating that other variables may be influencing the relationship between obesity and depression and anxiety (Wardle & Cooke, 2005). Two studies with average weight control groups found higher levels of depression in their clinical samples of obese participants but found no differences in depression levels between community-based obese groups and the normal-weight control groups (Britz et al., 2000; Eremis et al., 2004). The fact that the relationship does not appear in community-based samples limits the generalizability and external validity of these findings.

In addition to these limitations, much of the literature has found no relationship between body weight status and depression/anxiety. It has been found that those with higher weights are no more likely to experience negative depression and anxiety symptoms than those with more average weights even when controlling for variables such as gender, socioeconomic status and ethnicity (Wardle, Williamson, Johnson, & Edwards, 2006). Multiple studies further confirm this finding revealing no direct link between obesity and depression in childhood and adolescence (Brewis, 2003; Eisenberg et al., 2003; Kim & Kim, 2001; Ozmen et al., 2007). For adolescent girls, increased BMI did not predict depression over the course of four years (Stice & Bearman, 2001; Stice, Hayward, Cameron, Killen, & Taylor, 2000). This lack of relationship may be

partially due to high levels of resiliency within the overweight and obese population. Due to the prevalence of discrimination, many individuals in oppressed groups learn how to effectively protect themselves from the adverse mental and emotional impacts of bias at a young age (Wardle et al., 2006). Given this theoretical understating, the lack of relationship may be due to unexplored mediating or moderating variables that also have a strong relationship with anxiety and depression (Chen et al., 2007; Friedman et al., 2005; Hunger & Major, 2015; Ozmen et al., 2007). These variables include weight teasing, encouragement to diet, and body weight perception (BWP)—three variables examined in this study.

### **Weight Bias and the Thin Ideal: Societal Perpetuators of Weight Teasing and Encouragement to Diet**

It is important to discuss societal factors that perpetuate weight teasing and encouragement to diet to understand the potential roots of these behaviors. Two of the primary factors are weight bias and the thin ideal. Weight bias can be defined as negative attitudes or beliefs based on weight and size towards individuals with larger bodies (Puhl & Heuer, 2009). These attitudes usually appear through stereotypes (i.e. overweight people are lazy), prejudiced beliefs (i.e. negative attitudes from employers or medical providers), and discriminatory actions (i.e. ignoring or teasing those who weigh more; Puhl & Heuer, 2009). Weight bias is strongly tied to the thin ideal which pushes the narrative that thinness is the gold standard of body shape (Stice & Shaw, 2002). The thin ideal labels those who do not fit within its unattainable standards as less worthy and desirable thus perpetuating negative biases towards larger bodies (Puhl & Huer, 2009). The pressure to be thin originates from a wide array of sources including the mass media, parents, siblings, and peers. For example, children's media tends to convey positive messages about thinness while conveying negative ones about heaviness (Puhl & Heuer, 2009).

Characters in media who are heavier tend to be displayed with less socially desirable traits such as unattractiveness, lack of intelligence, and unhappiness in comparison to thinner characters (Klein & Shiffman, 2005; 2006). However, a major source of pressures to be thin, according to the research, comes from the family (Puhl & King, 2013). When individuals internalize the idea that thinner is better, they may begin to impose this idea onto important people in their life such as family members thus leading to actions such as weight teasing and encouragement to diet (Puhl & Heuer, 2009; Stice & Shaw, 2002). In fact, in a study of 2,449 women who were overweight and obese, 72% of participants reported family members as the most common source of teasing and inappropriate comments about weight (Puhl & King, 2013). However, despite the prevalence of family weight-based commentary, few studies have examined the implications particularly as they relate to anxiety and depression. This study aims to bridge this gap in the literature by examining the relationship between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression.

### **Weight Teasing and Encouragement to Diet**

**Weight Teasing.** Weight-based teasing occurs across multiple settings and from multiple sources such as family members, peers, and teachers (Puhl & King, 2013). It includes overt bullying such as name-calling, verbal teasing, and physical violence and more covert relational victimization such as social exclusion, ignoring, and being the subject of gossip (Puhl & King, 2013). Most of the literature about weight-based teasing focuses on adolescents. Teasing has proven to be common across many racial and ethnic groups in this population particularly amongst teens who are overweight or obese (Eisenberg, Berge, Fulkerson, & Neumark-Sztainer, 2011; Neumark-Sztainer et al., 2002; Neumark-Sztainer, Story, & Faibisch, 1998; Van den Berg, Neumark-Sztainer, Eisenberg, & Haines, 2008). In one study, about 50% of both boys and girls

reported frequent teasing (Neumark-Sztainer et al., 2002) while another study showed that obese teens reported more teasing than average weight adolescence in almost every racial and ethnic group (Van den Berg et al., 2008). However, teasing is not limited to just adolescents with larger bodies. Teens of average weight also are affected by teasing. One study reported that 19% of average-weight boys and 13% of average-weight girls experience frequent teasing (Neumark-Sztainer et al., 2002) while another depicted similar frequency of teasing and adverse outcomes across all weights (Hayden-Wade et al., 2005; Puhl & Luedicke, 2012).

Teasing occurs across the weight spectrum and has been shown to lead to numerous adverse outcomes such as depression and suicide ideation in youth (Eisenberg et al., 2003; Eisenberg et al., 2006; Madowitz et al., 2012; Puhl & Luedicke, 2012). In fact, one study discovered that the majority of girls who experienced weight-related teasing reported having suicidal ideation. Furthermore, these results depicted that 13% of boys who reported being teased by family members reported attempting suicide while only 4% of boys reporting no teasing had attempted (Haines, Hannan, van den Berg, Eisenberg, & Neumark-Sztainer, 2013). This discovery is of utmost concern and further points to the harmful effects of weight-based teasing.

While few researchers have focused on weight teasing in the family, those who have found a link between family weight teasing and numerous adverse outcomes (Keery et al., 2005). Teasing by the family has been associated with anxiety, depression, low self-esteem, and UWCBs (Fulkerson et al., 2007; Libbey et al., 2008; Keery et al., 2005). In one study, 23% of participants reported experiencing appearance related teasing from their family with 12% reporting being teased specifically about heaviness (Keery et al., 2005). However, more research is needed in this area of family weight teasing. This study aims to bridge this gap in the literature

by not only evaluating the adverse mental health impacts of weight-based teasing in the family but also examining the effects of body weight perception (BWP) on this relationship.

**Encouragement to Diet.** Encouragement to diet can be defined as the direction or suggestion to restrict the intake of certain foods (Fulkerson et al., 2007). Though weight-based teasing has been well-researched and linked to numerous negative outcomes throughout the literature, the effects of encouragement to diet are less established. While some may view encouragement to diet as harmless, many studies have begun to show the potential detrimental effects of encouragement to diet and weight-based commentary (Balantekin, Savage, Marini, & Birch, 2014; Fulkerson et al., 2007; Neumark-Sztainer et al., 2010). In adolescents, parental encouragement to diet has been linked to numerous adverse outcomes such as depression, low self-esteem, and higher levels of UWCBs (Fulkerson et al., 2007; Neumark-Sztainer et al., 2010). It has also been shown to be a predictor of dieting later in life (Balantekin et al., 2014).

Though encouragement to diet has most notably been linked to unhealthy eating and weight control behaviors, less is known about its effects on mental health. While some researchers have found a potential link to depression (Bauer, Bucchianeri, & Neumark-Sztainer, 2013; Fulkerson et al., 2007), hardly anything is known about its relationship with anxiety. Due to the implications of depression and anxiety symptoms, this relationship is in need of further exploration. Therefore, this study aims to further explore this relationship between encouragement to diet and anxiety and depression as the literature currently lacks studies on the topic.

**Gender Differences.** Some literature suggests that the adverse effects of family weight teasing and encouragement to diet differs based on gender of parent. Paternal teasing has been found as a significant predictor of restriction and purging, low self-esteem, and body

dissatisfaction while both maternal and paternal teasing were linked to depression (Keery, Eisenberg, Boutelle, Neumark-Sztainer, & Story, 2006). In regards to encouragement to diet, paternal encouragement has been linked to lower self-esteem and higher amounts of UWCBs in adolescents (Fulkerson et al., 2007) while maternal encouragement to diet was linked to only disordered eating tendencies (Neumark-Sztainer et al., 2010). The literature indicates that adverse effects may differ based on gender of parent. By looking at both paternal encouragement to diet and maternal encouragement to diet, this study aims to contribute to this literature by specifically looking at their relationships to anxiety and depression.

### **The Role of Body Weight Perception (BWP)**

In addition to family weight teasing and encouragement to diet, a growing body of literature is highlighting a strong relationship between body weight perception (BWP) and adverse mental health outcomes. BWP can be defined as how an individual perceives their own body in relation to their weight status. This perception can be above, below, or at the actual weight (Frank et al., 2018). In many cases, BWP has been shown to either partially or fully mediate the relationship between actual weight status and mental health outcomes (Al Mamun et al., 2007; Atlantis & Ball, 2008; Jansen et al., 2008; Mond et al., 2011; Roberts & Duong, 2013; Roberts & Duong, 2015; Ter Bogt et al., 2006). Furthermore, many findings show BWP to suppress the relationship between BMI and internalizing and externalizing problems (Atlantis & Ball, 2008; Jansen et al., 2008; Ter Bogt et al., 2006)—in one instance over the span of seven years (Al Mamun et al., 2007). Some studies found BWP to specifically mediate the relationship between weight status and depression (Erickson et al., 2000; Robert & Duong, 2015). When controlling for perceived weight, Robert & Duong (2015) found no relationship between obesity and depression thus indicating weight perception as a mediating variable in the relationship.



Erickson et al. (2000) discovered that the perception and fear of being overweight explained any relationship found between depression and obesity in children. It is possible that this finding persists throughout other age groups as well, indicating a need for further exploration.

A final and important finding is that the relationship between BWP and psychological distress is strongest for individuals who perceived their weight to be outside cultural ideals (Atlantis & Ball, 2008) and that feeling too fat was more closely associated with adverse mental health outcomes than not feeling too fat (Jansen et al., 2008). Those who have a negative body weight perception are particularly vulnerable to reduced quality of life which can manifest itself in low self-esteem and depression (Mond et al., 2011). These findings indicate a psychosocial explanation for mental distress as opposed to primarily biological explanation provided by weight status. Much of the literature supports strong links of both BWP and family weight teasing to anxiety and depression as well as preliminary support for this relationship between encouragement to diet and anxiety and depression. However, few if any studies have examined how these predictors impact one another. This study aims to bridge this gap by examining the relationship between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression while also exploring the effects of BWP as a moderating variable.

### **Attachment Theory: A Theoretical Understanding**

Much of the relationship between family weight teasing/encouragement to diet, BWP, and anxiety and depression can be understood through attachment theory. Established by John Bowlby, attachment theory is a framework aimed at explaining the parent-child relationship (Bowlby, 1982). In this theory, Bowlby asserts that individuals use their relationship with their caregiver to create a framework through which they understand the world around them. This

framework guides their responses towards others as well as their perceptions of safety and security. Attachment theory is largely based on the idea of proximity towards loved ones. If individuals feel close to those they love, they experience feelings of trust and security. However, if they perceive those they love as unavailable or untrustworthy, they may have trouble trusting and experiencing closeness with others (Holmes & Farnfield, 2014). In secure attachments, individuals feel free to explore the world around them and view their caregiver as a safe haven in times of uncertainty or fear. When individuals have a secure base, they engage with the world in a confident and resilient manner. They view themselves as worthy of love and support and develop a positive self-view. However, in an insecure attachment where a caregiver or loved one is unavailable, individuals may experience feelings of rejection and abandonment, viewing themselves as unworthy of love. This type of attachment can lead them to engage with the world in a distrustful or defensive manner (Holmes & Farnfield, 2014).

One could argue that the theory of attachment can be applied to understanding the potential impacts of family weight teasing, encouragement to diet, and BWP on anxiety and depression. When someone has a secure attachment to their family, they view themselves as worthy of love and therefore engage with the world in a confident manner despite their perception of their body size (Holmes & Farnfield, 2014). When faced with threats such as the thin ideal or weight bias, they are able to return to their family as a safe haven of acceptance thus enabling them to maintain their sense of lovability and worthiness. However, if their family becomes the source of threat through weight teasing and encouragement to diet and is no longer a safe haven, individuals may experience feelings of rejection, abandonment, and inadequacy. This rejection, abandonment, or inadequacy could then manifest as anxiety and depression. Furthermore, this process may be impacted by BWP. If an individual has a strong sense of self

and a positive BWP, they may be less susceptible to weight bias and the thin ideal thus filtering weight teasing and encouragement to diet through a lens of worthiness and lovability. However, if an individual has a poor sense of self and a negative BWP, they may be more susceptible to the thin ideal and weight bias and therefore internalize weight teasing and encouragement to diet as a rejection or marker of inadequacy. In other words, BWP may influence how one interprets negative messages about their body. An individual with a negative BWP may be more likely to receive messages about weight from family members as a personal attack on their worthiness as opposed to someone with a more positive body perception who may be less affected. This negative reception of weight-based comments could lead to higher levels of anxiety and depression amongst individuals who have been teased by their families about their weight. While weight-based teasing and encouragement to diet have been fairly extensively researched, few studies have looked specifically at the family as the source. However, this is an important source on which to focus more research. When viewed through the lens of attachment, family weight teasing and encouragement to diet has the potential to be particularly harmful.

### **Gaps in the Literature**

This study aims to fill a few gaps in the literature through focusing on the family as the source of teasing and encouragement to diet, using a sample of emerging adults, and conducting an analysis using multiple variables in relation to anxiety and depression. Since the need for increased emphasis on the family has been previously discussed, this section will focus on the use of an emerging adult sample and using a model that analyzes multiple variables.

**Emerging Adulthood.** The majority of the weight teasing and encouragement to diet literature focuses on children and adolescents. Apart from one study that found a prevalence of weight-based commentary in emerging adulthood (Eisenberg et al., 2011), very few focus on the

emerging adult population in general while none have focused on the adverse impacts on this population. Recent research has found emerging adulthood to be a separate developmental stage from adolescence presenting its own milestones and challenges (Arnett, 2004). Consisting of the late teenage years to early twenties, the stage of emerging adulthood arose due to the rapidly increasing age of marriage and childbirth. Emerging adulthood is best understood as an extended period of emotional insecurity regarding status and roles as compared to more stable emotional regulation of middle adulthood (Arnett, 2001). While emotional regulation is an important aspect of development in both adolescence and emerging adulthood, this regulation shifts more towards long-term goal formation and mate and career selectivity in emerging adulthood (Arnett, 2001). Emerging adulthood is characterized by four main stages: age of instability, age of exploration, age of feeling-in-between, and the age of possibilities. All of these stages describe the efforts of emerging adults to find stability in their roles and responsibilities as adults—a unique experience to that of adolescents (Roisman, Masten, Coatsworth, Tellegen, 2004). Attachment theory asserts that adolescents begin to shift their primary attachment bonds from their caregivers to friends. It can be suggested that this shift may become even more prominent in emerging adulthood. Therefore, it is necessary to explore the impacts of family weight teasing and parental encouragement to diet on anxiety and depression within the emerging adulthood population. Without research specifically within this population, these impacts remain unknown. Therefore, due to the developmental growth and milestones that occur during emerging adulthood, it is important for researchers to examine the unique effects and responses within this age group. As mentioned before, the weight teasing and encouragement to diet literature heavily focuses on adolescence and lacks research in the emerging adult population. Therefore, the current study

fills this gap in the research by solely focusing on college students who fall in the developmental stage of emerging adulthood.

**Multiple Variables.** In addition to using an emerging adult population, the current study assesses the relationship between multiple variables (family weight teasing, paternal encouragement to diet, maternal encouragement to diet, BWP, anxiety, and depression). Most studies to date have either examined the relationship between teasing/encouragement to diet and depression/anxiety or BWP and depression/anxiety. However, few have combined the variables into a single model. The current study fills this gap in the literature by combining all of these variables into a single model. This model will assess the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression as well as assess BWP as a moderating variable.

### **Purpose and Hypotheses**

The purpose of this path analysis is to explore the relationship between family weight teasing, paternal encouragement to diet and maternal encouragement to diet and depression and anxiety levels in emerging adults. Moreover, given the potential influence of body weight perception (BWP), this variable will be explored as a moderating variable. The sample in this study consisted of emerging adult college students and their parents at a large southeastern university.

**Research Question 1:** What is the relationship between family weight teasing and anxiety and depression, paternal encouragement to diet and anxiety and depression, and maternal encouragement to diet and anxiety and depression?

*Hypothesis 1:* The literature has significantly linked both weight teasing and encouragement to diet to anxiety and depression in child and adolescent populations (Eisenberg et al., 2003; Eisenberg et al., 2006; Fulkerson et al., 2007; Madowitz et al., 2012; Neumark-Sztainer et al., 2010 Puhl & Luedicke, 2012). Therefore, it is predicted that a significant positive relationship exists between all variables (family weight-teasing, paternal encouragement to diet, and maternal encouragement to diet) and anxiety and depression.

**Research Question 2:** Does body weight perception (BWP) moderate the relationship between the following variables: family weight-teasing and anxiety and depression, paternal encouragement to diet and anxiety and depression, and maternal encouragement to diet and anxiety and depression?

*Hypothesis 2:* The literature has linked BWP to depression as well as shown it to be a mediating variable between body weight and depression (Al Mamun et al., 2007; Atlantis & Ball, 2008; Jansen et al., 2008; Mond et al., 2011). Given that weight teasing and encouragement to diet have also been linked to anxiety and depression (Eisenberg et al., 2003; Eisenberg et al., 2006; Fulkerson et al., 2007; Madowitz et al., 2012; Neumark-Sztainer et al., 2010 Puhl & Luedicke, 2012), it is predicted that BWP will moderate the relationship between all of the above variables and anxiety and depression.

## CHAPTER 3: METHODS

### Methodology

For the study, we chose a quantitative path analysis. A quantitative design was selected for a few reasons. First of all, the study will examine the *relationship* between multiple variables (family weight teasing, maternal encouragement to diet, paternal encouragement to diet, BWP, depression, and anxiety). Second of all the study is seeking to either prove or disprove hypotheses about a phenomena rather than the more qualitative aim of exploring and building a narrative about these topics. A path analysis was selected in order to better explore the relationships between variables within the context of the other variables in the study. This more in-depth exploration will provide a more complete and systemic understanding of how the variables interact. This type of depth and understanding was seen as important rather than relying on a series of regressions exploring links between specific variables.

### Sample and Procedure

Data for this study was collected from a population of emerging adults at a large southeastern university as part of a larger study surrounding young adult attachment and health behaviors. Therefore, this study in particular was a secondary data analysis. Given that the emerging adulthood developmental period ranges from age 18-29 (Arnett, 2004), participants outside of this age range were excluded from the current study. Participants consisted of students in an undergraduate parenting class. In efforts to gather triadic data (i.e., emerging adult and two parents), extra credit was offered for individual completion of the study as well as extra credit for each parent that completed the study. Students had to be at least 18 years of age as well as English speaking to participate. While triadic data was collected, only the student data will be used in this particular study. Much of the literature has found that the likelihood of adverse

outcomes are largely determined by the *individual's* perception of frequency and distress of weight teasing (Keery et al., 2005; Libbey et al., 2008; Madowitz et al., 2012). Therefore, we decided to only use the student data as they are potentially on the receiving end of weight teasing and encouragement to diet in their families.

### **Demographic Information**

A total of 296 students participated in this study. Four participants were excluded due to age exclusion criteria. Two participants were under age 18 and two were above age 30. Therefore, a total of 292 participants were used in analyses. The college students involved in the study were 76.4% female and 23.6% male. The mean age of participants was 21.1 years with participants ranging from ages 17-30. While a majority of students were Caucasian (69.2%), there was still a fairly large representation of minority groups. Of the remaining participants, 21.9% were African-American/Black, 2.7% were Asian/Asian-American, and 1.4% of students were Hispanic.

### **Data Collection**

Data collection included student and parental height and weight measurements for the BMI measure as well as an online survey in order to assess body weight perception, health behaviors, mental health status, and attachment. Height and weight measurements for the participants were collected in a classroom setting. Since critics have flagged self-report as one of the biggest limitations in BMI research (Befort, Nazir, & Perri, 2012), it was decided to objectively measure height and weight using a Seca height board and scale. Due to the sensitivity of weight, all weight measurements were done in a confidential space in order to maximize comfort and safety for the participants. Only the staff member recording the measurements could see the numbers on the scale. To further maximize confidentiality, staff members recorded and arranged



measurements in a private area, and the scale measured in kilograms rather than pounds to limit even the staff members' awareness of the actual weight. After completing the height and weight measurements, students were given a unique numeric code that would connect their responses to their parents' responses. Students and parents then completed the survey answering questions that assessed attachment, eating behaviors, weight teasing, encouragement to diet, BMI, BWP, and depression and anxiety. The surveys also included demographic information. When parents filled out their surveys, they entered their child's numeric code in order to create a triadic data set. Researchers provided parents and students who were not local with very specific instructions on how to obtain accurate measurements. They then required these participants to upload a picture of them measuring both their height and weight in order to ensure accuracy.

## **Measures**

The purpose of the overall study was to explore the association between attachment styles and eating behavior. As a result, the online survey included questions about demographic information as well as questions from both the Experiences in Close Relationships Scale (ECR) and the Child Eating Behavior Questionnaire (CEBQ). The survey also assessed levels of anxiety and depression using the Generalized Anxiety Disorder-2 (GAD-2) and the Patient Health Questionnaire-2 (PHQ-2). While the survey included a wide variety of measures, only certain questions were used to address variables in this particular study: body weight perception, report of familial teasing, report of parental encouragement to diet, and anxiety and depression. The following is a description of the specific variables used to answer the research questions for this particular study.

**Family Weight Teasing.** Family weight teasing was assessed using the question, "My family teases me about my weight...." Participants were asked to select a number on a 5-point

Likert scale, with one representing “never” and five representing “very often.” This question was adapted from the 6-question Perception of Teasing Scale-Weight Teasing Frequency (POTS) subscale which assesses general weight-based teasing (Thompson, Cattarin, Fowler, & Fisher, 1995). Schultz, Paxton, and Wertheim (2002) reported a Cronbach alpha of .95 when studying a sample of girls ages 12-15.

**Parental Encouragement to Diet.** Parental encouragement to diet was assessed using two separate questions in order to identify the origin as paternal and maternal. Paternal encouragement to diet was measured using the question, “My father encourages me to diet...” and maternal encouragement to diet was measured using the question, “My mother encourages me to diet...” Participants were asked to select a number on a 5-point Likert scale, with one representing “never” and five representing “very often.” Since no empirical measure for encouragement to diet exists, these questions were adapted from a measure used in two other studies that showed positive psychometric qualities (Bauer et al., 2013; Neumark-Sztainer et al., 2008).

**Body Weight Perception (BWP).** Body weight perception (BWP) was measured using the question “Do you see yourself as: healthy weight, underweight, overweight, or obese”. Students then selected the weight category options that best fit their perception of themselves. While no empirically tested measure currently exists to measure BWP, a similar survey question was used to measure BWP in two frequently cited population studies both in the US (Chang & Christakis, 2003) and Australia (Donath, 2000) as well as in other research studies (Atlantis & Ball 2008). Therefore, this question was selected as the BWP measure.

**Anxiety.** Anxiety was measured using the GAD-2—an adapted version of the GAD-7. The full assessment includes seven questions that assess different aspects of anxiety and has a

high internal consistency (Cronbach alpha = .92). It is empirically supported throughout the literature as a valid measure for anxiety (Spitzer, Kroenke, Williams, & Löwe, 2006). The GAD-2 uses two of the seven questions on the GAD-7. The two questions are: “Over the last 2 weeks, how often have you been bothered by: a) Feeling nervous, anxious or on edge and b) Not being able to stop or control worrying. Possible answers included: 0- Not at all, 1- Several days, 2- More than half the days, and 3- Nearly every day. The GAD-2 has been proven as an accurate screener for generalized anxiety disorder when using the cutoff score of 3 (Plummer, Manea, Trepel, & McMillan, 2015). Additionally, both Seo and Park (2015a) and Delgadillo et al. (2012) reported a Cronbach alpha of .82 when used with patients struggling with migraines and addiction respectively. The GAD-2 also showed high reliability within the current study sample (Cronbach alpha = .84). The GAD-2 is frequently used in circumstances that do not allow for long questionnaires such as medical settings (Seo & Park, 2015a). Due to the vast number of questions on the survey, the GAD-2 was selected (as opposed to the GAD-7) in hopes of reducing participant fatigue as they completed multiple instruments.

**Depression.** Depression was measured using the PHQ-2—an adapted version of the PHQ-9. The full assessment includes nine questions that assess different aspects of depression and has a high internal consistency (Cronbach alpha = .92-.95). It is empirically supported throughout the literature as a valid measure for depression (Kroenke, Spitzer, & Williams, 2001). The PHQ-2 uses two of the nine questions on the PHQ-9. Two questions were used in this study: “Over the last 2 weeks, how often have you been bothered by a) Little interest or pleasure in doing things and b) Feeling down, depressed, or hopeless. Answers were formatted as follows: 0- Not at all, 1- Several days, 2- More than half the days, 3- Nearly every day. The PHQ-2 has been proven as an accurate screener for depression when using the cutoff score of 3 (Arroll et al.,

2010). Additionally, both Seo and Park (2015b) reported a Cronbach alpha of .75 when used with patients struggling with migraines. The PHQ-2 also was found to be reliable in the current study sample (Chronbach alpha = .73). Like the GAD-2, the PHQ-9 is frequently used in circumstances that do not allow for long questionnaires due to time constraints such as medical settings (Seo & Park, 2015b). Due to the length of the survey, the PHQ-2 was selected (as opposed to the PHQ-7) minimizing participant fatigue.

### **Analytic Plan**

A path analysis using Mplus 8.0 (Muthén & Muthén, 2012) was used to explore the pathways linking family weight teasing, paternal encouragement to diet, and maternal encouragement to diet with anxiety and depression levels. BWP was tested as a moderating variable for each of the pathways using a hierarchical regression model. Sex was included in the model as covariate. In order to determine if the proposed model is a good fit for the data, model fit statistics were used. Specifically, a comparative fit index (CFI: Bentler, 1990) above .95 (Hooper, Coughlan, & Mullen, 2008; Hu and Bentler, 1999) and a non-significant chi-square, the root means square error of approximation (RMSEA) values under .06 (Hooper et al., 2008; Hu and Bentler, 1999) was utilized to evaluate model fit. The model indirect command with bias-corrected bootstrapped confidence intervals using 1000 bootstraps was used to assess pathways. Pathways were considered significant if the confidence interval does not include a zero value. Full information maximum likelihood (FIML) estimation was used to manage missing data.

Through hierarchical regression models and a path analysis, this study will examine the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet as well as explore BWP as a moderating variable. The sample consists of college students who completed measures of family weight teasing, encouragement to diet,

BWP, depression, and anxiety. Significant relationships will be identified in the following results section.

## CHAPTER 4: RESULTS

In order to answer our research question regarding the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression, we first considered univariate statistics. Means and standard deviations for all continuous study variables can be found in Table 1.

Table 1.

*Descriptive statistics and intercorrelations for study variables. (N=292).*

Variables	1.	2.	3.	4.	5.
1. Anxiety	-				
2. Depression	.57**	-			
3. Family WT	.14*	.19**	-		
4. PED	-.01	.02*	.24**	-	
5. MED	-.02	-.02	.30**	.60**	-
<i>M</i>	4.34	3.55	1.53	1.93	2.32
<i>SD</i>	1.80	1.57	.89	1.15	1.24

*Note.* Family WT = Family Weight Teasing; PED = Paternal Encouragement to Diet; MED = Maternal Encouragement to Diet  
 \* $p < .05$ .  
 \*\* $p < .01$ .

To answer the first research question (*What is the relationship between family weight teasing and anxiety and depression, paternal encouragement to diet and anxiety and depression, and maternal encouragement to diet and anxiety and depression?*), bivariate relationships for continuous variables were examined via correlational analyses, which can also be found in Table 1. We first found that anxiety was significantly positively correlated with depression ( $r = .57$ ,  $p < .05$ ). This finding indicates that when the individual reported higher levels of anxiety, they also reported higher levels of depression.

Next, we found that family weight teasing was significantly positively correlated with depression ( $r = .19$ ,  $p < .05$ ), suggesting that when an individual reported more family weight

teasing, they also experienced higher levels of depression. In addition, we found that paternal encouragement to diet was significantly positively associated with higher levels of depression ( $r=.02, p<.01$ ), indicating that when an individual reported more encouragement to diet from their fathers, they also reported higher levels of depression.

Next, we found that paternal encouragement to diet was significantly positively related to family weight teasing ( $r=.24, p<.05$ ). In other words, when an individual reported paternal encouragement to diet, they also reported more family weight teasing. We also found that maternal encouragement to diet was significantly positively correlated to family weight teasing ( $r=.30, p<.05$ ), suggesting that when an individual reported encouragement to diet from their mother, they also reported more family weight teasing. Finally, we found that maternal encouragement to diet was significantly positively related to paternal encouragement to diet ( $r=.60, p<.05$ ). This finding indicates that when an individual reported encouragement to diet from their mother, they also reported more encouragement to diet from their father.

Next, to answer our second research question regarding BWP (*Does body weight perception (BWP) moderate the relationship between the following variables: family weight-teasing and anxiety and depression, paternal encouragement to diet and anxiety and depression, and maternal encouragement to diet and anxiety and depression?*), we examined the relationships between the categorical variable BWP and all dependent and independent variables by conducting a one-way between-groups ANOVAs to determine group differences by BWP on all variables of interest. To note, 177 participants reported perceiving themselves as having a healthy weight, 14 reported seeing themselves as underweight, and 101 as overweight/obese. One-way ANOVA results and mean differences by BWP for all variables can be found in Table 2. First, results revealed no significant BWP group differences for anxiety or depression.

However, Tukey’s post hoc analyses revealed that participants who viewed themselves as overweight/obese reported significantly more family weight teasing, paternal encouragement to diet, and maternal encouragement to diet than those who viewed themselves as having a healthy weight. Furthermore, results revealed that those who view themselves as overweight/obese reported significantly more maternal encouragement to diet than individuals who see themselves as underweight.

Table 2.

*ANOVA Table*

Variables	Healthy Weight (n=177)	Underweight (n=14)	Overweight/Obese (n=101)
Anxiety	4.30	4.14	4.44
Depression	3.47	3.28	3.71
Family WT	1.43 <sup>c</sup>	1.57	1.70 <sup>a</sup>
PED	1.81 <sup>c</sup>	1.57	2.19 <sup>a</sup>
MED	2.09 <sup>c</sup>	1.43 <sup>c</sup>	2.83 <sup>a,b</sup>

Table 2.

*Mean differences on anxiety and depression by body weight perception (N = 292).*

*Note.* Family WT = Family Weight Teasing; PED = Paternal Encouragement to Diet; MED = Maternal Encouragement to Diet

- <sup>a</sup> = Significantly different from Healthy Weight
- <sup>b</sup> = Significantly different from Underweight
- <sup>c</sup> = Significantly different from Overweight/Obese

Differences are significant at the  $p < .05$  level.

To further examine the relationships among our constructs of interest in the first research question, we conducted linear regression models, the results of which can be seen in Table 3. We first examined the simultaneous associations of family weight teasing, paternal encouragement to diet, and maternal encouragement to diet with anxiety. Results revealed a marginally significant regression model. Family weight teasing was significantly, positively linked with anxiety,



controlling for the influence of paternal and maternal encouragement to diet ( $B=.33, p<.01$ ). In other words, individuals who reported more family weight teasing experienced greater levels of anxiety. We next examined the simultaneous relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet with depression. Results depicted a significant regression model. Family weight teasing was significantly, positively related to depression ( $B = .37, p<.01$ ), controlling for paternal encouragement to diet and maternal encouragement to diet. In other words, those who reported more family weight teasing experienced higher levels of depression.

Table 3.

*Linear regression analyses examining links between participants' family teasing, paternal encouragement to diet, and maternal encouragement and anxiety and depression (N = 2,406).*

Variable	Anxiety			Depression		
	<i>B</i>	<i>SE (B)</i>	$\beta$	<i>B</i>	<i>SE (B)</i>	$\beta$
Constant	4.09	.26		3.20	.23	
Family WT	.33**	.12	.16**	.37**	.11	.21**
PED	-.02	.12	-.02	.04	.10	.03
MED	-.08	.11	-.06	-.13	.09	-.10
$R^2$		.02 <sup>†</sup>			.04**	
<i>F</i> for change in $R^2$		2.33 <sup>†</sup>			4.26**	

*Note.* Family WT = Family Weight Teasing; PED = Paternal Encouragement to Diet; MED = Maternal Encouragement to Diet  
<sup>†</sup> $p < .10$   
 $*p < .05$ .  
 $**p < .01$ .

Next to gain a more thorough understanding of the relationships among our constructs of interest, we tested for moderation effects. More specifically, via hierarchical linear regression modeling, we examined whether BWP moderated the significant association between family weight teasing and both anxiety and depression. Therefore, we generated interaction terms between family weight teasing and BWP (Aguinis, 2004). Interaction terms were subsequently included in the regression model predicting anxiety and depression. Hierarchical linear

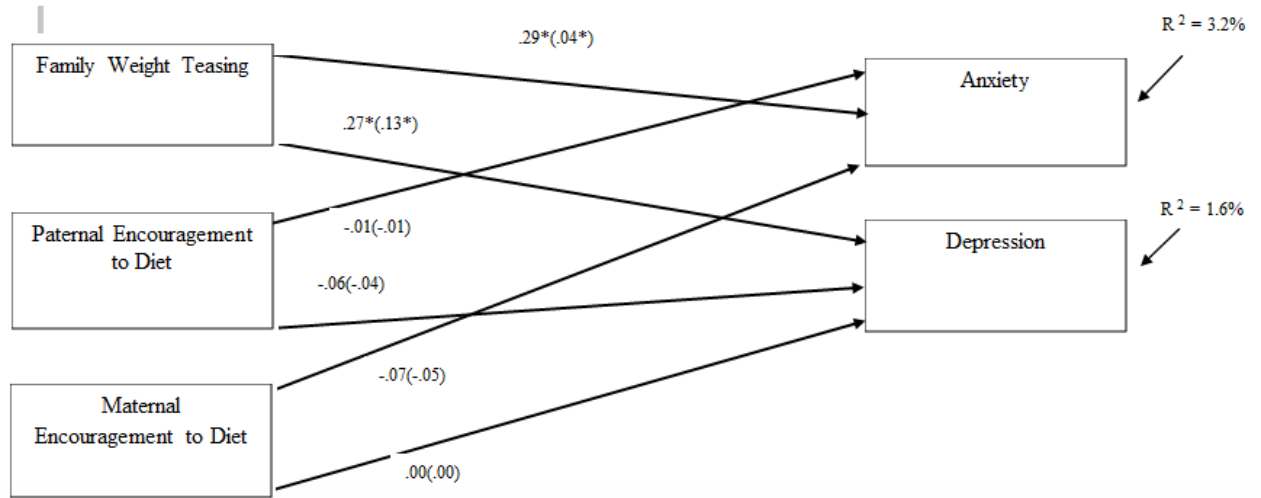
regression analyses revealed that none of the created interaction terms were significantly associated with anxiety or depression. This suggests that BWP does not account for variation in the significant links between family weight teasing and anxiety and depression.

To more comprehensively understand the associations among family weight teasing, paternal encouragement to diet, maternal encouragement to diet, anxiety, and depression, we additionally utilized path modeling via Mplus Version 8, which allowed us to consider links between numerous independent and dependent variables, simultaneously, controlling for all other pathways (Cook & Kenny, 2005). Missing data were handled using full information maximum likelihood. We controlled for gender and all constructs were allowed to covary, as were residuals of dependent variables. Goodness of fit was evaluated using the chi-square statistic, comparative fit index (Bentler, 1990), root mean square of approximation (Bentler, 1995), and standardized root mean square residual (Hu & Bentler, 1999).

Figure 2 shows our path model examining associations between the independent variables of family weight teasing, paternal encouragement to diet, and maternal encouragement to diet with the dependent variables of anxiety and depression, controlling for gender. Consistent with existing literature and common to structural equation modeling (Kenny & Ledermann, 2010), all models were fully saturated (i.e., all parameters were estimated, zero degrees of freedom; Cook & Kenny, 2005) and demonstrated perfect fit ( $\chi^2 = 0.00$ ,  $df = 0$ ; CFI = 1.00; TLI = 1.00; RMSEA = .00). Results revealed family weight teasing was significantly positively linked with self-reported anxiety ( $\beta = .29$ ,  $p < .05$ ), controlling for gender and all other pathways in the model. Thus, those who reported greater family weight teasing also reported higher levels of anxiety. We also found that family weight teasing was significantly positively related to self-reported depression ( $\beta = .27$ ,  $p < .05$ ), controlling for gender and all other pathways in the model.

In other words, individuals who reported greater family weight teasing also reported higher levels of depression. We additionally discovered that paternal and maternal encouragement to diet were not significantly linked with anxiety or depression in the path model. This model accounted for 3.2% of the variance in anxiety and 1.6% of the variance in depression.

Figure 1. Fully saturated path model illustrating links among family weight teasing, paternal encouragement to diet, maternal encouragement to diet, anxiety, and depression, controlling for gender ( $N = 292$ ).



Note: Unstandardized path coefficients are shown with standardized coefficients in parentheses. Model fit statistics:  $\chi^2 = 0.00$ , CFI = 1.00, RMSEA = 0.00; SRMR = 0.00. \* $p < .05$ .

Through completing the analyses, we found family weight teasing to be significantly associated with both anxiety and depression when controlling for all other variables. We also found a significant relationship between paternal encouragement to diet and depression as well as between both paternal and maternal encouragement and family weight teasing in initial correlational analyses. Significant findings will be further explained.

## **CHAPTER 5: DISCUSSION**

The purpose of this article was to explore the relationship between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and levels of anxiety and depression in the emerging adult population. Secondly, we examined body weight perception (BWP) as a moderating variable. This study aimed to contribute to the weight-teasing and encouragement to diet literature in a few key ways. First of all, most current weight-teasing literature focuses on general weight-teasing and does not explore specific outcomes within the family. Therefore, this study aimed to expand our knowledge on these outcomes by examining the relationship between family weight-teasing and anxiety and depression. Second of all, since little of the current encouragement to diet literature has explored mental health outcomes, this study aimed to examine the impacts of encouragement to diet on anxiety and depression levels. Third of all, BWP has also been linked to depression and anxiety throughout the literature. However, little if any research has explored how BWP interacts with other variables. Therefore, this study aimed to bridge this gap by examining BWP as a moderator in the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression. Finally, most of the current weight-teasing, encouragement to diet, and BWP literature focuses on impacts within the adolescent population and few have examined implications for other developmental stages. Therefore, this study aimed to fill gap by exploring the impacts of family weight teasing and parental encouragement to diet on anxiety and depression within the emerging adulthood population.

### **Family Weight Teasing**

Our hypothesis that family weight teasing would be associated with anxiety and depression was confirmed. Correlational analyses revealed a few key findings surrounding

family weight-teasing. Family weight teasing was significantly associated with anxiety, depression, paternal encouragement to diet, and maternal encouragement to diet. However, the links between family weight teasing and anxiety and depression were the only relationships that persisted in the path analysis. Our results are confirmed in current research. General weight-teasing has been linked to anxiety and depression in both childhood and adolescence (Eisenberg et al., 2006; Libbey et al., 2008; Madowitz et al., 2012; Puhl & Luedicke, 2011). One study even linked weight teasing to suicidal ideation in teenage girls further emphasizing the gravity of weight teasing (Haines et al., 2013). Few studies, however, have examined the specific impacts of teasing within the family—especially in the past decade. Furthermore, few if any studies have explored the relationship between weight teasing and anxiety specifically within the family. While a small handful of studies have linked family weight-based teasing to depressed mood in teens (Fulkerson et al., 2007; Keery et al., 2005), the findings of this study provide more current and updated support for this relationship. Therefore, these findings contribute to the weight-teasing literature by indicating the negative impacts of family weight teasing on levels of anxiety. Future researchers may want to explore these relationships further in order to better understand the impacts of family weight teasing on mental health.

A few potential explanations may capture why family teasing occurs and how it could lead to anxiety and depression. Parents may have a negative relationship with their own body and therefore take this insecurity out on their child through teasing. This teasing could therefore be an extension of their own pain surrounding body weight (Berge et al., 2013; Berge et al., 2015a). They may also fear that their child is getting teased about weight in other settings and therefore make comments about their child's weight with the intention of protecting them from further teasing (Berge, Trofholz, Fong, Blue, & Neumark-Sztainer, 2015b). However, the child may

interpret and internalize these well-intentioned comments from their parents as teasing.

Therefore, future research should examine both the child and parent's perceptions of family weight teasing and identify any discrepancies between these two perspectives.

Conversely, if parents fit more within thin ideal standards, they may have never endured teasing surrounding their weight. Therefore, they may not understand the degree of hurt that can occur when making teasing comments about their child's weight (Berge et al., 2015b). A person may develop depression and anxiety due to feeling abandoned, rejected, or inadequate (Mikulincer & Shaver, 2012). Due to the thin ideal (Stice & Shaw, 2002), many people may experience this abandonment, rejection or inadequacy as related to their body size or weight – especially if they perceive themselves as outside of this thin ideal or if they believe that others perceive them outside of this ideal. Therefore, weight teasing may be internalized as rejection or inadequacy thus contributing to depression and anxiety.

This experience may be further exacerbated if their family is a primary source of teasing. According to attachment theory, the degree of emotional security within primary attachment relationships (i.e., family relationships) shapes how one views themselves and engages with the world (Holmes, 2014). Events of rejection or abandonment can disrupt the security of these relationships (Zuccarini, Johnson, Dalglish, & Makinen, 2013). Perceived parental rejection has been linked to depression (Akse, Hale, Engels, Raaijmakers, & Meeus, 2004). If an individual feels rejected by their parents, they may begin to evaluate themselves and their futures in a negative way. These evaluations can leave people vulnerable to depression (Kim et al., 2003; Nolan, Flynn, & Garber, 2003) and may be even more pronounced in the context of family weight teasing given the sensitive nature of weight. Therefore, if an individual internalizes family weight teasing as rejection, these feelings may manifest themselves through symptoms of

depression. In regards to anxiety, family weight teasing may contribute to a hyperawareness of body size and weight. This hyperawareness may increase a person's fear of judgment from others regarding their body potentially leading to behaviors such as excessive exercise, body checking, and social isolation – all of which have been linked to body image related anxiety (Haase, Mountford, & Waller, 2007; Laursen & Hartl, 2013; Lichtenstein, Griffiths, Hemmingsen, & Støving, 2018). Therefore, if an individual becomes hyperaware of how people perceive their body due to family weight teasing, they could develop symptoms of anxiety.

### **Encouragement to Diet**

Our hypothesis that both paternal and maternal encouragement to diet would be associated with anxiety and depression was partially confirmed. Correlational analyses revealed a significant positive relationship between paternal encouragement to diet and depression. They also found a significant positive relationship between both paternal and maternal encouragement to diet and family weight teasing. Though the encouragement to diet literature is still growing, this finding is supported in current research (Fulkerson et al., 2007). Parental encouragement to diet has been linked to depression as well as UWCBs and low self-esteem (Fulkerson et al., 2007). However, little is known about how these impacts differ based on gender of parent. One study focused solely on mothers and found a relationship between encouragement to diet/weight talk and depression (Keery et al., 2005) while another explored impacts of encouragement to diet by both parents only finding significance between maternal encouragement to diet and depression (Fulkerson et al., 2007). Therefore, the findings of the current study present an interesting addition to the literature given that paternal encouragement to diet was linked to depression while maternal encouragement to diet was not.

This difference in impact based on gender of parent could exist for a few reasons. First of all, research has traditionally targeted mothers when exploring issues surrounding body image (i.e. depression, eating disorders, body dissatisfaction, and self-esteem) in teens and children (Benedikt, Wertheim, & Love, 1998; Fulkerson et al., 2002; Keery et al., 2006; Sanftner, Crowther, Crawford, & Watts, 1996). Due to this fact, many clinicians, prevention programs, and media outlets may emphasize educating mothers on the negative impacts of encouragement to diet, teasing, and weight-based commentary rather than fathers. Furthermore, research shows that females are more likely to attend therapy (Mahalik, Good, & Englar-Carlson, 2003; Pederson & Vogel, 2007)—a primary avenue of education surrounding weight talk. In sum, fathers may not be receiving the needed education surrounding weight teasing and encouragement to diet thus potentially increasing prevalence and negative impacts such as depression. Finally, results revealed that paternal encouragement to diet is less common than maternal encouragement to diet. Therefore, if individuals are not accustomed to receiving these types of comments from their fathers, the comments may carry more impact when they do occur thus exacerbating negative consequences such as depression.

Another potential explanation is the difference in empathy between mothers and fathers regarding weight. Research shows that the majority of women experience body dissatisfaction which can lead to disordered eating, depression, and low self-esteem (Ferreiro, Seoane, & Senra, 2014; Rohde, Stice, & Marti, 2015). Due to the prevalence of body dissatisfaction and subsequent outcomes for women, mothers may have their own personal experiences with issues surrounding their bodies thus increasing empathy and sensitivity when interacting with their children about weight and eating. Fathers may not have dealt with these same pressures and therefore may not speak with the same degree of caution or sensitivity as mothers when it comes



to weight and eating behaviors. These factors may increase risk of hurtful comments from fathers thus contributing to the relationship between paternal encouragement to diet and depression. However, more research is needed on the potential impacts of paternal encouragement to diet, weight teasing, and weight-based commentary on psychosocial health in order to either confirm or deny these theories. Researchers may want to specifically focus on how psychoeducation surrounding the impacts of encouragement to diet and family weight teasing differs by gender of parent. In addition, they may want to focus on identifying and unpacking the effects of specific comments made by mothers and fathers in order to better understand the role of empathy surrounding weight issues based on gender of parent.

### **Body Weight Perception (BWP)**

Finally, our hypothesis that body weight perception (BWP) would act as moderator in the relationships between family weight teasing, paternal encouragement to diet, and maternal encouragement to diet and anxiety and depression was not confirmed. No significant relationships were found. However, those who perceive themselves as overweight or obese reported significantly more family weight-teasing, paternal encouragement to diet, and maternal encouragement to diet than their peers who see themselves as healthy weight. Current research supports this finding. Teens who are obese or overweight report higher levels of teasing than teens of average weight—persisting across multiple ethnic and racial groups (Van Der Berg et al., 2008). However, while researchers have examined this relationship based on weight status, little research has been conducted on the relationship between prevalence of family weight teasing and parental encouragement to diet and BWP—particularly in the emerging adulthood age group. Findings of this study imply that the prevalence of weight-based teasing and encouragement to diet not only persists past the adolescent developmental period but also may be

impacted by BWP—particularly for individuals who perceive themselves as overweight or obese.

A few different factors may explain the increased prevalence of family weight teasing and parental encouragement to diet for those who perceive themselves as obese/overweight. General weight stigma may play a role. Many people who are obese or overweight experience high degrees of prejudice due to their weight (Brownell, Puhl, Schwartz, & Rudd, 2005; Puhl & Brownell, 2001). In fact, the prevalence of weight-based discrimination has consistently increased in recent decades (Andreyeva, Puhl, & Brownell, 2008). This stigma is a societal problem perpetuated by multiple sources such as the media, healthcare settings, and education systems. Therefore, families may internalize these negative societal biases on an individual level leading to higher frequencies of weight-based teasing and encouragement to diet towards those in larger bodies. Another related potential factor is internalized weight stigma. Internalized weight stigma can be understood as directing societal anti-fat attitudes towards one's own body (Durso & Latner, 2008). This internalized weight stigma has been associated with avoidance of exercise and binge eating (Puhl, Moss-Racusin, & Schwartz, 2007; Vartanian & Novak, 2011)—both of which could lead to weight gain. Therefore, if an individual perceives themselves as overweight or obese, they may also experience internalized weight stigma which could lead to binge eating, avoidance of exercise, and weight gain. Families may then continue to tease or encourage the individual to diet due to the weight gain thus potentially increasing the frequency of teasing for those who perceive themselves as overweight or obese (Ratcliffe & Ellison, 2015). More research is needed to further understand the difference in prevalence of family weight teasing and parental encouragement to diet based on BWP. Researchers may want to focus on identifying the specific factors (such as weight stigma or internalized weight stigma) that could

contribute to increased family weight teasing and encouragement to diet for those who perceive themselves as overweight or obese.

Overall despite the lack of moderation effect of BWP found in this study, more research is warranted. The BWP measure only consisted of one question thus limiting our ability to capture the nuance of this variable. Variables such as body shame, internalized weight stigma, and thin ideal internalization have been linked to depression and anxiety (Durkin & Paxton, 2002; Grabe, Hyde & Lindberg, 2007; Pearl et al., 2014; Wott & Carels, 2010) and may interact with BWP in significant ways, specifically in the context of family weight teasing. Therefore, it is important to better understand the impacts of these nuances—especially given that this study found that family weight teasing was more common among those with higher BWP and also that family weight teasing predicted anxiety and depression. Due to these factors, future researchers may want to ask participants more questions surrounding BWP in order to better assess its impacts. These more detailed and thorough questions may help researchers further explore the nuances and impacts of BWP—particularly by identifying other confounding variables as well as specific risk and protective factors for those who have a higher BWP given the higher prevalence of family weight teasing.

### **Interaction of Family Weight Teasing, Paternal and Maternal Encouragement to Diet, and BWP**

It is important to note that the relationships between family weight teasing and anxiety and depression were the only relationships that maintained significance when controlling for all other variables in the path analysis. The relationship between paternal encouragement to diet and depression was only significant in the correlational analyses and was lost when accounting for family weight teasing in the path analysis. This change in significance could have occurred for a

few reasons. As mentioned earlier, anxiety and depression could develop in part due to feelings of rejection and inadequacy. The unattainable standards of the thin ideal may contribute to a fragile body image for those who perceive themselves outside of this ideal (Stice & Shaw, 2002). This fragile body image may in turn make these individuals more susceptible to feelings of rejection and inadequacy when experiencing weight teasing and encouragement to diet. If these pressures are coming from their own family, the feelings of rejection and inadequacy may be further exacerbated due to the principles of attachment theory (Holmes, 2014). Therefore, given that correlational analyses revealed a relationship between both paternal and maternal encouragement to diet and family weight teasing, a potential continuum of negativity in regards to weight-based commentary may exist.

Encouragement to diet may contribute to feelings of rejection and inadequacy creating slight disruptions in family relationships and making individuals more susceptible to feelings of rejection and inadequacy in future interactions regarding weight. Since results reveal that both paternal and maternal encouragement to diet are associated with family weight teasing, teasing is likely to accompany encouragement to diet thus potentially deepening these feelings of rejection and inadequacy that ultimately could lead to anxiety and depression. While family weight teasing may be the only significant predictor of anxiety and depression in this model, encouragement to diet may still play a role in these relationships. Therefore, future research should further explore the relationship between parental encouragement to diet and family weight teasing, potentially by examining encouragement to diet as a moderator between family weight teasing and anxiety and depression.

## **Implications for Emerging Adults**

These findings may also have important implications for the emerging adult population. While the weight teasing literature is fairly robust, the research has traditionally focused on child and adolescent populations (Eisenberg et al., 2006; Libbey et al., 2008; Madowitz et al., 2012; Puhl & Luedicke, 2011; Van Der Berg et al., 2008). Apart from one study that found early family weight teasing to predict teasing in young adult years (Eisenberg et al., 2011), no studies have examined the implications of family weight teasing for emerging adults—particularly in relation to depression and anxiety. The results of this study indicate that the adverse effects of family weight teasing persist past the adolescent period into emerging adulthood. Emerging adulthood is an important stage of developmental growth specifically in regards to emotional regulation, independence, and finding stability in adult roles and responsibilities (Arnett, 2004). Battles of depression and anxiety may inhibit these integral developmental processes if not addressed appropriately. Anxiety and depression have been shown to impact educational achievement (Eisenberg, Golberstein, & Hunt, 2009; Van Ameringen, Mancini, Farvolden, 2003) and relationship quality (Du Rocher Schudlich, Papp, & Cummings, 2011; Whitton et al., 2007; Zaider, Heimberg, & Iida, 2010). For example, both anxiety and depression have been associated with early dropout from college and lower GPA (Eisenberg et al., 2009; Van Ameringen et al., 2003). Furthermore, anxiety has been linked to negative perceptions of relationship quality (Zaider et al., 2010) while depression has been linked to increased conflict, relationship dissatisfaction, and negative interactions within couple relationships (Du Rocher Schudlich et al., 2011; Whitton et al., 2007). Emerging adulthood is largely characterized by the establishment of secure romantic relationships and the pursuit of academic endeavors for future careers (Arnett,

2004)—experiences that may be disrupted by anxiety and depression. Therefore, identifying potential risk factors is important within the emerging adult population.

While this study indicates that family weight teasing is linked to anxiety and depression in emerging adulthood, more research is needed on how timing of teasing influences this relationship. Future researchers should examine whether those who experience ongoing teasing in emerging adulthood experience different impacts than those who only experienced teasing in adolescence or childhood. While more research is needed to further explore these relationships, this study has shown that family weight teasing to be a potential risk factor for anxiety and depression during emerging adulthood.

### **Clinical Implications**

These findings can aid clinicians in multiple ways at various stages of treatment. Clinicians working in settings that mainly serve emerging adults—such as college campuses—may especially find these results helpful. Due to the nature of the findings, clinical implications may be most relevant at the assessment and intervention stages. These implications will be further explained in the sections below.

**Assessment.** The results of this study can inform the assessment process in variety of ways. If a client reports frequent weight-based teasing or encouragement to diet from their family, therapists should assess for anxiety and depression. Conversely, if a client presents with anxiety and depression symptoms, therapists can assess for the frequency and nature of weight-based commentary in their family of origin as these experiences may be potential contributors towards the anxiety or depression. Assessing these systemic factors can be an important and informative tool even when working with individual clients (i.e., college students and graduate students). Furthermore, it may be helpful for therapists to ask clients questions regarding

perception of their bodies. Since the findings of this study show that those who perceive themselves as overweight/obese reported higher incidence of family weight teasing, knowledge of BWP can alert therapists to potential risk factors for family weight teasing.

If frequent experiences of family weight teasing or encouragement to diet are identified throughout the assessment phase, therapists may want to recommend family therapy. Many people who experience anxiety and depression seek individual therapy. However, according to systems theory, individuals are a part of many different systems that impact their individual functioning (Nichols & Davis, 2017). Change occurs not by simply addressing the individual but by addressing the societal and relational systems in which the individual interacts (Nichols & Davis, 2017). Therefore, given the potential impacts of the family system on the problem, family therapy may be more effective. If conducting family therapy, therapists can assess the relationship of parents and siblings with their own bodies as this may contribute to the frequency and nature of weight-based commentary in the home. They may also want to spend additional time assessing the father-child relationship given the correlational relationship between paternal encouragement to diet and depression depicted in the results.

**Intervention.** One potentially effective intervention could be psychoeducation regarding the negative impacts of family weight teasing and encouragement to diet. It is important for therapists to give space for conversations about the negative effects of family weight teasing, discouraging parents and siblings from making disparaging and teasing comments about weight. It is also important for therapists to facilitate conversations with parents about their own relationships with their bodies and histories with weight teasing and encouragement to diet. Parents may have a negative relationship with their own body and therefore take this insecurity out on their child through teasing. Therefore, it may be helpful for therapists to help parents

process these insecurities in order to increase body image security and decrease weight-based teasing. In addition, if parents have experienced high degrees of weight teasing themselves, they may attempt to protect their child from this hardship by encouraging their child to diet or lose weight in hopes of curtailing weight teasing from others.

It is important for therapists to validate the fears and motivations of parents while also advocating for alternative ways to support their child's health through weight-neutral and weight-accepting language. Therapists can utilize Health at Every Size (HAES) resources in order to help teach parents alternative ways to define and discuss health. The HAES approach to health is characterized by the spreading of knowledge about the adverse effects of restricting and dieting as well as promoting a definition of health that embodies both the mind and the body rather than simply focusing on weight (Gagnon-Girouard et al., 2010). It aims to help individuals foster a peaceful and flexible relationship with food as well as a positive body image in order to decrease preoccupation with weight (Gagnon-Girouard et al., 2010). A potential resource is the Accept Yourself program—a hybrid of Acceptance and Commitment Therapy (ACT) and HAES principles—which has been shown to decrease depression in preliminary studies (Berman, Morton, & Hegel, 2016).

If using an attachment approach to therapy, therapists may want to assess the severity of the weight teasing experience. If the experience appears particularly injurious, therapists could approach it as an attachment injury by working through the Attachment Injury Resolution Model (AIRM) with families (Zuccarini et al., 2013). When families emotionally process the hurt attached to these events, they are able to better identify the wound as well as clarify its effects on the family relationship (Johnson, Makinen, & Millikin, 2001; Schade & Sandberg, 2012; Zuccarini et al., 2013). This process in turn allows for the establishment of more positive



emotional reactions and interactions surrounding weight thus beginning to heal the wound, rebuild trust in the family, and potentially decrease depression and anxiety in the child, teen, or emerging adult (Johnson et al., 2001; Schade & Sandberg, 2012; Zuccarini et al., 2013). In addition, many people may experience anxiety or depression when they repress their emotions or do not openly share them in close relationships. Therefore, providing a safe space for honest emotional expression may reduce emotional suppression and subsequently decrease feelings of anxiety and depression. Therapists can also utilize an EFT intervention known as enactments in order to guide clients in communicating their attachment needs and fears surrounding weight to their family (Johnson, 2004). Therapists can help clients voice their need for unconditional acceptance or love to their families as well as help family members respond in a reassuring, supportive, and comforting way. Given the link between paternal encouragement to diet and depression, this intervention may be especially powerful between fathers and their children.

### **Limitations and Future Research**

First of all, the sample of this study was predominantly white and female thus potentially limiting generalizability. Therefore, the findings should be interpreted with caution. Second of all, measures for the primary variables in the study only included 1-2 questions. Future researchers should ask more extensive questions surrounding family weight teasing, encouragement to diet, and body weight perception in order to better understand their impacts on emerging adults. In addition, our study examined general family weight teasing rather than assess effects based on individual family members. Therefore, future researchers should ask questions that explore the difference in impact between paternal, maternal, and sibling family teasing. Furthermore, while the GAD-2 and PHQ-2 have high reliability, the measures used for other variables in the study are not as highly established in the literature. Therefore, future

researchers should develop and test more robust measures for family weight teasing, encouragement to diet, and BWP in order to establish greater reliability and validity. Second, findings from our path analysis should be interpreted with caution given that our results revealed that we only accounted for 3.2% of the variance in anxiety and 1.6% of the variance in depression. Clearly, there are other factors at play when explaining the variance in these complex dependent variables -- potentially internalized weight stigma or disordered eating which have both been linked to anxiety and depression (Gan, Nasir, Zalilah, & Hazizi, 2011; Pearl et al., 2014). Researchers should aim to identify these other factors and further explore how these factors interact with family weight teasing. Finally, although we were justified in examining group differences by BWP, the results may have been more sound had we collected data from a larger number of individuals who viewed themselves as underweight. This group represented only a small percentage of our sample.

Future studies should also examine how family weight teasing, parental encouragement to diet, and BWP relate to other mental health outcomes in addition to anxiety and depression such as disordered eating, body dissatisfaction, and self-esteem. While much of the literature has focused on the relationships between these variables in adolescents, few have examined the implications for emerging adults. Therefore, future research surrounding family weight teasing, parental encouragement to diet and BWP should focus on the emerging adult population in order to better understand the unique impacts for this age group.

## **Conclusion**

Weight teasing and encouragement to diet have been linked to numerous adverse outcomes including anxiety and depression in adolescence but little was known about its impacts on emerging adults particularly within the family (Eisenberg et al., 2003; Eisenberg et al., 2006;

Fulkerson et al., 2007; Madowitz et al., 2012; Puhl & Luedicke, 2012). However, the majority of the research has focused on general weight teasing within the adolescent population. This study adds to the literature through using a sample of emerging adults and also by assessing the impacts of weight teasing and encouragement to diet specifically within the family. Findings of this study showed a significant relationship between family weight teasing and anxiety and depression when controlling for all other variables as well as a correlational relationship between paternal encouragement to diet and depression as well as both paternal and maternal encouragement to diet and family weight teasing. These results indicate that family weight teasing may also have significant impacts on anxiety and depression levels for emerging adult and can inform clinicians when treating individuals in the emerging adult population with anxiety and depression – an important contribution to current research. While BWP was not found to moderate this relationship, future research should explore its impact on anxiety and depression in emerging adults using more robust measures. Future research should also further examine the effects of family weight teasing and encouragement to diet on emerging adults particularly as they relate to other aspects of mental health such as disordered eating and body dissatisfaction.

## REFERENCES

- Aguinis, H. (2004). *Regression analysis for categorical moderators*. Guilford Press.
- Akse, J., Hale, W. W., Engels, R. C., Raaijmakers, Q. A., & Meeus, W. H. (2004). Personality, perceived parental rejection and problem behavior in adolescence. *Social Psychiatry and Psychiatric Epidemiology*, *39*(12), 980-988.
- Al Mamun, A., Cramb, S., McDermott, B. M., O'callaghan, M., Najman, J. M., & Williams, G. M. (2007). Adolescents' perceived weight associated with depression in young adulthood: A longitudinal study. *Obesity*, *15*(12), 3097-3105.
- Andreyeva, T., Puhl, R. M., & Brownell, K. D. (2008). Changes in perceived weight discrimination among Americans, 1995–1996 through 2004–2006. *Obesity*, *16*(5), 1129-1134.
- Arroll, B., Goodyear-Smith, F., Crengle, S., Gunn, J., Kerse, N., Fishman, T., ... & Hatcher, S. (2010). Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. *The Annals of Family Medicine*, *8*(4), 348-353.
- Arnett J. J. (2001). Conceptions of the transition to adulthood: perspectives from adolescence through midlife. *Journal of Adult Development*, *8*, 133–143.
- Arnett, J. J. (2004). *Emerging adulthood: The winding road from the late teens through the twenties*. New York;Oxford;: Oxford University Press.  
doi:10.1093/acprof:oso/9780195309379.001.0001
- Atlantis, E., & Ball, K. (2008). Association between weight perception and psychological distress. *International journal of obesity*, *32*(4), 715.
- Balantekin, K. N., Savage, J. S., Marini, M. E., & Birch, L. L. (2014). Parental encouragement of dieting promotes daughters' early dieting. *Appetite*, *80*, 190

- Ball, K., Crawford, D., & Kenardy, J. (2004). Longitudinal relationships among overweight, life satisfaction, and aspirations in young women. *Obesity research, 12*(6), 1019-1030.
- Barlow, S. E., & Committee, a. E. (2007). Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. *Pediatrics, 120*(Supplement), S164. doi:10.1542/peds.2007-2329C
- Bauer, K. W., Bucchianeri, M. M., & Neumark-Sztainer, D. (2013). Mother-reported parental weight talk and adolescent girls' emotional health, weight control attempts, and disordered eating behaviors. *Journal of eating disorders, 1*(1), 45.
- Befort, C. A., Nazir, N., & Perri, M. G. (2012). Prevalence of obesity among adults from rural and urban areas of the united states: Findings from NHANES (2005-2008). *The Journal of Rural Health, 28*(4), 392-397. doi:10.1111/j.1748-0361.2012.00411.x
- Benedikt, R., Wertheim, E. H., & Love, A. (1998). Eating attitudes and weight-loss attempts in female adolescents and their mothers. *Journal of Youth and Adolescence, 27*(1), 43-57.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological bulletin, 107*(2), 238.
- Berge, J. M., MacLehose, R., Loth, K. A., Eisenberg, M., Bucchianeri, M. M., & Neumark-Sztainer, D. (2013). Parent conversations about healthful eating and weight: associations with adolescent disordered eating behaviors. *JAMA pediatrics, 167*(8), 746-753.
- Berge, J. M., MacLehose, R. F., Loth, K. A., Eisenberg, M. E., Fulkerson, J. A., & Neumark-Sztainer, D. (2015a). Parent-adolescent conversations about eating, physical activity and weight: prevalence across sociodemographic characteristics and associations with adolescent weight and weight-related behaviors. *Journal of behavioral medicine, 38*(1), 122-135.

- Berge, J. M., Trofholz, A., Fong, S., Blue, L., & Neumark-Sztainer, D. (2015b). A qualitative analysis of parents' perceptions of weight talk and weight teasing in the home environments of diverse low-income children. *Body image, 15*, 8-15.
- Berman, M. I., Morton, S. N., & Hegel, M. T. (2016). Uncontrolled pilot study of an Acceptance and Commitment Therapy and Health at Every Size intervention for obese, depressed women: Accept Yourself!. *Psychotherapy, 53*(4), 462.
- Brewis, A. (2003). Biocultural aspects of obesity in young Mexican schoolchildren. *American Journal of Human Biology, 15*(3), 446-460.
- Britz, B., Siegfried, W., Ziegler, A., Lamertz, C., Herpertz-Dahlmann, B. M., Remschmidt, H., ... & Hebebrand, J. (2000). Rates of psychiatric disorders in a clinical study group of adolescents with extreme obesity and in obese adolescents ascertained via a population based study. *International journal of obesity, 24*(12), 1707.
- Brownell, K. D., Puhl, R. M., Schwartz, M. B., & Rudd, L. E. (2005). *Weight bias: Nature, consequences, and remedies*. Guilford Publications.
- Bowlby, J. (1982). Attachment and loss: Retrospect and prospect. *American journal of Orthopsychiatry, 52*(4), 664.
- Chen, E. Y., Bocchieri-Ricciardi, L. E., Munoz, D., Fischer, S., Katterman, S., Roehrig, M., ... & Le Grange, D. (2007). Depressed mood in class III obesity predicted by weight-related stigma. *Obesity Surgery, 17*(5), 669-671.
- Chang, V. W., & Christakis, N. A. (2003). Self-perception of weight appropriateness in the United States. *American journal of preventive medicine, 24*(4), 332-339.

- Cook, W. L., & Kenny, D. A. (2005). The actor–partner interdependence model: A model of bidirectional effects in developmental studies. *International Journal of Behavioral Development, 29*(2), 101-109.
- Delgadillo, J., Payne, S., Gilbody, S., Godfrey, C., Gore, S., Jessop, D., & Dale, V. (2012). Brief case finding tools for anxiety disorders: Validation of GAD-7 and GAD-2 in addictions treatment. *Drug and Alcohol Dependence, 125*(1), 37-42.  
doi:10.1016/j.drugalcdep.2012.03.011
- Donath, S. M. (2000). Who's overweight? Comparison of the medical definition and community views. *The Medical Journal of Australia, 172*(8), 375-377.
- Du Rocher Schudlich, T. D., Papp, L. M., & Cummings, E. M. (2011). Relations between spouses' depressive symptoms and marital conflict: A longitudinal investigation of the role of conflict resolution styles. *Journal of Family Psychology, 25*(4), 531.
- Durkin, S. J., & Paxton, S. J. (2002). Predictors of vulnerability to reduced body image satisfaction and psychological wellbeing in response to exposure to idealized female media images in adolescent girls. *Journal of Psychosomatic Research, 53*(5), 995-1005.  
doi:10.1016/S0022-3999(02)00489-0
- Durso, L. E., & Latner, J. D. (2008). Understanding self-directed stigma: development of the weight bias internalization scale. *Obesity, 16*(S2), S80-S86.
- Eisenberg, D., Golberstein, E., & Hunt, J. B. (2009). Mental health and academic success in college. *The BE Journal of Economic Analysis & Policy, 9*(1).
- Eisenberg, M. E., Neumark-Sztainer, D., & Story, M. (2003). Associations of weight-based teasing and emotional well-being among adolescents. *Archives of pediatrics & adolescent medicine, 157*(8), 733-738.

- Eisenberg, M. E., Neumark-Sztainer, D., Haines, J., & Wall, M. (2006). Weight-teasing and emotional well-being in adolescents: Longitudinal findings from Project EAT. *Journal of adolescent health, 38*(6), 675-683.
- Eisenberg, M. E., Berge, J. M., Fulkerson, J. A., & Neumark-Sztainer, D. (2011). Weight comments by family and significant others in young adulthood. *Body Image, 8*(1), 12-19. doi:10.1016/j.bodyim.2010.11.002
- Erermis, S., Cetin, N., Tamar, M., Bukusoglu, N., Akdeniz, F., & Goksen, D. (2004). Is obesity a risk factor for psychopathology among adolescents? *Pediatrics International, 46*(3), 296-301. doi:10.1111/j.1442-200x.2004.01882.x
- Erickson, S. J., Robinson, T. N., Haydel, K. F., & Killen, J. D. (2000). Are overweight children unhappy?: Body mass index, depressive symptoms, and overweight concerns in elementary school children. *Archives of Pediatrics & Adolescent Medicine, 154*(9), 931-935. doi:10.1001/archpedi.154.9.931
- Ferreiro, F., Seoane, G., & Senra, C. (2014). Toward understanding the role of body dissatisfaction in the gender differences in depressive symptoms and disordered eating: A longitudinal study during adolescence. *Journal of adolescence, 37*(1), 73-84.
- Frank, R., Claumann, G. S., Felden, É. P. G., Silva, D. A. S., & Pelegri, A. (2018). Body weight perception and body weight control behaviors in adolescents. *Jornal De Pediatria, 94*(1), 40-47. doi:10.1016/j.jpmed.2017.03.008
- Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight stigmatization and ideological beliefs: relation to psychological functioning in obese adults. *Obesity research, 13*(5), 907-916.



- Fulkerson, J. A., Strauss, J., Neumark-Sztainer, D., Story, M., & Boutelle, K. (2007). Correlates of psychosocial well-being among overweight adolescents: the role of the family. *Journal of consulting and clinical psychology, 75*(1), 181.
- Gagnon-Girouard, M. P., Bégin, C., Provencher, V., Tremblay, A., Mongeau, L., Boivin, S., & Lemieux, S. (2010). Psychological impact of a “Health-at-Every-Size” intervention on weight-preoccupied overweight/obese women. *Journal of Obesity, 2010*.
- Gan, W. Y., Nasir, M. M., Zalilah, M. S., & Hazizi, A. S. (2011). Disordered eating behaviors, depression, anxiety and stress among Malaysian university students. *College Student Journal, 45*(2), 296-310.
- Grabe, S., Hyde, J. S., & Lindberg, S. M. (2007). Body objectification and depression in adolescents: The role of gender, shame, and rumination. *Psychology of Women Quarterly, 31*(2), 164-175. doi:10.1111/j.1471-6402.2007.00350.x
- Haase, A. M., Mountford, V., & Waller, G. (2007). Understanding the link between body checking cognitions and behaviors: The role of social physique anxiety. *International Journal of Eating Disorders, 40*(3), 241-246.
- Haines, J., Hannan, P. J., van den Berg, P., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Weight-related teasing from adolescence to young adulthood: Longitudinal and secular trends between 1999 and 2010: Weight-related teasing from adolescence to young adulthood. *Obesity, , n/a*. doi:10.1002/oby.20092
- Haines, J., Neumark-Sztainer, D., Eisenberg, M. E., & Hannan, P. J. (2006). Weight teasing and disordered eating behaviors in adolescents: Longitudinal findings from Project EAT (Eating Among Teens). *Pediatrics, 117*, e209–e215. <http://dx.doi.org/10.1542/peds.2005-1242>.

- Hayden-Wade, H. A., Stein, R. I., Ghaderi, A., Saelens, B. E., Zabinski, M. F., & Wilfley, D. E. (2005). Prevalence, characteristics, and correlates of teasing experiences among overweight children vs. non-overweight peers. *Obesity research, 13*(8), 1381-1392.
- Holmes, P., & Farnfield, S. (2014). *The routledge handbook of attachment: Theory*. New York: Routledge.
- Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Articles, 2*.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.  
<http://dx.doi.org/10.1080/10705519909540118>
- Hunger, J. M., & Major, B. (2015). Weight stigma mediates the association between BMI and self-reported health. *Health Psychology, 34*(2), 172.
- Jansen, W., van de Looij-Jansen, P. M., de Wilde, E. J., & Brug, J. (2008). Feeling fat rather than being fat may be associated with psychological well-being in young Dutch adolescents. *Journal of Adolescent Health, 42*(2), 128-136.
- Johnson, S. M. (2004). *The practice of emotionally focused couple therapy: Creating connection* (2nd ed.). New York: Brunner-Routledge.
- Johnson, S. M., Makinen, J. A., & Millikin, J. W. (2001). Attachment injuries in couple relationships: A new perspective on impasses in couples therapy. *Journal of marital and family therapy, 27*(2), 145-155.
- Keery, H., Boutelle, K., van den Berg, P., & Thompson, J. K. (2005). The impact of appearance-related teasing by family members. *Journal of Adolescent Health, 37*(2), 120-127.

- Keery, H., Eisenberg, M. E., Boutelle, K., Neumark-Sztainer, D., & Story, M. (2006). Relationships between maternal and adolescent weight-related behaviors and concerns: The role of perception. *Journal of psychosomatic research*, 61(1), 105-111.
- Kenny, D. A., & Ledermann, T. (2010). Detecting, measuring, and testing dyadic patterns in the actor-partner interdependence model. *Journal of family psychology*, 24(3), 359.
- Kim, O., & Kim, K. (2001). Body weight, self-esteem, and depression in Korean female adolescents. *Adolescence*, 36(142), 315-322.
- Kim, I. J., Ge, X., Brody, G. H., Conger, R. D., Gibbons, F. X., & Simons, R. L. (2003). Parenting behaviors and the occurrence and co-occurrence of depressive symptoms and conduct problems among African American children. *Journal of Family Psychology*, 17(4), 571.
- Klein, H., & Shiffman, K. S. (2005). Thin is “in” and stout is “out”: What animated cartoons tell viewers about body weight. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 10(2), 107-116.
- Klein, H., & Shiffman, K. S. (2006). Messages about physical attractiveness in animated cartoons. *Body image*, 3(4), 353-363.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, 16(9), 606-613.
- Laursen, B., & Hartl, A. C. (2013). Understanding loneliness during adolescence: Developmental changes that increase the risk of perceived social isolation. *Journal of Adolescence*, 36(6), 1261-1268.

- Libbey, H. P., Story, M. T., Neumark-Sztainer, D. R., & Boutelle, K. N. (2008). Teasing, disordered eating behaviors, and psychological morbidities among overweight adolescents. *Obesity*, 16(S2), S24-S29.
- Lichtenstein, M. B., Griffiths, M. D., Hemmingsen, S. D., & Støving, R. K. (2018). Exercise addiction in adolescents and emerging adults—Validation of a youth version of the Exercise Addiction Inventory. *Journal of behavioral addictions*, 7(1), 117-125.
- Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B. W., & Zitman, F. G. (2010). Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. *Archives of general psychiatry*, 67(3), 220-229.
- Madowitz, J., Knatz, S., Maginot, T., Crow, S. J., & Boutelle, K. N. (2012). Teasing, depression and unhealthy weight control behaviour in obese children. *Pediatric obesity*, 7(6), 446-452.
- Mahalik, J. R., Good, G. E., & Englar-Carlson, M. (2003). Masculinity scripts, presenting concerns, and help seeking: Implications for practice and training. *Professional Psychology: Research and Practice*, 34(2), 123.
- Mikulincer, M., & SHAVER, P. R. (2012). An attachment perspective on psychopathology. *World Psychiatry*, 11(1), 11-15.
- Mond, J., Van den Berg, P., Boutelle, K., Hannan, P., & Neumark-Sztainer, D. (2011). Obesity, body dissatisfaction, and emotional well-being in early and late adolescence: findings from the project EAT study. *Journal of Adolescent Health*, 48(4), 373-378.
- Muthén, L. K., & Muthén, B. O. (2012). MPlus: statistical analysis with latent variables--User's guide.

- Neumark-Sztainer, D., Bauer, K. W., Friend, S., Hannan, P. J., Story, M., & Berge, J. M. (2010). Family weight talk and dieting: how much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls?. *Journal of Adolescent Health, 47*(3), 270-276.
- Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P., & Mulert, S. (2002). Weight-teasing among adolescents: Correlations with weight status and disordered eating behaviors. *International Journal of Obesity, 26*(1), 123-131. doi:10.1038/sj.ijo.0801853
- Neumark-Sztainer, D., Haines, J., Robinson-O'Brien, R., Hannan, P. J., Robins, M., Morris, B., & Petrich, C. A. (2008). 'Ready. Set. ACTION!' A theater-based obesity prevention program for children: a feasibility study. *Health education research, 24*(3), 407-420.
- Neumark-Sztainer, D., Story, M., & Faibisch Ed.D, L. (1998). Perceived stigmatization among overweight african-american and caucasian adolescent girls. *Journal of Adolescent Health, 23*(5), 264-270. doi:10.1016/S1054-139X(98)00044-5
- Nichols, M. P., & Davis, S. D. (2017). *Family Therapy: Concepts and Methods* (11th ed.). Pearson.
- Nolan, S. A., Flynn, C., & Garber, J. (2003). Prospective relations between rejection and depression in young adolescents. *Journal of personality and social psychology, 85*(4), 745.
- Ogden, C. L., Carroll, M. D., Fryar, C. D., & Flegal, K. M. (2015). Prevalence of obesity among adults and youth: United states, 2011-2014. *NCHS Data Brief, (219)*, 1.
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2012). Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. *Jama, 307*(5), 483-490.

- Ogden, C. L., Carroll, M. D., Lawman, H. G., Fryar, C. D., Kruszon-Moran, D., Kit, B. K., & Flegal, K. M. (2016). Trends in obesity prevalence among children and adolescents in the united states, 1988-1994 through 2013-2014. *Jama*, *315*(21), 2292-2299.  
doi:10.1001/jama.2016.6361
- Ozmen, D., Ozmen, E., Ergin, D., Cetinkaya, A. C., Sen, N., Dundar, P. E., & Taskin, E. O. (2007). The association of self-esteem, depression and body satisfaction with obesity among Turkish adolescents. *BMC Public Health*, *7*(1), 80.
- Pearl, R. L., White, M. A., & Grilo, C. M. (2014). Weight bias internalization, depression, and self-reported health among overweight binge eating disorder patients. *Obesity*, *22*(5), E142-E148.
- Pederson, E. L., & Vogel, D. L. (2007). Male gender role conflict and willingness to seek counseling: Testing a mediation model on college-aged men. *Journal of Counseling Psychology*, *54*(4), 373.
- Plummer, F., Manea, L., Trepel, D., & McMillan, D. (2016). Screening for anxiety disorders with the GAD-7 and GAD-2: a systematic review and diagnostic metaanalysis. *General hospital psychiatry*, *39*, 24-31.
- Puhl, R., & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity research*, *9*(12), 788-805.
- Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. *Obesity*, *17*(5), 941-964.
- Puhl, R. M., & King, K. M. (2013). Weight discrimination and bullying. *Best practice & research Clinical endocrinology & metabolism*, *27*(2), 117-127.

- Puhl, R. M., & Luedicke, J. (2012). Weight-based victimization among adolescents in the school setting: Emotional reactions and coping behaviors. *Journal of youth and adolescence*, 41(1), 27-40. Chicago
- Puhl, R. M., Moss-Racusin, C. A., & Schwartz, M. B. (2007). Internalization of weight bias: Implications for binge eating and emotional well-being. *Obesity*, 15(1), 19-23.
- Puhl, R., & Suh, Y. (2015). Health consequences of weight stigma: implications for obesity prevention and treatment. *Current obesity reports*, 4(2), 182-190.
- Ratcliffe, D., & Ellison, N. (2015). Obesity and internalized weight stigma: A formulation model for an emerging psychological problem. *Behavioural and cognitive psychotherapy*, 43(2), 239-252.
- Rohde, P., Stice, E., & Marti, C. N. (2015). Development and predictive effects of eating disorder risk factors during adolescence: Implications for prevention efforts. *International Journal of Eating Disorders*, 48(2), 187-198.
- Roisman G. I., Masten A. S., Coatsworth J., Tellegen A. (2004). Salient and emerging developmental tasks in the transition to adulthood. *Child Development*, 75, 123–133.
- Roberts, R. E., & Duong, H. T. (2013). Perceived weight, not obesity, increases risk for major depression among adolescents. *Journal of psychiatric research*, 47(8), 1110-1117.
- Roberts, R. E., & Duong, H. T. (2015). Does major depression affect risk for adolescent obesity?. *Journal of affective disorders*, 186, 162-167.
- Sachs-Ericsson, N., Burns, A. B., Gordon, K. H., Eckel, L. A., Wonderlich, S. A., Crosby, R. D., & Blazer, D. G. (2007). Body mass index and depressive symptoms in older adults: the moderating roles of race, sex, and socioeconomic status. *The American Journal of Geriatric Psychiatry*, 15(9), 815-825.

- Sanftner, J. L., Crowther, J. H., Crawford, P. A., & Watts, D. D. (1996). Maternal influences (or lack thereof) on daughters' eating attitudes and behaviors. *Eating Disorders*, 4(2), 147-159.
- Schade, L. C., & Sandberg, J. G. (2012). Healing the attachment injury of marital infidelity using emotionally focused couples therapy: A case illustration. *The American Journal of Family Therapy*, 40(5), 434-444.
- Schultz, H. K., Paxton, S. J., & Wertheim, E. H. (2002). Investigation of Body Comparison Among Adolescent Girls 1. *Journal of Applied Social Psychology*, 32(9), 1906-1937.
- Seo, J., & Park, S. (2015a). Validation of the generalized anxiety disorder-7 (GAD-7) and GAD-2 in patients with migraine. *The Journal of Headache and Pain*, 16(1), 1-7.  
doi:10.1186/s10194-015-0583-8
- Seo, J., & Park, S. (2015b). Validation of the patient health questionnaire-9 (PHQ-9) and PHQ-2 in patients with migraine. *The Journal of Headache and Pain*, 16(1), 1-7.  
doi:10.1186/s10194-015-0552-2
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, 166(10), 1092-1097.
- Stice, E., & Bearman, S. K. (2001). Body-image and eating disturbances prospectively predict increases in depressive symptoms in adolescent girls: A growth curve analysis. *Developmental Psychology*, 37(5), 597-607. doi:10.1037/0012-1649.37.5.597
- Stice, E., Hayward, C., Cameron, R. P., Killen, J. D., & Taylor, C. B. (2000). Body-image and eating disturbances predict onset of depression among female adolescents: A longitudinal



- study. *Journal of Abnormal Psychology*, 109(3), 438-444. doi:10.1037/0021-843X.109.3.438.
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of psychosomatic research*, 53(5), 985-993.
- Strawbridge, W. J., Deleger, S., Roberts, R. E., & Kaplan, G. A. (2002). Physical activity reduces the risk of subsequent depression for older adults. *American journal of epidemiology*, 156(4), 328-334.
- Ter Bogt, T. F., van Dorsselaer, S. A., Monshouwer, K., Verdurmen, J. E., Engels, R. C., & Vollebergh, W. A. (2006). Body mass index and body weight perception as risk factors for internalizing and externalizing problem behavior among adolescents. *Journal of Adolescent Health*, 39(1), 27-34.
- Thompson, J. K., Cattarin, J., Fowler, B., & Fisher, E. (1995). The perception of teasing scale (POTS): A revision and extension of the physical appearance related teasing scale (PARTS). *Journal of Personality Assessment*, 65(1), 146-157.  
doi:10.1207/s15327752jpa6501\_11
- Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of anxiety disorders*, 17(5), 561-571.
- Van den Berg, P., Neumark-Sztainer, D., Eisenberg, M. E., & Haines, J. (2008). Racial/ethnic differences in weight-related teasing in adolescents. *Obesity*, 16(S2), S3-S10
- Vartanian, L. R., & Novak, S. A. (2011). Internalized societal attitudes moderate the impact of weight stigma on avoidance of exercise. *Obesity*, 19(4), 757-762.

- Wardle, J., Williamson, S., Johnson, F., & Edwards, C. (2006). Depression in adolescent obesity: cultural moderators of the association between obesity and depressive symptoms. *International journal of obesity*, 30(4), 634.
- Wardle, J., & Cooke, L. (2005). The impact of obesity on psychological well-being. *Best Practice & Research Clinical Endocrinology & Metabolism*, 19(3), 421-440.
- Whitton, S. W., Olmos-Gallo, P. A., Stanley, S. M., Prado, L. M., Kline, G. H., St Peters, M., & Markman, H. J. (2007). Depressive symptoms in early marriage: Predictions from relationship confidence and negative marital interaction. *Journal of Family Psychology*, 21(2), 297.
- Wott, C. B., & Carels, R. A. (2010). Overt weight stigma, psychological distress and weight loss treatment outcomes. *Journal of health psychology*, 15(4), 608-614.
- Zaider, T. I., Heimberg, R. G., & Iida, M. (2010). Anxiety disorders and intimate relationships: A study of daily processes in couples. *Journal of Abnormal Psychology*, 119(1), 163.
- Zuccarini, D., Johnson, S. M., Dalglish, T. L., & Makinen, J. A. (2013). Forgiveness and reconciliation in emotionally focused therapy for couples: The client change process and therapist interventions. *Journal of Marital and Family Therapy*, 39(2), 148-162.

APPENDIX A: ILLUSTRATION OF MODEL

